



## MICROLOOP OPTION FOR 1800 TRAFFIC CONTROL IS AVAILABLE

Version 2 of the 1800 Vehicular Traffic Control System, which includes the microloop option for traffic control, is available (1800-UG-06X).

Microloop provides a powerful new dimension for traffic control. It optimizes control at an individual intersection, while synchronizing it with adjacent intersections. It also has the ability to change any step timing manually, the capability of synchronizing subsystems, and an improved method of measuring stops and delay.

Current users are being sent a letter announcing the availability of Version 2. This letter is accompanied by a prepunched program order card that the customer should use to order the new version.

See the attached sales manual page (P 1800.5) for additional information.

## OPTIONAL FLOWCHARTS ARE AVAILABLE FOR PROJECT CONTROL SYSTEM (PCS)

The optional flowcharts for PCS (360A-CP-06X) are now available. They are combined with the source program statements and are available on one 2400' reel of magnetic tape.

For details, see the attached sales manual page (P 360A.7).



John Fahey  
Director of DP Marketing

### Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed concurrently to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

- [1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.
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Published by DP Sales Publishing Services, WTHQ

Attachments [6]: P 3, P 5, P 19, P 21, P 360A.7, and P 1800.5

Release Date: March 29, 1968

Distribution: All Areas

stems engineers

P68-51

**IBM****IBM World Trade Data Processing****NEW VERSION OF DAMPS TO BE AVAILABLE  
MARCH 14, 1969**

Version 2 of Data Acquisition Multiprogramming System (DAMPS) extends the facilities provided under Version 1 (see P67-98). It is designed for use on the System/360 Model 44 and will be available March 14, 1969.

Version 1 is still scheduled for delivery on September 30, 1968; however, after March 14, 1969, Version 1 will not be maintained.

Real-time applications which run under Version 1 will run under Version 2 without modification, provided adequate storage and the required devices are reserved. DAMPS Version 2 requires the Storage Protection special feature.

Version 2 includes improved multiprogramming features for real-time applications ... support of a full background processing capability ... support for 32 levels of the Priority Interrupt special feature and the IBM 1827 Data Control Unit.

The system will support assignment of program tasks to various priority interrupt levels. Foreground program tasks can be dynamically scheduled for execution during periods while there are no active priority interrupts. To sustain a higher throughput rate for real-time applications, the foreground processing tasks can be multiprogrammed. Customer written application programs can be prepared using the System/360 Model 44 programming system. The DAMPS Version 2 features appear as extensions to the System/360 Model 44 programming system.


A background process, logically independent of the real-time job, will be multiprogrammed at a low priority level. While the background functions under the System/360 Model 44 programming system, the foreground is particularly applicable to real-time on-line applications interfacing directly with the System/360 Model 44. Examples of DAMPS Version 2 applications are:

hybrid computing    data acquisition  
instrument control    laboratory automation

All customers affected by this change should be notified promptly.

The DAMPS Version 2 Application Description Manual (H20-0494) is available from the IBM Distribution Center in Mechanicsburg.

For the Version 2 sales manual write-up, see the reverse side.



**John Fahey**  
Director of DP Marketing

FOR IBM INTERNAL USE ONLY

Published by DP Sales Publishing Services, WTHQ

Release Date: April 3, 1968

Distribution: All Areas

P68-52

**Data Acquisition Multiprogramming System (DAMPS Version 2):** DAMPS Version 2

is a program designed to support

the System/360 Model 44 in on-line scientific applications. The system is particularly useful for real-time applications requiring quick response to multiple external processes. In addition to the devices supported by the System/360 Model 44 Programming System, DAMPS Version 2 supports 32 levels of the Priority Interrupt Special Features and the IBM 1827 Data Control Unit for interfacing directly with scientific applications. A capability for processing non-real-time jobs in the background is also provided. The System/360 Model 44 Programming System processors are compatible with DAMPS and are used in preparation of application programs.

**Description:** DAMPS Version 2 operates in conjunction with the Priority Interrupt special feature and the IBM 1827 Data Control Unit or other real-time interface. The system is designed to interface directly with an on-line, real-time, scientific application.

The system supports the assignment of program tasks to the various priority levels, to be scheduled as immediate response to external events. Foreground tasks may be dynamically scheduled for execution while there are no active priority interrupt levels. To sustain a higher throughput rate for real-time jobs, the foreground processing tasks can be multiprogrammed. The posture of the system, with respect to priority interrupts, can be altered with special subroutines provided. Foreground tasks use supervisor capabilities compatible with the System/360 Model 44 Programming System including FETCH and LOAD, while priority response routines are provided with special capabilities which support a broad range of processing at a priority level. DAMPS user written applications programs are prepared with the System/360 Model 44 Programming System. The features of DAMPS appear as extensions to the System/360 Model 44 Programming System.

A background process, logically independent of the real-time job, will be multiprogrammed at a low priority level. The Storage Protection feature is required to protect the real-time application from errors occurring in the background. A full System/360 Model 44 Programming System is reflected in the background.

**Features:** Special routines can be associated with an immediate response to an external event through the Priority Interrupt special feature ... foreground processing can be easily scheduled during priority interrupt ... foreground processing can be multiprogrammed ... the user can easily adjust the programs used for responding to priority interrupts ... the capabilities associated with the System/360 Model 44 Programming System are available to the user for preparation and processing of real-time jobs ... a full S/360 Model 44 Programming System is available in the background ... the real-time application is protected from the background ... a special, real-time channel scheduler is provided for channels dedicated to the processing of real-time data ... IBM 1827 Data Control Unit and tape subroutines are provided for use with the real-time channel scheduler ... the user, at his own discretion, can save and restore as little of the status of the computer at interrupt time as he deems necessary ... all the dynamic overlay capability available in the Model 44 Programming System is available to the real-time job.

**Special Sales Information:** Version 2 substantially reduces the programming effort to implement real-time applications on the System/360 Model 44, by providing both the monitor framework for system operation and the operating system for system development. Because DAMPS is essentially an extension of the System/360 Model 44 Programming System, a high degree of compatibility is maintained with the latter.

After release of Version 2, Version 1 will no longer be distributed and maintained by IBM. Real-time applications that are run under Version 1 will run under Version 2 without modification provided that adequate storage and the required devices are reserved. It should be noted, however, that the Storage Protection special feature is an additional requirement of Version 2.

**Use:** DAMPS is an operating system. All the processors of the System/360 Model 44 Programming System are available to prepare on-line real-time scientific application programs. The monitor structure to support real-time operation is also provided. The user is responsible for developing the application programs making use of these tools.

**Customer Responsibilities:** A thorough knowledge of the application ... a thorough knowledge of Version 2 ... any user modification of Version 2 ... installation, maintenance, and operation of all non-IBM equipment involved ... developing, testing, and operating application programs ... operation of the IBM hardware and systems ... programming any unsupported equipment.

**Programming System:** Version 2 is an extension of the System/360 Model 44 Programming System. The extensions were programmed in the assembler language of the system. Application programs can be developed using the FORTRAN and Assembly languages of the system, with the special features appearing as additions to these languages.

**Minimum System Requirements:** System/360 Model 2044G (128K), Multiplexer Channel (#5248), High Speed Multiplexer Channel (#4598), Priority Interrupt Feature (#5625), Second Single Disk Storage Drive (#6415), Store and Fetch Protection (#7533 or #7534), one System Input Device (1442 Model N1, 2501 Model B1 or B2, 2520 Model B1, 2540 Model 1, 2401 Model 1 through 6), one Output Listing Device (1403 Model 2, 3, 7, N1, 1443 Model N1 or any of the above-listed tape units), one Output Punching Device (1442 Model N2, 2520 Model B2 or B3, or any of the above-listed read punches, or any of the above-listed tape units), 1827 Data Control Unit, configured as required, or some other real-time interface if additional systems programming is contemplated.

**Notes on Configuration:**

1. Configuration restrictions which apply to System/360 Model 44 Processors are also applicable to DAMPS Version 2.
2. External Interrupt is not supported. If the 1827 Comparator is wired for external interrupt, it must use the Priority Interrupt special feature.
3. Sharing sub-channels between real-time and non-real-time devices will degrade the performance of the real-time channel schedules.
4. Except for console typewriter output, devices cannot be shared by both real-time and background jobs.

**Program Support Material:** Application Description Manual for Version 2 (H20-0494).

**Reference Material:** IBM System/360 Model 44 Programming System Concepts and Facilities (C28-6810) ... IBM System/360 Model 44 Programming System Assembler Language (C28-6811) ... IBM System/360 Model 44 FORTRAN IV Language (C28-6515) ... IBM System/360 Model 44 Programming System Guide to System Use (C28-6812). These manuals describe the system which DAMPS Version 2 is an extension of and compatible with.

For further information contact your Regional Manager of Scientific Marketing.

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IBM World Trade Data Processing

**SYSTEM RELEASE 16 OF DOS/360  
IS AVAILABLE**

**Order Now ... highlights are below ... for details, see  
the attached sales manual pages.**

**Improvements**

- . IBM 2314 Direct Access Storage Facility Support
- . Additional Index Sequential Options
  - Full Track ADD and Cylinder Index in Core
- . New System Resident Utilities
  - VTOC Display
  - Initialize Disk
  - Assign Alternate Track
  - Copy-Restore: Disk with Tape and Disk with Card
  - Copy: Disk to Disk
- . New Multiprogramming Features
  - Batched Job Foreground Options
  - Checkpoint/Restart in Foreground Partitions
  - Seek Separation Feature
- . Device Independent Access Method
- . Private Source and Relocatable Libraries
- . CSERV - Punch or Display of Core Image Library
- . Disk Label Simplification
- . CE Serviceability Program - I/O Trace for More Rapid and Accurate Diagnosis of Machine and/or Program Malfunction.
- . BTAM Binary Synchronous Communications for the IBM 2780 (EBCDIC): This Support is Functionally Identical to the Support Provided for the IBM 2780 (6 Bit Transcode, See P68-9)
- . QTAM QUEUES. Up to 16 Extents on 2311 or 2314
- . QTAM 2260 (local)

**Plan to Upgrade**

DOS/360 offers your customers ...

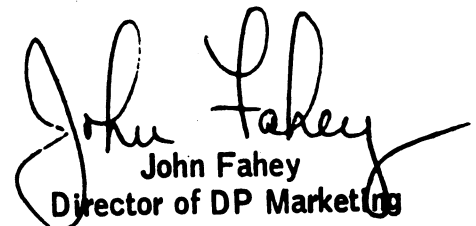
- . Improved Performance
- . Increased Function
- . Greater Usability

**Extensive Sales Support**

DOS/360 offers you support to ...

- . Sell - Install Multiprogramming Systems
- . Sell - Install Tele-processing Systems
- . Sell - Install Large Data Base Systems

SEE REVERSE SIDE FOR  
"NOTE TO WORLD  
TRADE READERS".



**John Fahey**  
Director of DP Marketing

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Published by DP Sales Publishing Services, WTHQ

Attachments [6]: [1 thru 6] P 360N.1, P 360N.3, P 360N.5, P 360N.7, P 360N.9 ... [6] P 360T.7

Release Date: April 5, 1968

Distribution: All Areas

P68-53



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IBM World Trade Data Processing

**DOS/360 BTAM WITH BINARY SYNCHRONOUS COMMUNICATIONS (BSC) SYSTEM/360 TO 2780 ASCII AVAILABILITY DATE IS ANNOUNCED**

Letter P67-9 stated that an availability date would be announced for System/360 to 2780 BTAM ASCII. The availability date of January 31, 1969 has now been established.

See P67-9 for additional information.

Customers affected should be notified.

**MODIFICATION TO MODEL 20 CARD REPORT PROGRAM GENERATOR INCREASES PERFORMANCE**

**Stacker Selection ...** Based on file matching and/or calculation results, stacker selection of input-file cards is now possible without specifying a dummy punch on the Output-Format Specifications form.

The file must, however, be defined as combined. A read operation is generated instead of the dummy punch. Processing time is reduced, and performance increases of up to 30%, and occasionally even more, can be obtained; for example, 33% in a card-sifting application on the MFCM based on file matching.

**Availability ...** System/360 Model 20 CPS Report Program Generator Version 2, Modification Level 3, 360T-RG-010, is now available and will be distributed automatically to current users.

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John Fahey  
Director of DP Marketing

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Release Date: April 4, 1968  
Distribution: All Areas

P68-54



CHANGES IN VERSION 2 OF DAMPS

Please change the back of P68-52 under the Minimum System Requirements and Program Support Material sections to read:

**Minimum System Requirements:** System/360 Model 2044G (128K), Multiplexer Channel (#5248), High Speed Multiplexer Channel (#4598), Priority Interrupt Feature (#5625), Second Single Disk Storage Drive (#6415), Store and Fetch Protection (#7533 or #7534), High Resolution Interval Timer (#4555), one System Input Device (1442 Model N1, 2501 Model B1 or B2, 2520 Model B1, 2540 Model 1, 2401 Model 1 through 6), one Output Listing Device (1403 Model 2, 3, 7, N1, 1443 Model N1 or any of the above-listed tape units), one Output Punching Device (1442 Model N2, 2520 Model B2 or B3, or any of the above-listed read punches, or any of the above-listed tape units), 1827 Data Control Unit, configured as required, or some other real-time interface if additional systems programming is contemplated.

**Notes on Configuration:**

1. Configuration restrictions which apply to the System/360 Model 44 Programming System Processors are also applicable to DAMPS Version 2.
2. External Interrupt is not supported. If the 1827 Comparator is wired for external interrupt, it must use the Priority Interrupt Special Feature.
3. Sharing channels between real-time and nonreal-time devices will degrade the performance of the real-time channel scheduler.
4. Except for console typewriter output, devices cannot be shared by both real-time and background jobs.

**Program Support Material:** System Description for Version 2 (availability and number will be announced in a PRL) ... Application Description Manual for Version 2 (H20-0494).

  
John Fahey  
Director of DP Marketing

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**ADDITIONAL FEATURES TO BE AVAILABLE  
IN NEW VERSION OF 1130 COMMERCIAL  
SUBROUTINE PACKAGE**

Version 3 of the 1130 Commercial Subroutine Package (CSP) [1130-SE-25X] will be available June 1, 1968. It includes:

- I/O routines for the 1403 Printer, 2501 Card Reader, and 1442 Card Punch Model 5.
- Faster (and smaller) versions of the character handling and decimal arithmetic routines. This improvement has been accomplished by a recoding into assembler language of all the routines formerly in FORTRAN.
- New character conversion routines, permitting the user to pack three characters (of a 40-character subset) and/or four decimal digits into one word. These routines can significantly reduce disk storage requirements for many data files.

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Availability and form number of a new Application Description Manual for the 1130 Commercial Subroutine Package Version 3 will be announced in a Publications Release Letter.

The 1130 User's Guide will be available for additional support of the Commercial Subroutines. Its release will also be announced in a Publications Release Letter. The sales manual page will be updated when Version 3 is available.

  
John Fahey  
Director of DP Marketing

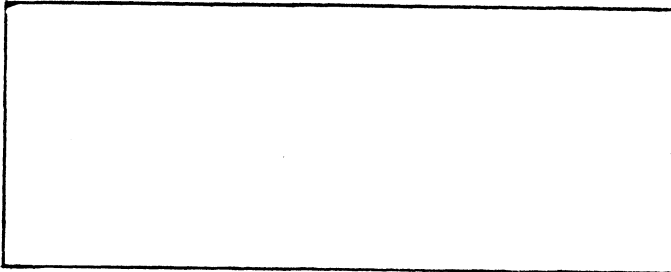
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P68-56



DP SALES MANUAL -- PROGRAMMING SECTION CHECK LIST

STATUS AS OF P68-57

To order missing Programming pages, circle the page numbers of the required pages on this sheet, fill in your name, position title, and address, and send the form to

WT DP Sales Publishing Services

Requests for more than twenty pages require management approval.

	CIRCLE				CIRCLE			
Programming	1	Jan 68 Rep	P68-12	TOS/360	360M.1	Sep 67 Rep	P67-104	
	3	Apr 68 Rep	P68-51		360M.3	Mar 68 Rev	P68-47	
	5	Apr 68 Rev	P68-51		360M.5	Mar 68 Rev	P68-47	
	7	Apr 68 Rev	P68-57		DOS/360	360N.1	Apr 68 Rev	P68-53
	9	Mar 68 Rev	P68-42			360N.3	Apr 68 Rev	P68-53
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	13	Mar 68 New	P68-42			360N.7	Apr 68 Rev	P68-53
	15	Jan 68 Rev	P68-12			360N.9	Apr 68 Rev	P68-53
	17	Jan 68 Rev	P68-12		BPS/360	360P.1	Apr 68 Rev	P68-57
	19	Apr 68 Rev	P68-51			360P.3	Apr 68 Rev	P68-57
	21	Apr 68 Rev	P68-51			360P.5	Apr 68 Rev	P68-57
System/360 Application Programs	360A.1	Mar 68 Rev	P68-50	360P.7		Apr 68 Rev	P68-57	
	360A.3	Dec 67 Rep	P67-137	360P.9		Apr 68 Rev	P68-57	
	360A.5	Sep 67 Rep	P67-97	360P.11		Apr 68 Rev	P68-57	
	360A.7	Apr 68 Rev	P68-51	360P.13		Apr 68 Rev	P68-57	
	360A.9	Nov 67 Rev	P67-120	360P.15		Apr 68 Rev	P68-57	
	360A.11	Feb 68 Rep	P68-23	360P.17		Apr 68 New	P68-57	
	360A.13	Feb 68 Rev	P68-23	360P.19		Apr 68 New	P68-57	
	360A.15	Apr 68 Rev	P68-50	OS/360	360S.1	Sep 67 Rev	P67-109	
	360A.17	Mar 68 Rev	P68-46		360S.3	Sep 67 Rev	P67-109	
	360A.19	Mar 68 Rev	P68-46		360S.5	Sep 67 Rev	P67-109	
	360A.21	Oct 67 Rev	P67-111		360S.7	Sep 67 Rev	P67-109	
	360A.23	Jul 67 Rev	P67-73		360S.9	Feb 68 Rep	P68-19	
	360A.25	Mar 68 Rep	P68-46		360S.11	Feb 68 Rev	P68-19	
	360A.27	Mar 68 Rev	P68-46		360/20	360T.1	Mar 68 Rev	P68-42
	360A.29	Mar 68 Rev #2	P68-47	360T.3		Mar 68 Rev	P68-42	
360A.31	Dec 67 Rep	P67-147	360T.5	Mar 68 Rev		P68-42		
360A.33	Dec 67 Rep	P67-147	360T.7	Apr 68 Rev		P68-53		
360A.35	Mar 68 Rev	P68-47	1130	1130.1		Jan 68 Rep	P68-12	
360A.37	Mar 68 Rep	P68-50		1130.3	Mar 68 Rep	P68-42		
360A.39	Mar 68 New	P68-50		1130.4.1	Mar 68 New	P68-42		
BOS/360	360B.1	Mar 68 Rev		P68-47	1130.5	Apr 67 Rev	P67-33	
	360B.3	Mar 68 Rev		P68-42	1130.7	Feb 68 Rep	P68-19	
	System/360 Conversion Programs	360C.1		Feb 68 Rep	P68-23	1130.9	Dec 67 Rep	P67-137
		360C.3		Feb 68 Rep	P68-23	1130.11	Feb 67 New	P67-14
360C.5		Mar 68 Rep	P68-50	1130.13	Feb 67 New	P67-14		
360C.7		Mar 68 Rev	P68-50	1130.15	Aug 67 Rep	P67-84		
360C.9		Feb 68 Rev	P68-23	1130.17	Dec 67 Rev	P67-137		
360C.11		Feb 68 New	P68-23	1400	1450.1	Mar 68 New	P68-46	
360/44	360F.1	Feb 68 Rev	P68-28		1800	1800.1	Feb 68 Rev	P68-23
	360F.3	Feb 68 Rev	P68-28			1800.3	Feb 68 Rev	P68-23
360/67	360G.1	Mar 68 Rev	P68-42	1800.5		Apr 68 Rev	P68-51	
	360G.3	Mar 68 Rev	P68-42	9000	9011	Mar 68 Rev	P68-42	
	360G.5	Mar 68 Rev #2	P68-47		9013	Jan 68 Rep	P68-6A	
					9015	Jan 68 Rep	P68-6A	
					9017	Jan 68 Rep	P68-6A	
					9019	Jan 68 Rep	P68-6A	

SEE REVERSE SIDE FOR "NOTE TO WORLD TRADE READERS"

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Cancels: P68-42

Attachments [11]: [1 thru 11] P 7 and P 360P.1 thru P 360P.19

Release Date: April 15, 1968

Distribution: All Areas

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P68-58

**A NEW BPS/360 UTILITY FOR PROGRAM DISTRIBUTION**

A new BPS/360 Distribution Program is now available [360P-UT-208]. It performs the following functions:

- Build two tape loadable programs on an output tape. The two programs are an Initialize Disk (2311/2314) program and a Restore Tape to Disk program.
- Copy one or more disk files, defined by the file name parameter on the utility modifier cards, to the output tape(s).
- The volume built by the above two steps will allow a disk pack to be initialized by the first tape loadable program and allow that disk pack to be restored with the disk file(s) information contained on the tape volume by the second tape loadable program.

**Performance ...** The program has three functions whose performance is as follows:

**Copy** -- This segment requires not more than 14 minutes to copy to tape a 2311 disk file whose extents are from cylinder 0 to cylinder 198. It requires not more than 28 minutes to copy to tape a 2314 disk file whose extents are from cylinder 0 to cylinder 198.

**Initialize Disk** -- This segment requires not more than 7 minutes to initialize a 1316 disk pack when performing surface analysis once per track. Increasing the number of times surface analysis is performed adds approximately 5 minutes per repetition.

Initialization of a 2316 disk pack requires not more than 14 minutes per one execution of surface analysis. Each additional repetition of surface analysis adds approximately 10 minutes.

**Restore Tape To Disk** -- This function requires not more than 11 minutes to restore a 2311 disk file from tape to a 1316 disk pack whose extents are from cylinder 0 to cylinder 198. It requires not more than 25 minutes to restore a 2314 disk file from tape to a 2316 disk pack whose extents are from cylinder 0 to cylinder 198.

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Published by DP Sales Publishing Services, WTHQ

Release Date: April 16, 1968

Distribution: All Areas

**Minimum System Requirements ...** System/360 with 16K bytes of main storage ... Card reader (1442, 2501, 2520, or 2540) ... Printer (1403, 1404 (continuous forms), 1443 or 1445) ... Printer Keyboard (1052) ... Tape Drive (2400 series) ... Disk Drive (2311 or 2314).

**Basic Program Material (360P-UT-208)**

SRL Publication -- IBM System/360 Basic Programming Support, Distribution Program, Specifications and Operating Guide, C21-5001-0.

Documentation -- Program material list.

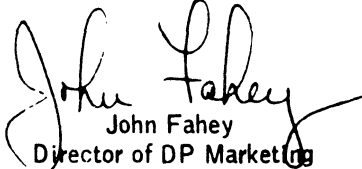
Machine Readable -- Object program available on a 9-track DTR (800 or 1600 bpi) or 7-track DTR (800 cpi) -- Data Conversion feature required.

**Ordering Procedures ...** See the DP Sales Activity Section of the Branch Office Manual.

When ordering, if the distribution medium is not specified on the program order card, 9-track at 800 bpi will be forwarded.

If only the publications or additional copies of the publications are required, order them from the IBM Distribution Center, Mechanicsburg -- not from PID.

DTRs are supplied by PID -- no tape submittal is required.

  
John Fahey  
Director of DP Marketing

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**MORE INFORMATION ON OS/360**

IBM continues to announce major improvements and new functions to the high performance capability of OS/360. Added are:

- [1] MVT Job Scheduler Improvements ... available July 31, 1968
- [2] FORTRAN Library Improved Object Time Facilities ... available October 31, 1968
- [3] Dynamic Support of Universal Character Set Functions ... available October 31, 1968

As OS/360 is extended into new application areas and its multiprogramming capabilities are better understood, appropriate improvements are being made based on actual user experience. Several of these features are representative of this activity.

An OS/360 Operational Characteristics Improvement Program has been established to evaluate, in a concerted way, the production environment requirements. This project depends on user reports via the formal Product and Support Requirement Requests, 120-1702. Each Region and Field System Center has a representative participating in the project who can be contacted for details of the program.

**MVT JOB SCHEDULER IMPROVEMENTS**

This new facility provides a Job Class parameter in addition to priority, which will be used by the system when deciding which job from the input work queue is to be selected for initiation. By classifying jobs properly, it is possible to control the mixture of job types which execute together. This control is important in a multijob system because it permits optimization of system resource usage according to the applications and hardware configuration.

Job classification for an installation should consider the system resources for which greatest contention is expected. Jobs using that resource can be given the same job class, and will run serially rather than together. A great variety of classification schemes are possible.

Some examples are classifications based on ...

- . The amount of operator setup action required
- . The use of an I/O device type, such as a tape or printer
- . The amount of main storage needed
- . High or low percentage of CPU usage

An additional improvement is provided by using cataloged procedures to control the characteristics of each initiator active in the system. This change will allow easier operational control, greater flexibility in conjunction with Job Classes, and improved system availability.

An initiator procedure can specify that a unique part of the data set catalog (control volume) be assigned to the initiator for use by a particular job class. Increased system availability will result from an associated logic change which makes each initiator a system sub-task. Failures which abnormally terminate the initiator are restricted to the initiator only, and does not require reinitialization of the entire system.

**OS/360 FORTRAN LIBRARY IMPROVED OBJECT TIME FACILITIES**

The OS/360 FORTRAN Library has been improved to provide additional information in object time error messages. The error messages includes the name of the routine in which the error is detected, a description of the cause of the error, and appropriate supplemental information. The improved messages are available to all users of OS/360 FORTRAN E, G and H.

There is also a SYSGEN parameter for FORTRAN G and H to provide "control" and "continue Execution" options when an error is detected. The job can be terminated or continued with the following options:

- . Execute a standard or user supplied routine to take corrective action on the data in error and continue execution.
- . Permit a standard or user-specified number of error occurrences before termination.
- . Trace-back after a detected error, whether the job terminates or continues.
- . Allow user-written library subroutines to take advantage of the expanded error handling facilities.



There is no significant effect on object time performance for error-free programs. However, additional processing time is required to handle error conditions.

The storage requirements of the FORTRAN Library is affected by the addition of improved object time error messages resulting in an increase in the core storage requirements of an object program. This increase is 150 bytes for FORTRAN E (400 bytes for FORTRAN G and H), plus an average of 200 bytes additional for each library subprogram called. In addition, if the user selects the optional "control and continue" feature, core storage from 4500 to 5300 bytes is required for an error monitor depending upon the action desired.

**Reference Publications ...** Further details concerning the OS/360 FORTRAN Library Improved Object Time Facilities will be published in appropriate SRL publications at the time of program availability.

### OS/360 UNIVERSAL CHARACTER SET (UCS)

A new function of OS/360 Data Management provides support for the UCS feature of the 1403 Printer, eliminating the additional job step to load the character set image into the UCS buffer.

**Scope ...** The support is provided under all OS/360 configurations to all users of BSAM, QSAM, and EXCP for on-line printing. It includes:

- . loading of the UCS buffer with or without fold.
- . setting/resetting block data check.
- . operator mounting of the print chain.
- . image verification.
- . system control of the character set loaded.

The user can specify that a character set be loaded either at OPEN time (via the DD card) or during execution while the data set is open (via a system macro instruction), thus allowing for changing character sets within a job step. At the time the character set is loaded, the operator is requested to mount the corresponding print chain.

**Character Set Definition ...** At system generation time, the user specifies which of the IBM standard character sets are to be included in his system. User-designed character sets may be added to the system with a simple assemble-link edit procedure. The IBM standard character sets which may be specified at system gener-

ation time are:

Character Set Code	Description
AN	alphameric
HN	alphameric
PCAN	alphameric *
PCHN	alphameric *
PN	alphameric (PL/I)
QNC	alphameric (PL/I - Comm'l) *
QN	alphameric (PL/I - Scientific) *
RN	FORTRAN-COBOL- Comm'l *
SN	text printing *
TN	text printing
XN	high-speed alphameric
YN	high-speed alphameric *

\* preferred character set

As part of the system generation, the user designates which of his selected character sets are default options, i.e., acceptable for use where no particular character set is requested.

If no character set is specified, the set that is currently loaded will be used if it has been designated as a default option; otherwise, the operator will be requested to specify the set to be used.

**MFT and MVT Special Consideration ...** Since UCS support is effective only for on-line UCS printers, the UCS control information is lost when data sets are passed across intermediate storage devices. Therefore, data sets requiring the same UCS characteristics should be grouped together on the intermediate storage device (e.g., using the SYSOUT Class capability) and printed with the common set of UCS parameters.

**Conversion from IEHUCSLD ...** This new support supersedes the present IEHUCSLD utility program which loads the UCS buffer. IEHUCSLD will be withdrawn after the new function has had sufficient field usage.

Conversion is effected by deleting the job step that executes IEHUCSLD and supplying the corresponding UCS parameters in the DD card to define the UCS printer data set for the output writer class.

Users should be aware that the IEHUCSLD Utility and the new UCS support are not compatible, since the utility does not maintain the control information required by the new support. Consequently, during the conversion period, users are advised to designate all of their character sets as defaults, thus causing the new support to recognize only specific UCS requests (i.e.,

converted jobs). IEHUCSLD jobs will continue to run as default jobs under the new support without intervention.


**System Configuration ...** UCS support operates under all OS/360 System configurations; it is applicable only to the 1403 Printer with the UCS feature.

**Performance ...** The input/output time required to load the UCS buffer is overlapped with the time required to mount the new print chain.

**Storage Requirements ...** The fixed main storage requirement is increased by eight bytes for each UCS printer UCB. A UCS load at OPEN requires 272 bytes of temporary storage in addition to the current OPEN requirement. A UCS load performed during program execution requires 736 bytes of temporary storage plus a 32-byte call linkage assembled in the problem program. UCS support modules and the character set image library reside on the system residence volume and require approximately three tracks on an IBM 2311 Disk Storage Drive.

**Reference Publications ...** The following publications will be updated to reflect the new UCS support:

Job Control Language, C28-6539  
 Job Control Language Charts, C28-6632  
 Operator's Guide, C28-6540  
 Supervisor and Data Management Services, C28-6646  
 Supervisor and Data Management Macro Instructions, C28-6647  
 Messages and Codes, C28-6631  
 System Generation, C28-6654  
 Storage Estimates, C28-6551  
 System Programmer's Guide, C28-6550  
 System Control Blocks, C28-6628

  
 John Fahey  
 Director of DP Marketing

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**PROGRAMMING SUPPORT FOR IBM 50 AND IBM 2495**

Here are the details of the programming support for the recently announced IBM 50 Magnetic Data Inscrber and IBM 2495 Tape Cartridge Reader.

An additional input macro-instruction (INTCR) will be added to the set of DOS/360 Multiprogramming Support (MPS) Utility Macro-Instructions. Availability will be January 31, 1969.

The INTCR utility macro-instruction will provide the DOS/360 user with a direct and easy means of generating efficient Tape Cartridge Reader input utility programs tailored to the user's specific needs. The generated utility programs will operate in any partition of DOS/360.

System Configuration

For Assembly -- same as required by the DOS/360 Assembler Program.

For Execution -- 1052 Printer-Keyboard, 2495 Tape Cartridge Reader, 16K bytes of storage for use in a batch job environment, 24K bytes of storage for use in a multiprogramming environment.

Performance ... INTCR is designed to operate in a minimum storage partition of 4K bytes (including buffers and user output routine). Size of buffers, user output routine and user optional routines may cause additional storage requirements.

The speed at which INTCR can read (and edit or translate, where applicable) data from a 2495 Tape Cartridge Reader is dependent on the size of the input buffer. Throughput is dependent upon the speed of user processing routines and any other I/O routines which collectively form the INTCR application program. Additional performance information is contained in the supporting programming publications.

Publication ... Availability of a TNL to the SRL "IBM System/360 Disk and Tape Operating Systems Utility Macro Specifications," C24-5042, will be announced in a future Publication Release Letter.

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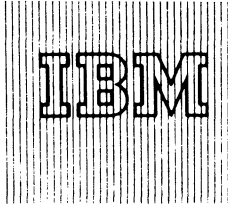
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*John Fahey*  
John Fahey  
Director of DP Marketing

Published by DP Sales Publishing Services, WTHO

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Release Date: April 26, 1968  
Distribution: All Areas



### SYSTEM/360 MODEL 20 DISK PROGRAMMING SYSTEM UPGRADED

The Model 20 DPS has been improved by the addition of:

- . A Tape Sort/Merge Program.
- . Five Tape Utility Programs.
- . Modifications to various existing DPS programs.

Details are described below.

#### TAPE SORT/MERGE

The DPS Tape Sort/Merge program, 360W-SM-194, allows the sorting of tape files into ascending and/or descending sequence and the merging of presequenced tape files.

For object program execution, the operator supplies the required control information in the form of control cards.

The DPS Tape Sort/Merge program is an adaptation of the TPS Sort/Merge program, 360U-SM-150, to run under the DPS. It sorts binary data (including alphabetic characters), fixed-point integers, packed or unpacked decimal numbers contained in blocked or unblocked records of fixed or variable length in an ascending or descending order. It also merges presequenced files (2-5 files). Operations are performed according to control data contained in up to 12 fields of each record, with a maximum length of 256 bytes for all control fields. When using the Merge functions, the sequence of all files (1-5 files) is checked. The program provides for exits to user-written routines as well as for checkpoints and restart. Tape input and output files can be

1. contained in more than one reel.
2. selected from or written on a reel containing more than one file.

Tape label checking conforms to established System/360 standards and non-standard labels are bypassed. An exit is provided to allow new processing of additional standard labels of the user. The program runs under supervision of the control programs for either the card or the disk-resident system.

**Performance Data ...** See SRL System/360 Model 20, Disk Programming System, Performance Estimates, C33-6003.

Published by DP Sales Publishing Services, WTHQ

**Minimum System Requirements ...** A 2020 Central Processing Unit Model BC2 ... One 2501 Card Reader Model A1 or A2, 2520 Read Punch Card Model A1 or 2560 MFCM Model A1 ... One 1403 Printer Model 2, 7, or N1 or 2203 Printer Model A1 for printing of error, and diagnostic messages ... One 2415 Magnetic Tape Unit Model 2 or 5 (at least three tape drives are required) ... One 2311 Disk Storage Drive, Model 11 or 12.

#### Restrictions on tape drive configurations:

With 9-track input tapes and/or 7-track input tapes, that were created with the Data Conversion feature turned on, output tapes must be 9-track tapes and/or 7-track tapes with the Data Conversion feature turned on. Sorting requires 9-track tapes.

With 7-track input tapes that were created with the Data Conversion feature turned off, output tapes can be either 9-track or 7-track tapes. For sorting work tapes may be either track.

All 7-track tapes used in a given Sort or Merge operation must have the same characteristics. For example, if the translate capability of the Compatibility special feature is used when 7-track input tapes are created, it must be used with all 7-track work or output tapes.

Files of variable length records to be sorted or merged must be created on 9-track tapes or on 7-track tapes with the Data Conversion special feature turned on. Therefore, 9-track work tapes must be used when sorting variable-length records.

Checkpoint records are written only on 9-track work tapes or 7-track work tapes with the Data Conversion feature.

#### TAPE UTILITIES

The DPS Tape Utilities are an adaptation of the TPS Utility Programs, 360U-UT-131 ... 135, to run under DPS. By providing generalized routines, the tape utility programs reduce the need for repetitive programming of certain operations that are performed frequently. The programs assist the user in the day-to-day operation of his installation by providing for the transfer of data from one medium to another. The tape utility programs consist of the following five separate programs:

Card-to-Tape	360W-UT-197
Tape-to-Card	360W-UT-196
Tape-to-Printer	360W-UT-198
Tape-to-Tape	360W-UT-195
Initialize Tape	360W-UT-199

A utility-modifier card, provided for the input and output file, allows the user to specify the blocking factor, record length, control fields, etc. A field-selection card furnishes information to the program for transferring fields from an input record to the same or a different relative position of the output record and for simultaneously converting the data to a different format. Header cards can be used to provide titles for the pages of printed output.

Except for the Initialize Tape Utility program, the tape utilities provide for the transfer from an input medium to an output medium, with the following options: copy, reblock, field select, and reblock and field select. Printer output can be in a byte-for-byte representation of the information in core storage (display) or in an audited listing of the information on core storage (list). The Initialize Tape Utility program can be used to write volume labels and one dummy header label on tape reels.

Tape input and output files can be

1. contained on more than one reel, or
2. selected from or placed on a reel containing more than one file.

Sequence numbering of output cards and sequence checking of input cards can be performed.

Tape label checking conforms to established System/360 standards, and non-standard labels are bypassed. An exit is provided for user-processing of additional user standard labels and Sterling currency routines.

The tape utility programs run under supervision of the control programs for either a card-resident or a disk-resident system.

**Performance Data ...** See the SRL System/360 Model 20, Disk Programming System, Performance Estimates, C33-6003.

**Minimum System Requirements ...** When using the control programs for the card-resident system: A 2020 Central Processing Unit Model BC2 ... One card reading device (2501 Model A1 or A2, 2520 Model A1, or 2560 Model A1) ... One 2415 Magnetic Tape Unit Model 1 or 4.

For error and diagnostic messages and especially the Tape-to-Printer Utility program: One 2203 Printer Model A1 or 1403 Printer Model 2, 7, or N1.

Additionally for the Tape-to-Card Utility Program: One card punching device (2520 Model A1-A3, 2560 Model A1, or 1442 Model 5).

When using the control programs for the disk-resident system: A 2020 Central Processing Unit Model BC2

... One card reading device (2501 Model A1 or A2, 2520 Model A1, or 2560 Model A1) ... One 2415 Magnetic Tape Unit 1 or 4 with at least one 9-track read/write head.

The Tape-to-Tape Utility program requires a 2415 Model 2 or 5 in this environment.

For error and diagnostic messages, especially for the Tape-to-Printer Utility program: One 2203 Printer Model A1 or 1403 Printer Model 2, 7, or N1.

Additionally, for the Tape-to-Card Utility program: One card punching device (2520 Model A1-A3, 2560 Model A1, or 1442 Model 5).

### MODIFICATION TO DPS PROGRAMS

The programs that have been modified and their current status are:

	Version	Modification
360W-CL-171	1	2
SL-173	1	1
SL-175	1	2
RG-180	1	2
AS-181	1	2
SM-182	2	1
UT-183	1	1
UT-186 thru 191	1	1
IO-192	1	2
IO-193	1	1

### ENGINEERING CHANGE

For proper use of current Model 20 DPS programs, at least the following Engineering Change Levels are required:

2020	Central Processing Unit (microprogram)	12103	ECA 163
	Storage Control (microprogram)	12448	ECA 316
	I/O Channel (microprogram)	12107	ECA 188
	Serial I/O Channel (microprogram)	12116	ECA 273
2311	Disk Storage Drive Model 11 or 12	411283	
2415	Magnetic Tape Unit Model 1-3	730339	ECA 026
	Model 4-6	730346	ECA 031
1419	Magnetic Character Reader	127244	CEM 167

**BASIC PROGRAM MATERIAL**

Publications -- System/360 Model 20 - Guide to the Disk Programming System, C33-6000 ... Disk Programming System, Operating Procedures, C33-6004, TNL N33-9016 and TNL N33-9023 ... Disk Programming System, Control and Service Programs, C24-9006-2, TNL N33-9021 and TNL N33-9027 ... Disk Programming System, Disk Utility Programs, C26-3810-1 with TNL N33-9028. (Underlined publications are new.)

Documentation -- Basic Program Material List.

Machine Readable -- Users ordering at least one of the DPS programs will receive the complete set of Model 20 DPS programs with exception of the Distribution Package Retrieval Program 360W-SL-178, which is contained only in distributions on magnetic tapes. The DPS programs are available on one 1316 Disk Pack, one 9-track tape (800 or 1600 bpi), or one 7-track tape (800 cpi) Data Conversion feature required.

The 1316 Disk Pack returned from the program library will contain a running system as well as the card-resident control programs and sample decks in card-image format to be punched. It will be accompanied by 5 Disk IPL cards to be used for initializing the loading of the running system, which is referred to as the DPS Disk Pack.

Users with 2415 Magnetic Tape Units attached to their Model 20 System should request the programs on tape. The tape will contain the Distribution Package Retrieval Program to be activated by one Bootstrap Card distributed with the tape. The retrieval program will

- . Initialize the first one hundred cylinders of a 1316 Disk Pack.
- . Copy a running system as well as the card-resident programs and sample programs in card-image format on to a 1316 Disk Pack.
- . Punch the cards for initializing the loading of the DPS Disk Pack.

**ORDERING PROCEDURE**

See DP Sales Activity Section of the Branch Office Manual.

If only the publications or if additional copies are required, order them from the IBM Distribution Center, Mechanicsburg -- not from PID.

If the track and density requirements are not indicated on the back of the program order card, 9-track (800 bpi) will be forwarded.

Magnetic tapes (2400 foot) may be forwarded to PID

or ordered. The order card should accompany the tape or tape order form; disk packs must be forwarded to PID with the order form.

Current users will receive a prepunched Program Order Card and a letter announcing the availability of a Maintenance Package and a Replacement DPS/360 System. Also provided will be Ordering Instructions for either the Maintenance Package or the Replacement System. All orders are to be processed through the Branch Office using the prepunched card.

DTRs are supplied, no tape submittal is required.

**REFERENCE PUBLICATIONS**

IBM System/360 Model 20, Disk and Tape Programming Systems; Tape Sort/Merge, C26-3804 ... Tape Utility Programs, C26-3808.

**ADDITIONAL PROGRAM SUPPORT MATERIAL**

See the back of this letter for the subject matter that will appear in the sales manual.

  
John Fahey  
Director of DP Marketing

**Note to World Trade Readers**

This letter is a reprint of an IBM Programming Announcement and was mailed concurrently to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

- 1) All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.
- 2) Advance copies of the form number'd publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.
- 3) When a new version of a program is announced, current users must order it; they will not receive it automatically nor will they necessarily receive a prepunched request card in their Area.
- 4) Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.
- 5) All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.
- 6) Any reference made to DPD Departments (or regions) as sources of information or for manuals, etc., should be understood to mean the comparable WT Department (or corresponding organizational level).
- 7) Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.
- 8) References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. **NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.**

**Additional Program Support Material:****Program Logic Manuals****Card Programming Support (CPS)**

Basic Utilities	Y24-9000
IOCS	Y24-9001
RPG	Y24-9002
Basic Assembler	Y24-9003
Punched Card Utilities	Y24-9004
CIOCS	Y24-9009

**Tape Programming System (TPS)**

IOCS for 1419	Y33-9009
I/O Control System	Y33-9003
Sort/Merge	Y33-9005
Utilities Programs	Y33-9006
Report Program Generator	Y33-9001
Assembler Language	Y33-9002

**Disk Programming System (DPS)**

Assembler Language	Y33-9014
Control and Service Programs	Y33-9008
I/O Control System	Y33-9007
Report Program Generator	Y33-9015
Sort/Merge	Y33-9016
Utilities Programs	Y33-9017
IBM System/360 Model 20 Disk or Tape Programming -- System for the IBM 1419	Y33-9009
Tape Sort/Merge Program	Y33-9005
Tape Utilities Program	Y33-9006

**Program Listings:** Program listings are available only on microfiche.

Specify Group Code 4000 for S/360 Model 20 Card.  
4100 for S/360 Model 20 Tape.  
4200 for S/360 Model 20 Disk.

**Optional Program Material:****Card**

Source card images of eleven Model 20 CPS programs are available on one 2400 foot reel of 9-track magnetic tape at 800 or 1600 bpi. A self loading retrieval program is on the beginning of this tape, and operating instructions will be forwarded when the tape is ordered.

To order the source card images of the Model 20 card programs, the requester must forward or order one reel of magnetic tape following the current ordering procedures in the Branch Office Manual, DP Sales Activity. The source card images of all of the programs listed below are provided on the one reel of tape.

Program	Program Number
System/360 Model 20 Basic Assembler	360T-AS-001
System/360 Model 20 Input/Output Control System for Punched Card Equipment	IO-002
System/360 Model 20 Input/Output Control System for 1419 Magnetic Character Reader	IO-029
System/360 Model 20 Input/Output Control System for Communications Adapter	CQ-003
System/360 Model 20 Basic Utility Programs (Except Trace)	UT-102
System/360 Model 20 Basic Trace (4K). The 8K, 12K and 16K versions, 360T-UT-104, 360T-UT-107 and 360T-UT-105, can be derived from the 4K version by the exchange of the two START cards as commented in the symbolic deck.	UT-103
System/360 Model 20 Report Program Generator for Punched Card Equipment	RG-010
System/360 Model 20 Punched Card Utility Programs I	UT-100
System/360 Model 20 Punched Card Utility Programs II	UT-101
System/360 Model 20 Universal Character Set Utility Program	UT-108

**Tape**

The source card material of Model 20 TPS programs are available on a 9-track tape to be handled with the Model 20 TPS Utility Programs.

The optional program components listed below are available on one 2400' magnetic tape, 9-track at either 800 bpi or 1600 bpi.

There is no optional program material available for the I/O and Basic Monitor Macro Definitions, 360U-IO-151, and I/O Macro Definitions for the IBM 1419, 360U-IO-152.

Program	Program Number
System/360 Model 20 Basic Assembler (Tape)	360U-AS-130
System/360 Model 20 TPS Control and Service Prgms	
Initial Program Loader for Card-Resident System	CL-136
Basic Monitor Prgm of Card-Resident System	CL-137
Job Control Program of Card-Resident System	CL-138
Initial Prgm Loader for Tape-Resident System	CL-139
Basic Monitor Prgm of Tape-Resident System	CL-140

Job Control Program of Tape-Resident System	360U-CL-141
Load System Tape Program	SL-142
Copy System Tape Program	SL-143
Directory Service Program	SL-144
Core-Image Maintenance Program	SL-145
Macro Maintenance Program	SL-146
Linkage Editor Program	SL-147
System/360 Model 20 TPS Assembler Program	AS-149
System/360 Model 20 TPS Report Program Generator	RG-148
System/360 Model 20 TPS Utility Programs	
Tape-to-Tape	UT-131
Tape-to-Card	UT-132
Card-to-Tape	UT-133
Tape-to-Printer	UT-134
Initialize Tape	UT-135
System/360 Model 20 TPS Sort/Merge Program	SM-150

**Disk**

The entire source statements of all Model 20 DPS programs are made available in card-image format on one 2400' magnetic tape, 9-track at 800 bpi or 1600 bpi.

Program	Program Number
Assembler	360W-AS-181
Control and Service Prgms	
Card-Resident Ctrl	CL-170
Disk-Resident Ctrl	CL-171
Load System Disk	SL-172
Library Allocation Organization	SL-173
Physical and Logical Unit Tables Service	SL-174
Core Image Maintenance	SL-175
Macro Maintenance	SL-176
Library Service	SL-177
Distribution Package Retrieval	SL-178
Linkage Editor	SL-179
I/O and Basic Monitor Macro Definitions	IO-192
I/O Macro Definitions for 1419	IO-193
Report Program Generator	RG-180
Sort/Merge	SM-182
Tape Sort/Merge	SM-194
Utility Programs	
Initialized Disk	UT-183
Alternate Track Assignment	UT-184
Clear Disk	UT-185
Disk-to-Disk	UT-186
Disk-to-Tape	UT-187
Tape-to-Disk	UT-188
Disk-to-Card	UT-189
Card-to-Disk	UT-190
Disk-to-Printer	UT-191
Tape-to-Tape	UT-195
Tape-to-Card	UT-196
Card-to-Tape	UT-197
Tape-to-Printer	UT-198
Initialize Tape	UT-199

The requester may forward or order one magnetic tape, following the current ordering procedures in the Branch Office Manual, DP Sales Activity.

If the density desired is not indicated on the program order card, 800 bpi will be forwarded.

See GI page 20 for complete information before ordering additional program support material.

**REMOTE JOB ENTRY WORK STATION FOR  
BOS/360 AND BPS/360 IS NOW AVAILABLE**

Release 16 of BOS/360 and Version 1 Modification Level G (16) of BPS/360 Basic Tape System are now available.

The Remote Job Entry Work Station Program and maintenance are included in these releases.

In addition, BOS/360 includes improvements to Report Program Generator (RPG) and Index Sequential Access Method (ISAM) functions.

**REMOTE JOB ENTRY (RJE)**

RJE Work Station Program permits System/360 Model 25\*, 30, 40, 50, 65, 67 (65 mode) 75, or 85 using BOS/360 or BPS/360 and connected to a central processor by a binary synchronous communication line to be used as an RJE work station. This program operates in conjunction with the OS/360 RJE Program\*\* resident at the central processor. The program provides the RJE user the ability to submit OS/360 jobs to be run at a central computing facility and optionally receive all or part of the output from these jobs at his remote System/360.

The RJE program provides three basic functions:

1. Input of OS/360 jobs and RJE commands through an attached input device.
2. Data transmission to and from the central computing system.
3. Data output to an attached printer or punch, or passed to a user-written output routine for processing.

OS/360 jobs are entered through the card reader. Work Station commands are entered either through the card reader or the printer-keyboard. Prior to transmission to the central computer, a sequence check is made of the RJE control statements associated with a Job Entry.

Job Entry output is directed to the printer, punch, or passed to a user-written output routine. Messages are sent to the printer-keyboard or the system line printer.

\* Model 25 available 1Q69.

\*\* OS/360 RJE MVT available July 31, 1969 (P67-77).  
OS/360 RJE MFT-II available April 30, 1969 (P68-34).

Published by DP Sales Publishing Services, WTHQ

**BOS/360 ISAM LOAD AND ADD**

In addition to currently available functions allowing record retrieval and updating for ISAM files, the user will be able to:

- . Load a new file.
- . Add records to an existing file.
- . Retrieve records from a file and add records to the same file.
- . Retrieve records from a file, update, and add records to the same file.
- . Process key fields for both input and output records.

While some of the new functions can be performed with an 8K system, in general, combinations of these functions will require 16K, especially for large record sizes.

**SYSTEM REQUIREMENTS**

See programming section of the sales manual.

**BASIC PROGRAM MATERIAL AND ORDERING  
PROCEDURE**

For Release 16 of BOS/360 see the reverse side.

Version 1, Modification Level (G) 16 of BPS/360 Basic Tape System, 360P-AS-091, will be distributed automatically to all current users. The modification consists of a 9-track DTR (800 or 1600 bpi) containing the update material, and TNL N33-8541 to C24-3354-6, TNL N33-8539 to C24-3391-3, TNL N33-8540 to C24-5061-2, and memo to users with an attachment.

  
John Fahey  
Director of DP Marketing

FOR IBM INTERNAL USE ONLY



System/360 Basic Operating System

Basic Program Material

SRL Publications

The following SRL Publications appropriate to the components ordered are shipped by the Program Information Department (PID) with each initial BOS/360 order.

Basic Control Program (360B-CL-302), Consecutive Processing Macros (360B-IO-303), ISFMS Macros (360B-IO-304), Direct Access Macros (360B-IO-305), and STR Macros (360B-IO-310).

System/360 Basic Operating System Specifications, Assembler with Input/Output Macros with TNLs N24-5314, N24-5335, N24-5341, and N33-8534 C24-3361-5

System/360 Basic Operating System Control Programs and Assembler Operating Guide with TNL N33-8533 C24-3450-3

System/360 Basic Operating System Programmers Guide with TNLs N24-5336, N24-5328, and N33-8531 C24-3372-6

System/360 Basic Operating System Operating Guide, Operator Messages with TNL N33-8537 C24-5024-3

System/360 Basic Operating System, System Generation and Maintenance with TNL N33-8532 C24-5060-2

Utilities - Group 1 (360B-UT-300), and Utilities - Group 2 (360B-UT-301)

System/360 Basic Operating System, Utility Programs Specifications and Operating Guide C24-3409-3

1070 PCS (360B-SV-032)

Basic Operating System/360 1070 Process Communication Supervisor C26-5996-1

System/360 Basic Operating System 1070 Process Communications Supervisor, Operating Guide C26-3627-1

Autotest (360B-PT-306)

System/360 Basic Operating System Specifications, Autotest (8K Disk) with TNLs N21-5011, N21-5041 and N21-5070 C24-3378-2

Note: SRL C24-3378-1 plus TNLs N24-5015, N21-5011, N21-5041 and N21-5070 may be used in lieu of the SRL C24-3378-2 plus TNLs N21-5011, N21-5041 and N21-5070.

Report Program Generator (360B-RG-307)

System/360 Basic Operating System Specifications, Report Program Generator (8K Disk) with TNLs N21-5060, N24-5196 and N21-5064 C24-3387-4

Note: SRL C24-3387-3 plus TNLs N24-5169, N24-5175, N24-5196 and N21-5060 may be used in lieu of the SRL C24-3387-4 plus TNLs N24-5196, N21-5060 and N21-5064.

Sort/Merge (360B-SM-308)

Basic Operating System/360 Specifications, Sort/Merge Program (8K Disk) with TNL N21-5045 C24-3321-3

Assembler (360B-AS-309)

Basic Operating System/360 and System/360 Basic Programming Support - Macro Definition Language 8K Disk/Tape C24-3364-3

Form numbers which have changed since previous release are underlined.

If only the publications or if additional copies of the publications are required, order them from the IBM Distribution Center, Mechanicsburg -- not from PID.

Documentation -- Program Material List and Attachment (Instructions to User)

Machine Readable -- BOS/360 is available on one 2400' reel of magnetic tape, 9-track at 800 bpi or 1600 bpi, or 7-track at 800 cpi (Data Conversion Feature required), or on one 1316 Disk Pack.

The dumped disk pack data on the tape will be preceded by an Initialize 2311 Utility Program and a Tape to Disk Program. The operating Instructions for creating the system pack from the tape are provided with the Program Material List.

Ordering Procedures

See DP Sales Activity section of the Branch Office Manual.

Magnetic Tapes (2400 foot) may be forwarded to PID or ordered. (The program order form should accompany the magnetic tape or the tape order form); disk packs must be forwarded to PID with the program order form.

If the track and density requirements are not indicated on the back of the program order card, 9-track at 800 bpi will be forwarded.

New Users -- Program components may be selected from the following list. Each component for which program documentation and maintenance material is required must appear on the order form.

The program components of BOS/360 are:

Basic Control Program	360B-CL-302 *
Utilities, Group 1	360B-UT-300
Utilities, Group 2	360B-UT-301
Consecutive Processing Macros	360B-IO-303*
ISFMS Macros	360B-IO-304
Direct Access Macros	360B-IO-305
Autotest	360B-PT-306
RPG	360B-RG-307*
Sort/Merge	360B-SM-308*
Assembler	360B-AS-309*
STR Macros	360B-IO-310*
1070 PCS	360B-SV-032
BSC	360B-CQ-312*
Remote Job Entry	360B-CQ-311*

To order BOS/360, specify on the IBM Program Order for System/360 Operating Systems (120-1411) the Basic Control Program, 360B-CL-302, and each of the other components for which documentation and maintenance material is required. Documentation and maintenance will not be provided for components not listed.

All of the BOS/360 program components will automatically be included on the tape or disk pack containing 360B-CL-302 (those not needed may be deleted from the system pack by the user.)

Current Users -- Current users will receive a prepunched Program Order Card and a letter announcing the availability of BOS/360 Release 16. The letter instructs them to order this release through the branch office. Current users must use the prepunched card to order either the Maintenance Package or the Replacement System for Release 16.

To order the tape maintenance package for System Release 16, specify Tape Maintenance Package, 9-track Distribution Tape Reel (DTR) at 800 or 1600 bpi or 7-track DTR at 800 cpi. It is not available on Disk. Disk only users must order the Replacement System for Release 16.

Complete ordering instructions are provided in the letter to users.

The Maintenance Package will be available from PID for a period of 60 days following the announcement of availability of System Release 16.

\* Denotes change from previous release.

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**NEW VERSION OF SSP/360 PROVIDES MAJOR EXTENSIONS OVER PREVIOUS VERSION**

Version 3 of the Scientific Subroutine Package (360A-CM-03X) is now available. It consists of a collection of over 250 FORTRAN subroutines, input-output free, which can be combined with a user's input, output, or computational routines to meet his individual requirements. Many of the subroutines are available in both single and double precision.

Version 3 provides major extensions to SSP/360 Version 2 in the areas of non-parametric statistical tests, regressions, correlations, distribution functions, matrix analysis, polynomial roots, permutations, smoothing, and differentiation.

Current users will receive a prepunched program order card and a letter announcing the availability of Version 3. The letter instructs them to order the new version through the branch office. They must use the prepunched program order card.

Availability of the updated System Manual (Y20-0092) will be announced in a Publication Release Letter.

For the new sales manual writeup, see the back of this letter.

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Published by DP Sales Publishing Services, WTHQ

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John Fahey  
Director of DP Marketing

Release Date: April 29, 1968

Distribution: All Areas

P68-63

Scientific Subroutine Package: Provides a new and powerful computational ability for the scientist and engineer. It consists of a collection of over 250 FORTRAN subroutines, input-output free, which can be combined with a users input, output or computational routines to meet his individual requirements. (360A-CM-03X)

Description: This package provides a basic mathematical and statistical subroutine library. The library includes a wide variety of subroutines to perform the functions listed below. Most of the new subroutines are available in both single and double precision.

New or substantially expanded capabilities are indicated with an asterisk.

Individual subroutines, or combinations of them, can be used to carry out the following functions in:

Statistics -- analysis of variance (factorial design) ... correlation analysis\* ... multiple linear regression ... stepwise regression\* ... polynomial regression ... canonical correlation ... factor analysis (principal components, varimax) ... discriminant analysis (many groups) ... probit analysis\* ... time series analysis ... data screening and analysis ... nonparametric tests\* ... random number generation (uniform, normal) ... distribution functions\*.

Mathematics -- inversion ... eigenvalues and vectors\* ... simultaneous linear algebraic equations\* ... transpositions ... matrix arithmetic (addition, product, etc.) ... matrix partitioning ... matrix tabulation and sorting of rows or columns ... elementary operations on rows or columns of matrices ... matrix factorization\* ... integration of given or tabulated functions ... solution of systems of first-order differential equations ... Fourier analysis of given or tabulated functions ... Bessel and modified Bessel function evaluation ... Gamma function evaluation\* ... Jacobian elliptic functions ... elliptic, exponential, sine cosine, Fresnel integrals ... finding real roots of a given function ... finding real and complex roots of a real polynomial\* ... polynomial arithmetic (addition, division, etc.) ... polynomial evaluation, integration, differentiation ... Chebyshev, Hermite, Laguerre, Legendre polynomials ... minimum of a function ... approximation, interpolation and table construction\* ... permutations\* ... differentiation\*.

Features: All subroutines are free of input/output statements ... subroutines do not contain permanent maximum dimensions for the data arrays named in their calling sequence ... all subroutines are written in FORTRAN ... all subroutines are documented uniformly.

Use: The user may incorporate any scientific subroutine in his own FORTRAN program, which may provide input and output, by utilizing the FORTRAN CALL statement.

Customer Responsibilities: The customer must be familiar with the System/360 FORTRAN Language.

Programming Systems: The Scientific Subroutine Package has been developed using System/360 Basic Programming Support FORTRAN Compiler (tape). However, the subroutines of SSP/360 should compile and execute with any System/360 FORTRAN compiler capable of accepting Basic Programming Support FORTRAN statements.

Basic Machine Configuration: A System/360 configuration suitable for the FORTRAN compiler chosen. The machine configuration required for any given problem depends on the number of subroutines used, the size of the compiled subroutine, the size of the compiled main program, the size of the control program, and the data storage requirements.

Basic Program Material:

Publications† -- Application Directory ... Programmer's Manual (H20-0205-3)

Machine Readable†† -- The FORTRAN source statement cards for all subroutines and the sample program source decks with data are available either on one 9-track magnetic tape (800 or 1600 bpi), one 7-track magnetic tape (800 cpi), or one 1316 Disk Pack. The Data Conversion feature is required with 7-track tape.

Ordering Procedure: See the Branch Office Manual, DP Sales Activity section.

†If only the form numbered manual is required, order from the IBM Distribution Center, Mechanicsburg -- not from PID.

††If the track and density requirements are not indicated on the back of the program order card, 9-track at 800 bpi will be forwarded.

Magnetic Tapes (2400') may be forwarded or ordered (the order card should accompany the tape order form); disk packs must be forwarded to PID with the program order card.

Additional Program Support Material: Application Description Manual (H20-0166) ... System Manual containing flowcharts (Y20-0092).

For further information contact your Regional or District Scientific Marketing Representative.



**MODIFICATION TO OS/360 INDEPENDENT UTILITIES NOW BEING DISTRIBUTED**

Modification 1 to Version 2 of the OS/360 Independent Utilities is being distributed to current users. The programs are:

Direct Access Storage Drive	
Initialization	360P-UT-213
Dump/Restore Program	360P-UT-214
Recover/Replace Program	360P-UT-215

Modification 1 includes device support for the IBM 2321 Data Cell Drive and improved error recovery for Data Checks on disk devices.

The Dump/Restore program has been improved to assign the "To" and "From" devices to separate channels where possible.

All three programs should be ordered by System/360 users who do not have OS/360 Release 13 or later. These programs are identical to the independent utilities provided with OS/360 Release 13 (360S-UT-507) and later. Non-OS/360 users should not mistakenly order these as BPS utilities.

**Systems Requirements:** A 64K or larger System/360.


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**CORRECTION TO P68-62 REMOTE JOB ENTRY**

The footnote found on the bottom left column of P68-62 should read: OS/360 RJE MVT available July 31, 1968 (P67-77) instead of 1969.

  
**John Fahey**  
 Director of DP Marketing

Published by DP Sales Publishing Services, WTHQ

Attachments [8]: P 5, P 11, P 13, P 360B.3, P 360F.3, P 360N.3, P 360N.5, P 360T.9  
 Release Date: May 1, 1968  
 Distribution: All Areas





IBM World Trade Data Processing

P68.65

NEW DECISION TABLE PROGRAM  
TO BE AVAILABLE OCTOBER 31

The System/360 Decision Logic Translator, to be available October 31, 1968, provides customers with a decision table implementation program that converts tabular oriented logic into a FORTRAN source program.

Decision tables provide an easily read and understood tabular approach to solution of complex decision logic. This technique allows a problem to be reduced to its simplest form by arranging and presenting logical alternative courses of action under various combinations of conditions.

The System/360 Decision Logic Translator incorporates many logic capabilities and FORTRAN features into the decision table language to provide the user flexibility, minimum decision table sizes, minimum number of source statements, error checking, sorting, and other capabilities. The use of the program can result in significant savings in implementation time and in cost of installation of complex applications.

The sales manual write-up is on the back of this letter.

PMS/360 FLOWCHART, SYSTEM  
MANUALS REVISED, AVAILABLE

In the announcement of Version 1, Modification Level 1 (P67-142), the optional Flowchart Tape and System Manuals were temporarily withdrawn. These items are now updated to Modification Level 1. The flowcharts are now in the form of a manual (Y20-0204). The System Manuals are the Network Processor System Manual (Y20-0083), the Cost Processor System Manual (Y20-0084), and the Report Processor System Manual (Y20-0085). All of these manuals are available from the IBM Distribution Center, Mechanicsburg.

The sales manual page will be updated shortly.

  
John Fahey  
Director of DP Marketing

FOR IBM INTERNAL USE ONLY

Published by DP Sales Publishing Services, WTHQ

Release Date: April 30, 1968

Distribution: All Areas

P68-65

**Decision Logic Translator:** This program provides an advanced tool needed to translate decision tables into FORTRAN language.

**Description:** Decision tables are a technique for documenting the logic of a problem and its solution. The concise format of decision tables allow them to present information so that it is easily read and understood, and to present logic simply so that its concepts are readily grasped. The tabular approach is used to express complex decision logic in a manner that encourages the analyst to reduce a problem to its simplest form by arranging and presenting logical alternative courses of action under various combinations of conditions.

The Decision Logic Translator incorporates many logical capabilities and FORTRAN features into the decision table language.

**Features:**

- . The number of tables to translate is not limited, the limit is due to the size of the FORTRAN program which is obtained.
- . Tables may contain a mixture of limited and extended entry rows.
- . The logical connective between conditions in a rule may be either "AND" or "OR". Both connectives may appear in the same table and rule.
- . A variable value may be compared with the values of a singly subscripted array in the condition area of a decision table.
- . Arrays with up to three subscripts (FORTRAN limit) may be used.
- . Blocks of FORTRAN arithmetic statements may be defined in addition to the formula statements.
- . FORTRAN Features ... the use of the specification statements -- DIMENSION, COMMON, EQUIVALENCE and FORMAT ... the use of FUNCTION and SUBROUTINE statements ... the use of the direct access input/output statements -- DEFINE, FILE, FIND, READ, WRITE.
- . Tape or disk may be used to store the output FORTRAN source statements which will be acceptable input to the FORTRAN compiler for translation into machine language and execution without further manipulation.
- . Table with up to 64 columns and 99 condition and action rows can be translated.
- . Each main program or subroutine may have up to 20 closed tables.
- . There may be up to 99 references to a single closed table.
- . The table columns may be 2, 8, or 16 spaces wide depending on the needs of this table.

**Sales Information:** All current users of the 1401 Decision Logic Translator program and all analysts and programmers are potential users of the S/360 Decision Logic Translator program.

Areas of application of decision tables and the S/360 Decision Logic Translator apply across industry lines.

**Sample Applications Areas:**

In the Manufacturing and Scientific Industries

The main applications are for Automated Design Engineering (ADE) and Automated Manufacturing Planning (AMP). These applications represent a precise method and set of tools for studying engineering problems and establishing working computer oriented systems. They both accept customer requirements as input and through the medium of explicit design logic stored in the computer, by means of decision table technique, produces the completed design information for manufacturing. Error-checking, bid and order costing can be incorporated into such systems.

In the Distribution Industries

Decision tables are very useful for credit checking, price computation, and inventory control.

In the Transportation Industries

Decision tables are used to establish automated reservation systems and set prices.

In the Service Industries

Decision table techniques are used in insurance area to establish the policy type and the tariffing from a customer request.

Decision tables can be used effectively for systems analysis, procedure design, program debugging, and many varied applications.

Decision tables may also be employed to describe an entire data processing system as well as a portion of the system.

**Use:** This program is designed primarily for areas concerned with problems having a complex decision logic.

Decision tables are a means of bringing together and presenting the related information to express complex decision logic in a way that is easy to visualize and follow. They can be used independently of, or to complement, flow charts and block diagrams in recordkeeping, decision-making and problem-solving operations in business, mathematical and the science fields. Decision tables can be used effectively for system analysis, procedure design and documentation. Their use expedites and simplifies the time-consuming functions of problem definition, system analysis and programming.

Once the system is established, it is easy to maintain, and the documentation and program are easy to change.

**Customer Responsibility:** The S/360 Decision Logic Translator provides output in the form of FORTRAN source programs. To augment the many capabilities of the program it is recommended that the customer have an individual who is knowledgeable in FORTRAN and familiar with the applications.

The customer must be prepared to compile test and implement the FORTRAN programs obtained from the Decision Logic Translator processor.

**Programming System:** The program is written in System/360 Assembler Language and operates under the Disk Operating System (DOS). The Standard Instruction Set is required to assemble the original programs and the Floating Point feature (#4427) is required to compile the FORTRAN source program produced.

**Minimum Machine Configuration:** System/360 Model E supported by DOS/360 ... two 2311 Disk Storage Drives ... Printer, Card Reader, and Card Punch (selected from the set supported by DOS/360) ... 1052 Printer-Keyboards.

**Program Support Material:** Application Description Manual (H20-0492).

Further information may be obtained from your Regional Manufacturing Industry Marketing Representative.

Note to World Trade Readers

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- [1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017. Programming Section, WT DF-Sales Manual.
- [2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.
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- [8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.



**THREE NEW TYPE II PROGRAMS ON  
INFORMATION SYSTEMS TO BE  
AVAILABLE MID 1969**

We are announcing three Information Systems which significantly advance IBM System/360 capabilities for data base maintenance, creation, and query:

- . Generalized Information System (Basic)
- . Information Management System/360
- . Public Utility Customer Information Control System

Information Systems fall within two broad classifications: Executive Information Systems and Operational Systems.

Executive information systems support the spontaneous or unanticipated requirements needed by various levels of management and their staffs. Further, an executive information system provides facilities for preparing reports that cannot be anticipated in advance - but deal with the available data. A prime example of this type of system is the Generalized Information System (Basic).

Operational systems are large volume, transaction-oriented, detail-level information systems. They are characterized by repetitive, well-defined, pre-planned activities related to those operations involved in the daily conduct of business. Examples of operational system applications are order entry, engineering records, sales reporting, inventory status, etc. The Information Management System/360 and the Public Utility Customer Information Control System are particularly well suited to this purpose.

The programs are described on pages 2 and 3 of this letter. For more details, see the attached sales manual pages.

  
John Fahey  
Director of DP Marketing

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Published by DP Sales Publishing Services, WTHQ

FOR IBM INTERNAL USE ONLY

Attachments [2]: P 360A.39 and P 360A.41  
Release Date: April 29, 1968  
Distribution: All Areas

## GENERALIZED INFORMATION SYSTEM BASIC (GIS)

GIS (Basic) will be available June 30, 1969.

This announcement supersedes all former Basic GIS announcements and should be read in its entirety.

GIS (Basic), in conjunction with OS/360, provides a powerful technique for addressing specific data processing needs and the requirements of executive information systems. In response to spontaneous and changing requirements, GIS provides sets of generalized routines which enable data set creation, maintenance, and data retrieval. With this system, existing or new files are described once to GIS and are thereafter symbolically referenced by the user in his procedure specifications.

GIS (Basic) will be particularly advantageous in application areas where frequent changes in program design, application logic, or report requirements would invalidate the efficiency ordinarily attainable with assembly-level coding. The applicability of GIS (Basic) ranges from narrowly defined uses to the most general (for example, Credit Control -- credit risk data base maintenance ... Resource Management -- evaluation, inventory analysis, and exception reporting ... Middle and Executive Management Information Systems -- obtaining decision data from files generated by on-line and off-line transaction systems).

Implementing a particular application ordinarily requires a computer programmer to code a multitude of specific routines. Typically, the system requirements associated with this application do not remain stable. Additional routines are needed to provide greater capabilities; new reports are identified to answer spontaneous information demands not anticipated at the time the application was defined. Accordingly, this dynamic operational environment imposes a significant continuing demand on programmers to maintain existing programs.

In contrast to conventional practices, the GIS user describes his new or existing files in a procedure that does not involve detailed programming. This file description is a one-time task. As a result of processing by a GIS program component, these file descriptions enable the user to address the contents of his files by means of symbolic names. No longer must the user repeat, in every procedure, the size of each field, its units, relative location, and other data management parameters.

When the user applies GIS (Basic) techniques to

write his file creation, maintenance, and retrieval procedures, they will be compiled by a GIS (Basic) program component after diagnostic testing to ensure their validity. Once compiled, the executable code may be applied to the user's data or stored in a GIS library for subsequent recall by a single symbolic name. With some limitations, user routines written in higher level languages (such as PL/I) may access GIS files. GIS procedures can link to OS/360 Assembly Language user routines referenced within GIS procedures.

GIS provides a technique to precompile a library of customized application programs for system requirements that can be anticipated. In response to spontaneous requirements, new procedures can be written, compiled and executed -- drawing on single or multiple files -- to provide customized reports.

For further information on the availability of a Sales and Systems Guide and a Marketing Kit, contact your Regional Scientific Marketing Manager.



## INFORMATION MANAGEMENT SYSTEM/360 (IMS/360)

IMS/360 will be available July 31, 1969. It enhances the capability of the Operating System/360 and facilitates implementation of medium to large common data bases in a multi-application environment. This environment accommodates both Teleprocessing and conventional batch processing concurrently or separately. The system allows the evolutionary expansion of data processing applications from a batch to a Teleprocessing environment.

The combined Teleprocessing data base facilities of the Information Management System/360 operate under Operating System/360 MFT-II (Multiprogramming with a Fixed Number of Tasks, Version II) or MVT (Multiprogramming with a Variable Number of Tasks).

The batch-only data base facilities of IMS/360 can operate under Operating System/360 PCP (Primary Control Program), MFT-II, or MVT.

The data base processing facilities are provided by a new data management concept known as Data Language/1. These facilities assist the data base definition, creation, access and maintenance functions.

### HIGHLIGHTS ...

- . The user can enter messages from remote input/output devices allowing both data base inquiry and update.
- . The user can transmit messages to remote input/output terminals in response to application program message processing.
- . A terminal command language provides for system control from a master terminal and for input message editing through all terminals of the system.
- . Application programs for message processing can be scheduled concurrently where each program is operative under a unique storage protection key of OS/360.
- . Centralized definition and control of all data base facilities are provided through Data Language/1 to help the user maintain data base integrity in the Teleprocessing multi-programming environment.
- . The system provides checkpoint/restart capabilities.

## PUBLIC UTILITY CUSTOMER INFORMATION CONTROL SYSTEM

The System/360 Customer Information Control System will be available June 30, 1969. It is a new program modularly constructed to provide the basic control system structure for the installation of electric, gas, and telephone company information systems. The Customer Information Control System is designed primarily for inquiry and order entry applications; it has the capability for limited message switching and administrative message handling, and functions as an interface between user written processing programs and the IBM System/360 Operating System (OS/360). Maximum OS/360 serviceability features are incorporated into the user's system. Used in conjunction with OS/360, the Customer Information Control System schedules tasks, loads user programs, and provides linkage to OS/360 access methods.

This program reduces the resources involved in the implementation of an information system by providing a structure into which the user puts his programs.

### The Customer Information Control System:

- . Provides macro instructions which facilitate user communication with his input-output devices and terminals.
- . Incorporates program features that protect the system from uncontrolled arrival of requests and the resultant heavy processing program demands for the resources of the system.
- . Provides control programming services that reduce the detailed programming by the user.
- . Provides the facility to generate a tailored Control System from symbolic descriptions in control cards.
- . Provides multi-programming capabilities for transaction processing.
- . Incorporates features which will facilitate the serviceability of the system components to maximize availability.
- . Records system performance statistics.
- . Uses OS/360 services.

**NEW VERSION OF RAX LIFTS RESTRICTIONS  
ON USE OF EMBEDDED BLANKS AND  
KEY WORDS**

Version 2 of System/360 Remote Access Computing System (RAX), a time-shared, remote computing system, is now available (360A-CX-17X).

This version lifts the restrictions on the use of embedded blanks and key words, providing a standard Basic USASI FORTRAN. By means of the ADJUST parameter on the /FTC card a user can include embedded blanks and use key words in his program. NOADJUST will not allow the above flexibilities but will be 35% faster in compilation, thereby improving systems response. An installation will be able to define its own default option on the above.

Version 2 includes no functional changes to the configuration or capabilities of RAX.

Version 1 is obsoleted. Current users will receive a prepunched program order card and a letter announcing the availability of the new version. The letter instructs them to order the new version through the branch office. They should use the prepunched program order card.

For details see the sales manual text on the inside pages.

  
John Fahey  
Director of DP Marketing

**Remote Access Computing System (RAX):** Provides sustained access to a System/360 from remote locations to enable programmers, engineers, scientists, and other users to obtain fast turnaround and reduced problem-solution time for their computational problems. (360A-CX-170)

**Description:** RAX is a time shared, remote computing system. Users of RAX can submit Basic FORTRAN IV and Basic Assembler language jobs for compilation and time-sliced execution from local and remote terminals, simultaneous with similar operations from other on-line equipment at the computer site. Programmers can compile, modify, and execute programs from their terminals while non-computer oriented users can be conversationally interacting with programs previously stored in the RAX library.

RAX user flexibility is provided by a modular and compatible design. Three System/360 models (30, 40, and 50) are supported. Three memory sizes (64K, 128K, and 256K bytes) can be used with the three CPU models. Two terminals (the IBM 1050 Data Communications Terminal and the IBM 2260 Display Station) can be used with up to a maximum of 63 terminals simultaneously operational. Two IBM 2311 Direct Access Storage Devices are necessary, but up to eight can be utilized by RAX.

In addition to modularity, RAX flexibility is enhanced by its functional capabilities available with the smallest and the largest configuration.

#### Features:

- Up to 63 terminals can be used with RAX, depending upon the amount of core memory available. The number of RAX terminals supported for the allowable memory configurations are:
  - 256K byte memory
    - maximum of sixty-three 1050 Data Communications Terminals
    - maximum of eight 2260 Display Stations
    - total number of 1050 terminals and 2260 Display Stations may not exceed sixty-three
  - 128K byte memory
    - maximum of thirty-six 1050 terminals
    - 2260s can be used with this memory configuration with one 2260 equated to three 1050s in determining the thirty-six limit
  - 64K byte memory
    - maximum of ten 1050 terminals
- Users may share programs and data stored in the RAX user library. File security is provided by means of a lock code used to prevent unauthorized deletion or modification of any file in the library.
- A restart capability is provided for resumption of jobs after recovery from systems error. Upon recovery, RAX will indicate to each user the last line of input accepted or repeat the last few lines of output.
- The 2260 Display Stations allow entry of up to twelve lines of input at a time. The Non-Destructive Cursor feature is used to provide for single character modification within a line when updating program or data files.
- Object program execution storage of 32K bytes is provided on the minimum memory configuration. 64K bytes are available on the 128K and 256K byte configurations. This object program space includes necessary execution time routines.
- Users of RAX may enter programs and data one line at a time from their terminals or use a single terminal command to insert a previously stored data or source program module into his job stream at compile time.
- Up to seven 2311 Disk Storage Drives are supported for on-line library storage.
- The user may enter either Basic FORTRAN IV or Basic Assembler jobs from his terminals. All input/output must be programmed in FORTRAN. Execution of privileged instructions in a user program is not allowed by RAX.
- A DISPLAY command is available for total or selective listing of a user's input or library files.
- RAX supports Basic USAF FORTRAN, and there are no restrictions on the use of imbedded blanks or key words. This is done by use of the ADJUST/NOADJUST parameter on the /FTC card. By means of the ADJUST parameter on the /FTC card a user can include embedded blanks and use key words in his program. NOADJUST will not allow the above flexibilities but will be 35% faster in compilation, thereby improving systems response. An installation will be able to define its own default option on the above.

**Use:** Sustained access to a System/360 from remote locations enables engineers, scientists, and other users to realize fast turnaround and reduced problem solution time. FORTRAN programmers can compile, modify, and execute programs from remote terminals, while non-programmers may use programs previously stored in the RAX library. Familiarity with the RAX terminal command language and the operation of the terminal device, enables the user to exploit the computational power of System/360 in a convenient manner.

RAX provides a facility for conversational interaction between a user and an executing program. This is accomplished by the use of input/output statements in a problem program which address the user's terminal as an I/O device. Thus, programs can be written to take advantage of the "on-line" presence of the user by permitting him to selectively modify his input, observe intermediate results, and alter parameters - or perhaps the execution sequence - of the program based on his interpretation of these results.

**Customer Responsibilities:** A customer using RAX must take the following steps before installation to insure satisfactory operations:

1. Order and install (satisfactorily) the communications equipment required.
2. Train operators to use the terminal command language, the programming languages, and terminal operations.
3. Familiarize a systems programmer with the internal operations of the system.

**Sales Information:** Most System/360 Model 30, 40, or 50 customers and prospects are potential prospects for RAX.

- RAX can constitute the entire justification for a system in engineering research firms, in universities, or in engineering departments of large firms.
- RAX provides justification for upgrading and adding equipment for customers who want to provide access to a computing service for their scientific and technical personnel.

RAX enables IBM customers to acquaint themselves with remote computing time-sharing systems. A small additional investment permits batch-oriented installations to evaluate the benefits of this system concept for their own operations.

By building a library of interactive application programs, an installation can extend the capabilities of System/360 to a broader range of users.

**Programming System:** RAX is written in BPS Basic Assembler Language.

**Minimum System Requirements:** System/360 Model 30F with one Selector Channel, Interval Timer, Storage Protection, Decimal Arithmetic, Floating Point Arithmetic features ... 1052 Printer-Keyboard Model 8 as a system console ... 2540 Card Read Punch ... 1403 Printer Model 2, 3, 7 or N1 ... two 2311 Disk Storage Drives; for attaching 1050 Data Communication Terminals EITHER a 2702 Transmission Control with Terminal Control - Type 1 (#4615), Selective Speed (#9684), and appropriate line adapters OR a 2701 Data Adapter Unit with Terminal Adapter - Type 1 (#4645 or 4646) and appropriate line adapter for each line (up to 4). Up to ten 1050 Data Communication Terminals may be attached to the minimum configuration. 2260 Display Stations are not supported on the 64K byte configuration.

**Terminal Configuration:** The minimum IBM 1050 Data Communication Terminal consists of: one IBM 1051 Control Unit Model 2 with the First Printer Attachment feature (#4408) and one IBM 1052 Printer-Keyboard Model 2. The 1052 Printing Element used by RAX is Data 1 font (#9575 or #9576). The 1050 can utilize the 1054 Paper Tape Reader or 1056 Card Reader attached as Reader #1 on the 1051. For use with the 1056 cards can be prepared on either the 26 or 29 Keypunch. The 1056 must have the Extended Character Read Special Feature.

Below are indicated 1050 special features that can be used with RAX (A); features that can be attached but are not utilized by the system (B); and features that must not be attached to a RAX terminal (C). (AR) status means that, where the component is installed, the referenced feature must be available.

Component	Feature No.	Status
<u>1051 Control Unit Model 1 &amp; 2</u>		
<u>I/O Unit Attachments</u>		
Card Punch Attachments	1635	B
1st Printer Attachment for mdl 1 or 2	4408	AR for 1052
1st Punch Attachment	4410	AR for 1055, 1057, 1058
1st Reader Attachment	4411	AR for 1054, 1056
2nd Printer Attachment	6381	B
2nd Punch Attachment	6383	B
2nd Reader Attachment	6384	B
Auto Fill Char Cen	1287	B
Auto Ribbon Shift & Line Feed Select	1295	B
Audible Alarm	1307	B
Automatic EOB	1313	A
CPU Attachment	3130	C
Forms Stand Stacker	4450	B
1447 Attachment	4461	C
Home Comp Recogn	4605	B
Home Correction	4607	B
Home Loop Input Component		
Interlock	4606	B
IBM Line Adapter	4647	A
IBM Line Adapter Subchannel 1	4691	A
Subchannel 2	4692	A
Subchannel 3	4693	A
Subchannel 4	4694	A
IBM Line Adapter	4790	A
I/O Comp Table	4632	B
Keyboard Request	4770	A
Line Correction	4795	B
Line Cor Release	4796	B
Master Station	5050	B
Open Line Detection	5465	B
Reader Stop Prefix J	6060	B

Switch Unit		
for Mod 1	7660	C
for Mod 2	7661	C
Tel Line Attachment	7835	C
Vertical Forms Control	8715	A
<u>1052 Printer-Keyboard mdl 1 or 2 only</u>		A
Accelerated Carrier Return	1006	B
Auto EOB	1313	A
Forms Feed Control	4452	A
Home Loop Input Component Interlock	4606	B
Open Line Detection	5465	B
<u>1053 Printer Mdl 1</u>		B
<u>1054 Paper Tape Reader mdl 1</u>		A
Edge-Punch Read	3570	C
Reels, Center Roll Feed and Take-up	6120	B
Telegraph Speed	7910	C
<u>1055 Paper Tape Punch mdl 1</u>		A
Edge-Punching	3571	C
Reel-Take-Up	6121	B
<u>1056 Card Reader (Model 1 Recommended)</u>		A
Card Reader Program	1640	B
Extd. Character Reading	3861	AR
Feed, 51 Col Card	4004	C
Feed, Short Card Pack	4006	C
High Speed Skp	4595	B
Telegraph Speed	7910	C
<u>1057 Card Punch, Model 1</u>		A
Extd. Character Punch	3860	AR
Operator Panel	5478	C
<u>1058 Printing Card Punch, Models 1 and 2</u>		C

For systems larger than 64K, support is provided for IBM 1050 Data Communication Terminals and/or 2260 Display Stations. Additionally, work file capability and expanded program save features are available with the larger configurations. The IBM 2260 Display Station must have an Alphameric Keyboard feature and be connected to the multiplexor channel through a directly attached 2848 Display Control Model 3 with the Non-Destructive Cursor feature. One 2848 Model 3 with up to eight 2260 Display Stations is supported.

The 128K byte core system (Processing unit model G) will support a maximum of thirty 1050s and two 2260s. A tradeoff on core storage will allow one 2260 to replace three 1050s and vice versa. For purposes of calculating the mix of terminal lines entering the system, 600 bytes of memory are required for each 1050 terminal and 1800 bytes per 2260 terminal after the basic I/O routines are incorporated.

**Maximum Support Configuration:** System/360 Model 50 H (256K byte memory) with two Selector Channels, Interval Timer, Storage Protection, Decimal Arithmetic, Floating Point Arithmetic, 1052 Printer-Keyboard Model 7, 2540 Card Read Punch, 1403 Printer Model 2, 3, 7 or N1, eight 2311 Disk Storage Drives, two 2702 Transmission Controls up to sixty-three 1050 Data Communications Terminals, one 2848 Display Control Model 3 with Non-Destructive Cursor feature and up to eight 2260 Display Stations with the Alphameric keyboard feature (with a maximum of sixty-three 1050s and 2260s combined), four 2400 9-track tape drives.

#### Basic Program Material:

Publications\* -- Application Directory ... User's Manual (H20-0354) ...  
TNL N20-1859 ... Operator's Manual (H20-0355) ... TNL N20-1062.

Machine Readable\*\* -- Object program load modules and sample problem decks are available on either one 9-track DTR (800 or 1600 bpi) or one 7-track DTR (800 cpi) - Data Conversion feature required.

#### Optional Program Material:

Machine Readable\*\* -- Source Decks are available on either one 2400' reel of magnetic tape 9-track (800 or 1600 bpi) or 2400' reel of magnetic tape 7-track (800 cpi) - Data Conversion feature required.

**Ordering Procedure:** See the Branch Office Manual, DP Sales Activity section, page 4-401.

\*If only the form numbered manuals are required, order them from the IBM Distribution Center, Mechanicsburg -- not from PID.

\*\*When ordering, if the distribution medium is not specified on the program order card, 9-track at 800 bpi will be forwarded.

DTRs are provided by PID; no tape submittal is required.

Magnetic Tapes (2400') may be forwarded or ordered (the order card should accompany the tape order form).

**Note: Systems Generation** -- Distribution on the RAX program will be on tape. RAX users must have access to tape configuration on which to punch the object and source program decks.

**Additional Program Support Material:** Application Description Manual (H20-0353-1) ... System Manual (Y20-0101).

**Reference Material:** IBM System/360 Basic FORTRAN IV Language (C28-6629) ... BPS Basic Assembler Language (C28-6503) describe the languages implemented under RAX.

For further information contact your Regional Scientific Marketing Manager.

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**ELEVEN INDEPENDENT PROGRAMS  
HIGHLIGHT VERSION 2 OF MODEL 20  
TELEPHONE ACCOUNTING SYSTEM**

Version 2 of the Model 20 Telephone Company Revenue Accounting System can now be ordered. Shipments will begin the week ending May 10.

Version 2 implements the toll ticket format change introduced October 1, 1967, and the interstate toll rate change which became effective November 1, 1967.

This version includes eleven independent but interrelated programs. Each program functions as a unit and is processed only as often as required.

Version 1 is obsolete. Current users will receive a prepunched program order card and a letter announcing the availability of the new version. The letter instructs them to order the new version through the branch office. They must use the prepunched program order card.

For the new sales manual write-up, see the back of this letter. Changes are bracketed.

**NOTE:** This program formerly had the number 360A-SU-11X. With Version 2, the program number is changed to 360V-SU-11X. All Type II programs for the Model 20 will be in the new 360V series.

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John Fahey  
Director of DP Marketing

Published by DP Sales Publishing Services, WTHQ

FOR IBM INTERNAL USE ONLY

Release Date: May 2, 1968  
Distribution: All Areas

P68-68

**Model 20 Telephone Company Revenue Accounting System:** Is designed to perform efficiently the high volume revenue accounting operations of the small- and medium-sized telephone company. The Telephone Revenue Accounting System will significantly reduce the cost in man hours and length of conversion required for installation. (360V-SU-11X)

**Description:** The Telephone Revenue Accounting System includes eleven independent but interrelated programs. Each program functions as a unit and is processed only as often as required.

The primary functions of the Telephone Revenue Accounting System include: creation and maintenance of toll message pricing data ... editing and pricing of both manually and automatically originated toll messages (either intrastate or interstate) ... preparation of customer toll statements ... preparation of customer bills together with a customer remittance card which later serves as customer payment input data ... processing and control of customer payments and adjustments with maintenance of accounts receivable ... review of customers whose payments are delinquent and preparation of customer reminder and denial-of-service notices.

**Features:** The user is permitted extensive flexibility in the design of input/output formats through the use of Report Program Generator (RPG) as a source language ... modular construction allows selection of only the routines and functions required (i.e., V&H or Block and Section Methods of distance calculation for toll messages) ... extensive controls are built into the system to ensure accuracy of all operation and to provide required audit trails ... exits are provided in RPG to allow users to insert their own subroutines ... automatic production of multiple copies of both customer and toll statements ... automatic punching and interpreting of cash remittance cards ... consistent application of company policy in the treatment of delinquent accounts ... automatic determination of the day-of-week during editing (Monday-Friday, Saturday, Sunday, or holiday) using only toll ticket date and a standard formula.

**Customer Responsibilities:** The user should perform the following before actual installation of the package --

1. Make a detailed analysis of the package design and capabilities.
2. Compare the package against his own desired system design.
3. Define the areas where differences exist and make a decision as to whether the programs in the package or the system design or both should be modified.
4. Obtain the source deck of terminating point data used to prepare the terminating point master rate deck.
5. Use the program documentation to prepare, in punched card form, rate tables that reflect the user's existing tariff structures.
6. Design both card and paper document formats relative to the requirements of this package.
7. Establish, according to the user's policy, the criteria to be used as limits in the treatment program.
8. Understand the operation of Report Program Generator as a means of originating unique user programs and making necessary modifications to this package.

Failure to do the above can easily result in a difficult and protracted installation period.

**Programming Systems:** System/360 Model 20 Report Program Generator is the major programming language used. System/360 Model 20 Basic Assembler language is used for subroutines which augment Report Program Generator routines.

**Minimum System Requirements:** 8K 2020 Processor (Model C1) with Card-Print Control (#1580), 2203 Attachment (#8082), 2560 Attachment (#8099) ... 2560 Multi-function Card Machine with Card Print--first 2 lines (#1575), 2203 Printer Model A1 with Print Positions, 24 additional (#5558).

**Basic Program Material:**

**Publications --** Application Directory ... Application Description Manual (H20-0193) ... User's Manual (H20-0264) ... Operator's Manual (H20-0265). If only the form numbered manuals are required, order from the IBM Distribution Center, Mechanicsburg -- not from PID.

**Machine Readable --** The source decks, sample problem data, and table cards (when required) will be distributed in card form.

**Ordering Procedure:** See the DP Sales Activity section of the Branch Office Manual.

**Additional Program Support Material:** System Manual (Y20-0172)

**Reference Material:** System/360 Model 20 Report Program Generator Operating Procedures (C26-3800) ... System/360 Model 20 Basic Assembler Operating Procedures (C26-3802).

For further information contact the Public Utilities Industry Manager, DPD HQ.

## TIME SLICING PROVIDED FOR OS/360 USERS OF MVT OR MFT-II

Time Slicing, a new feature for use with the MVT or MFT-II option of OS/360, will be available October 31, 1968. Time Slicing is not supported for use with Model 65 multiprocessing configurations.

This feature supplements the normal task dispatching by adding the optional ability to designate tasks whose CPU use is to be limited. Other tasks in the system, outside of the time sliced group, follow the normal dispatching rules with highest priority task given control of the CPU.

The Time Slicing feature is designed for use when interactive applications, such as graphic job processing, require that several multiprogrammed terminals be given equal response time, even though one may be using much more CPU time than the others. The Time Slicing option may be elected at system generation time and further modified at the time of system initialization.

Time slicing used with MFT-II can be applied to any group of contiguous partitions. When used with MVT time slicing operates among all tasks of a designated priority. Multiple priorities may be specified so that time slicing operates in more than one group. A job is subject to time slicing by having its priority or partition match the group being time sliced. With MVT, a job step or sub-task may also be time sliced by using the CHAP (Change Priority) macro-instruction to make the new priority equal to a time sliced priority.

**PERFORMANCE ...** When the Time Slicing option is selected, a slight increase in the time to perform task switching should be expected. The total added time depends upon CPU speed and length of the time slice selected.

Contention for the use of the single SVT transient area in MFT-II may cause noticeable performance degradation if non-resident SVC routines (such as OPEN) are frequently used by different time sliced tasks. Short batch jobs (which often require many transient SVC routines) should, therefore, not be time sliced when run with MFT-II.

The Time Slicing option requires approximately 400 bytes of additional nucleus space when used with MFT-II, and approximately 1,300 bytes, plus 16 bytes for each priority subject to time slicing, when MVT is used.

  
John Fahey  
Director of DP Marketing

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IBM World Trade Data Processing

P68-70

## MARVEL/360 IS AVAILABLE

MARVEL/360 is now available (360A-CO-15X).

The optional program material consisting of the source program will be available November 29, 1968.

MARVEL is a language processor for the data preparation, matrix generation, output analysis, and management report writing functions associated with the Mathematical Programming System/360 (360A-CO-14X). MARVEL was designed and implemented to provide powerful functional capabilities in this fast growing area of mathematical programming. The comprehensive language and processor capabilities necessitated "trading off" performance for function, which reduces the applicability of MARVEL in a high-speed production environment; IBM does not plan to further improve this performance level.

Because of its extended functional capabilities, MARVEL may be used most effectively in the development of new LP applications and for solving non-repetitive problems.

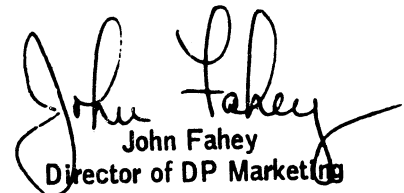
For the sales manual write-up, see the back of this letter.

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Published by DP Sales Publishing Services, WTHQ

  
John Fahey  
Director of DP Marketing

FOR IBM INTERNAL USE ONLY

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P68-70



**MARVEL:** MARVEL/360 (360A-CO-15X) used in conjunction with the Mathematical Programming System/360 (360A-CO-14X), provides powerful functional capabilities for data preparation, matrix generation, output analysis, and management report writing.

MARVEL execution speeds are quite slow; IBM does not plan to improve its performance.

**Description:** MARVEL is a language processor which facilitates the data preparation and output analysis functions associated with the Mathematical Programming System/360 (360A-CO-14X). The user may write a MARVEL program to generate a linear programming input matrix for MPS/360, analyze an MPS/360 solution, and produce data on an external file pertaining to this solution, or generate a management report from an MPS/360 solution. MARVEL operates under the control of MPS/360 and is called with the MPS Procedure Call statement.

**Features:** Elements referenced by row and column name ... automatic array overflow onto a DASD when memory is exceeded ... easy retrieval of MPS/360 data ... transfer of program control based on intermediate results.

**Use:** The MARVEL language operates on arrays or tables of data, but is unique in that it references the elements of arrays by row and column name rather than numerical subscripts. The arrays to be used are first defined and input data is read into them. The data records may contain the array, row, and column names into which the data element is to be stored; thus, there is no need for any particular ordering. The MARVEL program may contain arithmetic or logic statements required to perform the desired data transformation for output. Results may be filed on work files or output files, and previously filed data may be retrieved. Format specifications are required only for initial input and final output; intermediate results are filed automatically in a common format.

**Customer Responsibilities:** The user must learn the MARVEL programming language to implement its applications. He must also be familiar with MPS/360.

**Performance Information:** MARVEL supports two configurations -- the 128K configuration and the 256K and above configuration. MARVEL performs best on the 256K and above configuration; the 128K configuration is approximately half the speed of the 256K configuration.

The table below contains the execution speeds of a single MARVEL program which performs matrix generation and report writing on a 128K and 256K configuration.

	128K M40	128K M50	256K M40	256K M50
MARVEL - PREPROCESSOR	1.20	.71	1.20	.61
MARVEL - MATRIX GENERATION	9.51	3.95	4.48	2.19
MPS/360 - OPTIMIZATION	4.05	1.76	4.05	1.76
MARVEL - REPORT WRITING	31.12	13.92	15.60	7.07

**NOTES:** (1) Times are in minutes. (2) Model is 129 rows x 512 columns.

**Programming Systems:** MARVEL is written in the basic assembler language and operates under OS/360. It uses BSAM and EXCP data access methods.

**Minimum Machine Configuration:** MARVEL requires a S/360 with 128K bytes of storage, the Universal Instruction set, and, if the systems output device is a printer, it must have 132 print positions.

**Program storage requirements,** including access methods, for the two configurations are -- 61K bytes for the 128K configuration and 128K for the 256K and above configuration. Additional memory (minimum of 5K) is used for array storage.

The following table lists the files used by MARVEL. These files may be stored on a 2314, 2311 DASD, or a 2400 series magnetic tape unit. Note that the OS/360 Input, Output, and Residence devices are not included in this table.

File Name	Description	Notes
OBJ	Contains object program produced by MARVEL preprocessor.	Required
CALC1 & CALC2	Used by CALCULATE statement when memory is exceeded.	Optional
OVERFLOW	Contains arrays which cannot be maintained in memory.	Optional - Must be DASD.

**Basic Program Material:**

**Publication\*** -- Application Directory ... Primer Manual (H20-0496-0) ... Program Description Manual (H20-0505-0) ... Operations Manual (H20-0512-0) and TNL N20-1860.

**Machine Readable\*\*** -- The MARVEL system is distributed on either a 9-track (800 bpi or 1600 bpi) or a 7-track (800 cpi) DTR (Data Conversion Feature required).

**Ordering Procedure:** See the Branch Office Manual, DP Sales Activity section.

\*if only the form numbered manuals are required, order them from the IBM Distribution Center, Mechanicsburg - not from PID.

\*\*if the track and density requirements are not specified on the back of the program order card, a 9-track (800 bpi) DTR will be forwarded.

DTR's are provided by PID; no tape submittal is required.

**Additional Program Support Material:** Mathematical Programming System/360, Application Description Manual (H20-0136-3).

**Reference Material:** MPS/360 Control Language - User's Manual (H20-0290) ... MPS/360 Linear and Separable Programming - User's Manual (H20-0476) ... MPS/360 System Manual (Y20-0065) ... MPS/360 Read Communications Format Reference Manual (H20-0372).

For further information contact your Regional or District Scientific Marketing Representative.



OS/360 RELEASE 14 MAINTENANCE PACKAGE FOR USERS OF COBOL AND FORTRAN AVAILABLE

A Compiler Maintenance Release of OS/360, Release 14 CMR, is now available.

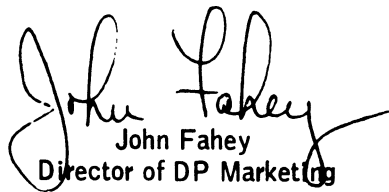
Release 14 CMR is composed of the COBOL and FORTRAN Compilers with their related libraries. These components can be incorporated into Release 14 through a Processor-only SYSGEN. Only those users who have already ordered Release 14 and use COBOL or FORTRAN should order Release 14 CMR. Those users who order Release 14 will also receive Release 14 CMR if COBOL or FORTRAN are requested.

Corrections for 119 APARs are included in Release 14 CMR. The number that have been solved for each component is as follows:

Component	No. of APARs Fixed
COBOL E	35
COBOL F	16
FORTRAN E	4
FORTRAN G	25
FORTRAN H	31
FORTRAN Library	8

Four OS/360 PROSE restrictions are also corrected.

The remainder of this letter contains ordering procedures and other details.

  
 John Fahey  
 Director of DP Marketing

DOCUMENTATION

The Release 14 SRLs are still applicable for Release 14 CMR. One new TNL is required, and will be shipped by PID with each order:

TNL N28-2341 to the Storage Estimates SRL C28-6551-4.

Release 14 CMR consists of:

1. A Memo to Users containing a description of the Release and its purpose.
2. Maintenance PROSE indicating APARs that have been corrected.
3. System PROSE indicating restrictions that have been eliminated.
4. Operating instructions.
5. A Description of a new COBOL F Message.
6. A Program Material list which updates the Release 14 basic and optional Program Material lists.

Items 1, 2 and 3 will be sent with the prepunched order card. The remainder of the documentation will be sent with the Release 14 CMR as shipped. Information copies of items 1, 2 and 3 will be sent to branch offices and field systems centers.

FE-SE SYSTEM GENERATION PLANNING

Close cooperation between Field Engineering and Systems Engineering is vitally important, particularly when planning to install a new release. The following procedure is strongly recommended before any Operating System generation and installation is attempted.

Field Engineering and Systems Engineering representatives should meet before system generation will be performed. All programming components to be used by the customer should be reviewed for known restrictions or PTF's. Applicable PTF's should be installed before attempting customer operations. The review should consider all available

published information plus information carried in RETAIN or SECOM.

NOTE - This is especially important in relation to FORTRAN H Version II. The bulk of the corrections are in response to APARs submitted on Version I. The number of PTFs that are available and the known problems still outstanding should be reviewed thoroughly.

## EC REQUIREMENTS

There are no new EC requirements for Release 14 CMR.

## FORTRAN CONTROL SECTION NAMING

As of Release 14 all three FORTRAN Compilers generate code without a Pound Sign (#) appended to the control section name. Optional program modifications (OPMs) were provided in SYS1.SAMPLIB of Release 14. New OPMs for FORTRAN E & G are in SYS1.SAMPLIB of Release 14 CMR. The Release 14 OPM for FORTRAN H is still applicable. These OPMs are for those installations which must continue temporarily to use CSECT names with a Pound Sign(#). For additional information, see P68-7 and Installation Newsletters 67-25, 68-01 and 68-02. It is our intent that the OPMs for FORTRAN Pound Sign will not be provided beyond October, 1968.

## MACHINE READABLE

Release 14 CMR is distributed --

For the 2311 user - On one 2400' reel of magnetic tape, either 9-track (800 or 1600 bpi), or 7-track (800 cpi, Data Conversion feature required), or on a 1316 Disk Pack.

For the 2314 user - On one 2400' reel of magnetic tape, either 9-track (800 or 1600 bpi), or on 7-track (800 cpi, Data Conversion feature required).

The tape will be in a dump/restore format. The user must also specify if it is to be restored to a 2311 or 2314 disk drive. If either 9-track (800 bpi or 1600 bpi) or 7-track (800 cpi) magnetic tape is not specified on the IBM Program Order form 9-track at 800 bpi will be forwarded.

Magnetic tape (2400') may be forwarded to PID or ordered. The order card should accompany the tape or the tape order form; Disk Pack (1316 only) must be forwarded to PID with the program order card.

## ORDERING PROCEDURE

Current users of FORTRAN and/or COBOL OS/360 will receive a prepunched order card and a letter announcing the availability of Release 14 CMR, and instructing them to order the new release through the Branch Office using this prepunched card.\* Users who have not yet ordered Release 14, will when ordering Release 14, receive Release 14 and Release 14 CMR if COBOL or FORTRAN are requested. They will be required to provide for one additional volume over their requirements for Release 14. This additional volume will be for Release 14 CMR, 2311 or 2314 must be specified.

\* Standard program order card may be used provided 360S-CI-505 CMR is specified.

## OPTIONAL PROGRAM MATERIAL

The Optional Program Material (source statements) for COBOL and FORTRAN (P68-8 Distribution Volume Numbers 2 and 3) available with Release 14 is obsolete. It will become available again in a future OS/360 release reflecting the level of COBOL and FORTRAN at that time. The microfiche used by Field Engineering in servicing an account reflects the up-to-date status of Release 14 CMR COBOL and FORTRAN.

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**RELEASE 17 IMPROVES DOS/360**

Release 17 of DOS/360 with its functional and performance improvements can now be ordered. Shipments will begin the week ending May 24. Affected are:

- RPG
- BTAM
- OLTEP
- System Control and Basic IOCS
- PL/I
- CE Serviceability Programs

Release 17 also includes maintenance and the new high performing **Assembler F** component. (This support was scheduled for July 29, 1968.) Details are given below.

Plan to upgrade your DOS/360 customer systems with these increased capabilities.



John Fahey  
Director of DP Marketing

**ASSEMBLER F (360N-AS-466)**

A high-performance assembler implementing the full System/360 Assembler Language (Except for CXD, DXD, and type Q DCs, which have no significance under DOS). It provides new and improved functions for users with a minimum of 64K of main storage:

- . High performance -- up to 45% faster than the present DOS/360 - supported assembler, Assembler D (360N-AS-465).
- . Up to two continuation cards per statement rather than one.
- . Multiple-operand DC and DS statements.
- . Bit-length modifiers, in addition to byte-length modifiers, in DC and DS statements.
- . Enhanced diagnostic capability.

Any source program that can be assembled by Assembler D (360N-AS-465) can be assembled by Assembler F without change.

Assembler F requires a minimum of 44K bytes of main

storage and executes in the background partition only.

**RPG (360N-RG-460) provides:**

- . Support of the 2321 Data Cell Drive as storage for user data files.
- . Generation of programs to create and add records to Indexed Sequential files on the 2311, 2314, and 2321 direct access storage devices is supported. Data files created on the 2321 may optionally have high level indices located on a disk volume.
- . The ability to process information within the key field of Indexed Sequential records where the key is not part of the data portion of the record.
- . Sequence checking of source statements. A warning diagnostic is issued for out-of-sequence statements.
- . Programmer control of data tape positioning at OPEN, CLOSE, and EOJ. An additional entry on the File Description Specification permits the options of REWIND, NO REWIND, AND REWIND-UNLOAD.
- . Printer speed has been improved by overlapping processing with the printer output cycles.
- . Two input/output areas can be assigned to sequential files on card, tape, disk, or data cell if enough main storage is available. An additional entry on the File Description Specification identifies the relative priority of multiple files when a second area is to be assigned. An entry in the RPG Control Card specifies the amount of main storage available at object execution.
- . Extraneous logic pertaining to the LO indicator has been removed.
- . The retrieval of a record will be bypassed if the desired record is in main storage from a previous request. This applies to records retrieved by key from Direct Access or Indexed Sequential files by chaining or Record Address File (RAF) processing.

**Performance**

With the use of two I/O areas per file, processing time is overlapped with I/O time. Thus, execution speed for those programs that are primarily devoted to input/output can be increased to approximately the rated speed of the slowest I/O device.

Published by DP Sales Publishing Services, WTHQ

**FOR IBM INTERNAL USE ONLY**

Release Date: May 15, 1968  
Distribution: All Areas

Note: It is now required that key length be specified on the File Description Specification for all Indexed Sequential files and for Direct Access files retrieved by key.

#### **BTAM (360N-CQ-469)**

Expanded to include on-line terminal test facilities for Binary Synchronous Communications. This support provides the ability to test communications network of a computer system and/or verify hardware malfunctions. The Binary Synchronous configurations supported are:

System/360\* to System/360\*

BTAM provides the BSC on-line test facility over nonswitched (leased or private direct connection) and switched (dial) networks.

Request for test message initiation (RFT)  
RFT message recognition  
Transparent test messages  
Strong and weak test patterns  
EBCDIC code  
USACII code

System/360\* to 1130 or 2780

BTAM provides the BSC on-line test facility over nonswitched (leased or private direct connection), point-to-point, or multi-point (centralized), networks and over switched (dial) networks.

Request for test message initiation (RFT with  
x = 0 only - see BTAM SRL, C30-5001)  
RFT message recognition  
Transparent test message  
Strong and weak test patterns (1130 only)  
EBCDIC code  
Transcode (6 bit) (2780 only)

\*System/360 model 30, 40, 50, 65, 67 (65 mode), or 75.

**BTAM Functional Improvements:**

- . Buffer pool management for all 2740 terminals now includes support for multiple buffers.
- . Read initial with reset (TIR) for the basic 2740 and the 2740 with checking. This overcomes the potential problem of losing data when a read initial follows a write initial with reset.
- . Write continue (TT) for the basic 2740.

BTAM support for the 2740 model 2 with buffer receive (1499) and record checking (6114) features is now available. (This support was scheduled for August 1968.)

#### **OLTEP (360N-DN-481)**

Improved to support unit tests to measure inter-record gap timings for all models of the 2400 series magnetic tape drives.

#### **SYSTEM CONTROL AND BASIC IOCS (360N-CL-453)**

A new function has been added to the librarian maintenance program to allow updating of individual statements within a book of a source statement library. One or more source statements may be added to, deleted from, or replaced in a book in the library without replacing the entire book.

The following options are available with this update feature:

- . Change Level Number verification can be required prior to the updating of a book, if the optional "C" parameter was included in either the CATALS statement (when the book was cataloged) or the END statement of the previous update.
- . Change Level Number updating may be performed.
- . Temporary updating may be performed. With this option, the old book is renamed and retained in addition to the updated book.
- . Resequencing of a book may be performed during an update.

#### **PL/I (360N-PL-464)**

Changed to improve diagnostic message capabilities in the following areas:

- . Error flags in the Symbol Table, formerly described by numbers, are now described in text.
- . Text in many error messages is reworded to better explain the cause of error.
- . Execution time error messages may now be augmented by the number of the source statement causing the error if UPSI bit 1 has been on during compilation.

#### **CE SERVICEABILITY PROGRAMS**

CE Serviceability Programs are designed to be used by IBM Customer Engineers. Their purpose is to facilitate more rapid and accurate diagnosis of machine and/or program malfunction. This release provides a FETCH/LOAD trace program and a TRANSIENT DUMP program. A detailed description may be obtained from your Customer Engineer.

#### **PTFs**

PTFs applicable to DOS/360 Release 17 are contained in the Source Statement library. The book title is X.PTFS and may be printed and punched using normal system facilities. An IBM representative should advise the customer on selection and applications of these PTFs.

IBM Disk Operating System/360

Basic Program Material

The following SRL publications appropriate to the components ordered are shipped by the Program Information Department (PID) with each initial DOS/360 order.

SRL Publications: System/360 Disk Operating System --

Operating Guide TNL <u>N24-5356</u>	C24-5022-4
Concepts and Facilities TNL <u>N24-5358</u>	C24-5030-4
Performance Estimates	<u>C24-5032-5</u>
Systems Generation and Maintenance TNL <u>N24-5357</u>	C24-5033-4
Data Management Concepts	C24-3427-3
System Control and System Service Programs TNL <u>N24-5355</u>	C24-5036-3
Supervisor and Input/Output Macros	C24-5037-4
Basic Telecommunications Access Method	<u>C30-5001-5</u>
Utility Macros Specifications	C24-5042-2
Vocabulary File Program for the 7772 Audio Response Unit	C27-6924-2
Utility Programs Specifications	C24-3465-4
Tape Sort/Merge Program Specifications (Note - C24-3438-1 and TNLs N21-5021, N24-5064, N24-5131, N21-5036, N21-5042 and N21-5050 or SRL C24-3438-2 plus TNLs N21-5036, N21-5042 and N21-5050 may be used in lieu of the SRL C24-3438-3)	C24-3438-3
Sort/Merge Program Specifications (Note - SRL C24-3444-1 plus TNLs N21-5035, N21-5049 and N28-2257 may be used in lieu of the SRL C24-3444-2 plus TNL N28-2257.)	C24-3444-2
COBOL DASD Macros (Note - C24-5039 and TNLs N24-5142, N24-5181 may be used in lieu of C24-5039-1)	C24-5039-1
Assembler Specifications TNL <u>N26-0582</u>	C24-3414-5
COBOL Programmers Guide	C24-5025-4
COBOL Language Specifications (Note - SRL C24-3433-3 plus TNLs N24-5188, N28-0232, N28-0237 and N28-0241 may be used in lieu of the SRL C24-3433-4 plus TNL N28-0241.)	C24-3433-4
FORTRAN IV Programmers Guide	C24-5038-2
FORTRAN IV Language	C28-6629-1
Report Program Generator TNL N24-5195, N21-5077, N21-5055, and <u>N21-5086</u>	C26-3570-4
Autotest Specifications	C24-5062
QTAM Message Control Program TNLs N30-5019, N30-5026, <u>N30-5512</u>	C30-5004-1
QTAM Processing Program Services TNLs N30-5015, N30-5020, N30-5503, <u>N30-5511</u>	C30-5003-2
Basic PL/I Reference Manual TNL <u>N33-9015</u>	C28-8202
PL/I Programmers Guide TNL <u>N33-9034</u>	C24-9005-2
PL/I DASD Macros TNL <u>N24-5301</u>	C24-5059
On-Line Test Executive Program Specs and Operating Guide	<u>C24-5066-2</u>

Form numbers which have changed since previous release are underlined.

If only the publications or if additional copies of the publications are required, order them from the IBM Distribution Center, Mechanicsburg -- not from PID.

Documentation -- Program Material List ... Attachment I - Temporary Restrictions ... Attachment II - Special Instructions ... Attachment III - APAR Information.

Machine Readable

For 2311 Residence -- DOS/360 (without the Teleprocessing components) is distributed on one 2400 foot reel of magnetic tape, either 9-track (800 or 1600 bpi), or 7-track (800 cpi, Data Conversion feature required) or one 1316 Disk Pack.

The Teleprocessing components and Assembler F are distributed on one 2400 foot reel of magnetic tape, either 9-track (800 or 1600 bpi), or 7-track (800 cpi, Data Conversion feature required), or one 1316 Disk Pack.

The reels of magnetic tape are in 1316 Disk Pack restore form.

The DOS/360 data is preceded by an initialize 2311 Utility Program and a Restore Tape-to-Disk program.

For 2314 Residence -- DOS/360 (Including Teleprocessing components and Assembler F) is distributed on two 2400 foot reels of magnetic tape, either 9-track (800 or 1600 bpi) or 7-track (800 cpi, Data Conversion feature required).

Ordering Procedures

See DP Sales Activity section of the Branch Office Manual.

Magnetic Tapes (2400') may be forwarded to PID or ordered. The order card should accompany the tape or the tape order form; disk packs (1316 only) must be forwarded to PID with the program order card.

When ordering on magnetic tape, if the distribution medium is not specified on the back of the program order card, 9-track at 800 bpi will be forwarded.

New Users -- Program components may be selected from the following list. Each component for which program documentation and maintenance material is required must appear on the order form.

Supervisor - 2311 (6K)	360N-SV-474
(8K)	360N-SV-475
(10K)	360N-SV-473
2314 (8K)	360N-SV-486
(10K)	360N-SV-487
(12K)	360N-SV-488
System Control and Basic IOCS	360N-CL-453
Direct Access Method	360N-IO-454
Consecutive Disk IOCS	360N-IO-455
Consecutive Tape IOCS	360N-IO-456
ISFMS	360N-IO-457
Consecutive Paper Tape IOCS	360N-IO-458
BTAM	360N-CQ-469
QTAM	360N-CQ-470
Compiler I/O Modules	360N-IO-476
MICR IOCS	360N-IO-477
Optical Character Reader IOCS	360N-IO-478*
Autotest	360N-PT-459
Assembler	360N-AS-465
Assembler F	360N-AS-466*
COBOL	360N-CB-452
COBOL DASD Macros	360N-CB-468
FORTRAN IV	360N-FO-451
Report Program Generator	360N-RG-460
Group 1 Utilities - Unit Recd/Disk	360N-UT-461
Group 2 Utilities - Tape	360N-UT-462
Group 3 Utilities - Data Cell	360N-UT-463
MPS Utility Macros	360N-UT-471
Vocabulary File Utility Program	360N-UT-472
Disk Sort/Merge	360N-SM-450
Tape Sort/Merge	360N-SM-400
Basic PL/I	360N-PL-464
OLTEP	360N-DN-481

DOS/360 is distributed in one of 6 formats: 2311-Resident systems with a 6, 8, or 10K Supervisor, and 2314-Resident systems with an 8, 10, or 12K Supervisor.

The System Control and Basic IOCS component and one of the six Supervisor components are required. To order these components, specify on the IBM Program Order for System/360 Operating Systems (120-1411) -- System Control and Basic IOCS, 360N-CL-453, and one of the following supervisors:

Supervisor - 2311 (6K)	360N-SV-474
(8K)	360N-SV-475
(10K)	360N-SV-473
2314 (8K)	360N-SV-486
(10K)	360N-SV-487
(12K)	360N-SV-488

If no supervisor is indicated on the order card, PID supplies the 2311-Resident 6K Supervisor, 360N-SV-474.

DOS/360 for 2311 residence is available on two reels of magnetic tape or two disk packs. The first volume contains all of the DOS/360 components listed above except the Teleprocessing components (BTAM, QTAM, and the Vocabulary File Utility Program, including the Sample Program, VFU1 and Assembler F), which are contained in the second volume.

If the Teleprocessing components and Assembler F are required on 2311 residence, two volumes must be supplied to PID; if they are not required, only one volume need be supplied.

For 2314 residence the entire DOS/360 system (except Autotest) is supplied on two reels of magnetic tape. The 2314 residence is not available on Disk.

Current Users -- Current users will receive a prepunched Program Order Card and a letter announcing the availability of DOS Release 17. This letter instructs them to order this Release through the Branch Office. Current users must use the prepunched card to order either the Maintenance Package or the Replacement System for Release 17.

When ordering the Release 17 maintenance package or replacement system submit the required tape or disk pack. On the back of the prepunched order card indicate either "Maintenance for 2311" or "2314", or "Replacement DOS", and specify the following: "9-track Magnetic Tape @ 800 bpi" or "9-track Magnetic Tape @ 1600 bpi" or "7-track Magnetic Tape @ 800 cpi" (Data Conversion feature required). Maintenance for 2314 not available on Disk.

Complete ordering instructions are provided with the letter to users.

Additional Comments -- Maintenance package 17 is available for 60 days. It will be obsoleted July 24, 1968.

Additional Program Support Material:

Program Logic Manuals

DOS/360

System Control Introduction	Y24-5017-3
Librarian Maintenance and Service	Y24-5079
Linkage Editor	Y24-5080
Supervisor and Transients	Y24-5084
IPL and Job Control	Y24-5086
Logical IOCS Introduction	Y24-5020-3
Unit Record, Mag. Tape, and Compiler Files	Y24-5087
Sequential and Direct Access Files	Y24-5088
ISFMS	Y24-5089
BTAM	Y30-5001-2
QTAM	Y30-5002-2, TNL Y30-5504
Utilities	Y24-5023, TNL Y21-0002
Disk Sort/Merge	Y24-5021, TNL Y28-2291

DOS/360 and TOS/360

OLTEP	Y24-5056-1
MPS Utilities	Y24-5045-1, TNL Y24-5068
Tape Sort/Merge	Y24-5016
Assembler	Y26-3642-1
Assembler F	Y26-3716
RPG	Y26-3701-1
COBOL	Y24-5025-2, TNL Y28-6390
FORTRAN IV	Y24-5032

Program Listings: The DOS/360 assembly listings and/or Macro (Source Statement Library) SSERV listings are available on Microfiche. Specify Group Code 2030 for the assembly listings or Group Code 2032 for the Macro SSERV listings. The assembly listings are equivalent to the output listings produced by assembling the symbolic modules as required for each of the DOS/360 Components listed below. The Macro SSERV listings are equivalent to a SSERV display on a printer of the Macros of the Components where applicable.

Optional Program Material (Symbolic Modules): Use the IBM Program Order for IBM System/360 Operating Systems, 120-1411.

The optional program components are available on ten distribution volumes, each identified for PID ordering purposes by a Distribution Volume Number. Distribution may be requested on IBM 1316 Disk Packs, 9-track magnetic tape (800 bpi or 1600 bpi), or 7-track magnetic tape (800 cpi) with the Data Conversion feature.

Each tape may also be restored to a 2316 Disk Pack on a 2314 Disk Drive. When using a 2314 Disk Pack, the user should designate the device as a 2311 for all operations involving the restoring and using of the Disk Pack. However, it should be initialized as a 2316.

Magnetic tapes may be ordered or forwarded, or disk packs may be forwarded in accordance with current procedures described in the DP Sales Activity section of the Branch Office Manual. A separate magnetic tape or disk pack is required for each distribution volume. The external tape or disk pack label must show the distribution volume number indicated below, as well as the information required under current procedures.

If either 9- or 7-track magnetic tape is not specified, 9-track (800 bpi) will be forwarded.

Distribution

Volume Number	Program Component Name	Program Number
1	System Control	360N-CL-453
2	Assembler	360N-AS-465
	Assembler F	360N-AS-466
3	Group 1 Utilities (Unit Record and Disk)	360N-UT-461
	Group 2 Utilities (Magnetic Tape)	360N-UT-462
	Group 3 Utilities (Data Cell)	360N-UT-463
	MPS Utilities	360N-UT-471
4	COBOL	360N-CB-452
5	Disk Sort/Merge	360N-SM-450
	Tape Sort/Merge	360N-SM-400
	FORTRAN IV	360N-FO-451
6	Report Program Generator (RPQ)	360N-RG-460
	Autotest	360N-PT-459
7	BTAM	360N-CQ-469
	QTAM	360N-CQ-470
	Vocabulary Utility File	360N-UT-472
8	Basic PL/I	360N-PL-464
9	1285 Optical Character Reader	360N-IO-478
	Magnetic Ink Character Reader IOCS	360N-IO-477
	Basic IOCS	360N-CL-453
10	On-Line Test Executive Program	360N-DN-481

The above distribution volumes do not contain source statements which are available in source format with the basic machine readable material for DOS/360. Therefore, there is no optional program material for the following DOS/360 components: Consecutive Disk IOCS, 360N-IO-455; Consecutive Tape IOCS, 360N-IO-456; Direct Access Method, 360N-IO-454; ISFMS, 360N-IO-457; Consecutive Paper Tape IOCS, 360N-IO-458; COBOL DASD Macros, 360N-CB-468.

Source statements for the Supervisor - 2311 (6K), 360N-SV-474, (8K), 360N-SV-475, (10K), 360N-SV-473, 2314 (8K) 360N-SV-486, (10K), 360N-SV-487, (12K) 360N-SV-488, and the Compiler Input/Output Macros 360N-IO-476, are not provided. See System/360 Disk Operating System, System Generation and Maintenance, C24-5033-3, for information on these modules.

See GI Page 20 for complete information before ordering additional program support material.

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed concurrently to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

- [1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.
- [2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.
- [3] When a new version of a program is announced, current users must order it; they will not receive it automatically nor will they necessarily receive a prepunched request card in their Area.
- [4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.
- [5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.
- [6] Any reference made to DPD Departments (or regions) as sources of information or for manuals, etc. should be understood to mean the comparable WT Department (or corresponding organizational level).
- [7] Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.
- [8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. **NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.**



**PL/I MOVES AHEAD WITH VERSION 4**

IBM continues to extend the functional scope and capability of PL/I Version 4 of the OS/360 PL/I F level compiler will be available July 31, 1968.

In two years OS/360 PL/I has advanced with the announcement and delivery of four major versions of this compiler:

- August 1966 ..... the first PL/I compiler release.
- January 1967 ..... primarily a functionally oriented release.
- October 1967 ..... a performance oriented version.
- July 1968 ..... will provide additional and major features described below:

**Functional Additions:**

- . *LOCATE - mode record Input/Output*  
improving throughput by processing directly in Data Management I/O buffers.
- . *List processing facilities*  
enabling indirect referencing for data chaining and table handling.
- . *Variable length record handling*  
permitting processing unknown length records as well as self-defining records.
- . *Intermixed record formats*  
processing of files with varied record descriptions using the list processing and LOCATE mode facilities.
- . *PL/I Tasking*  
allowing the creation and priority control of tasks within a PL/I program with OS/360 MVT.
- . *Checkpoint/Restart*  
enabling use of OS/360 Primary Control Program checkpoint facility.

**Performance Improvements:**

- . *Additional in-line conversions*  
improved performance of a variety of data conversions including arithmetic, numeric and string data.
- . *Improved PL/I Housekeeping*  
reduces overheads of many PL/I procedures.

**Usability Features**

- . *Increased dictionary capacity*  
a 3.5 to 1 increase permitting compilation of significantly larger program segments than previously possible.

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**FOR IBM INTERNAL USE ONLY**

Release Date: May 16, 1968  
Distribution: All Areas

- . *COBOL data set communication*  
enabling data set interchange with OS/360 COBOL.
- . *Listing improvements*  
pinpoints object core required for data and generated code.

These and many other features including planning considerations are detailed on the following pages. Existing and planned PL/I programs should be examined to take advantage of these latest and significant improvements.



John Fahey  
Director of DP Marketing

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed concurrently to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

- [1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.
- [2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.
- [3] When a new version of a program is announced, current users must order it; they will not receive it automatically nor will they necessarily receive a prepunched request card in their Area.
- [4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.
- [5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.
- [6] Any reference made to DPD Departments (or regions) as sources of information or for manuals, etc. should be understood to mean the comparable WT Department (or corresponding organizational level).
- [7] Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.
- [8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. **NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.**



## Functional Additions

### Locate Mode Input/Output

Locate Mode Input/Output permits the processing of data directly in the I/O buffer areas. The language implemented is:

- LOCATE statement
- SET option in the READ statement
- REWRITE statement without the FROM option

The user of locate mode I/O is responsible for the correct alignment of data within the buffers.

### Based Storage and List Processing

The List Processing facilities included are: the use of offsets, or relative pointers, in addition to pointers. The REFER attribute has been introduced for the definition of self-defining structures and the processing of variable length records. The new attribute is specified in the revised SRL IBM System/360 PL/I Reference Manual, C28-8201-1.

The List Processing features implemented are:

- IN and SET options in the ALLOCATE statement
- IN option in the FREE statement
- AREA, BASED, POINTER, OFFSET, REFER attributes
- NULL, NULLO, EMPTY, ADDR built-in functions
- AREA ON condition
- Pointer qualification

### VARYING strings in Record I/O

Record I/O is permitted on scalar VARYING strings of varying length.

### Tasking

The tasking facilities of PL/I permit the creation and control of tasks within a PL/I program. The language facilities implemented are:

- TASK, EVENT and PRIORITY options in the CALL statement
- WAIT statement
- EVENT option in the DISPLAY statement
- UNLOCK statement
- NOLOCK option in the READ statement
- EXCLUSIVE attribute
- EVENT and TASK attributes
- COMPLETION, STATUS and PRIORITY built-in functions and pseudo-variables

### Checkpoint and Restart

The PL/I user may call a library routine for interface with the OS/360 checkpoint facility, available with the Primary Control Program.

### STRINGRANGE

The STRINGRANGE prefix and ON condition permit control over processing with the SUBSTR built-in function or pseudo-variable where the substring does not lie within the source string.

### PUT DATA

The PUT DATA statement is permitted without a data list. It causes all variables known at that point in the program, to be written according to the rules of data-directed output.

### Positioning Control for Stream I/O

The LINESIZE option may now be specified for files processed by STREAM transmission without the PRINT attribute. The SKIP option and SKIP and COLUMN format items may be used in GET and PUT statements for these files.

### DELETE Statement

The DELETE statement is supported for sequential access to data sets with INDEXED organization.

### Carriage Control in Record I/O

Options CTLASA (ASA control) and CTL 360 (machine code control) in the ENVIRONMENT attribute cause the first character of a record to be interpreted as carriage control.

## Performance Improvements

The following improvements will be made in the speed of object program execution. Their effect depends on the usage of the features in an individual program:

### Conversions

In-line code is generated for certain cases for conversions between the following data types, in addition to the in-line conversions already implemented in Third Version.

- Fixed binary to fixed-length bit string
- Fixed-length bit string to fixed binary
- Float to fixed binary

Execution speed for these conversions will be improved by at least 5 to 1.

### PL/I Housekeeping Overheads

Further reductions are made in the overheads for invoking small PL/I procedures by using static rather than dynamic storage for procedures which are neither REENTRANT nor RECURSIVE. The overhead for such a procedure is reduced by approximately 1.5 to 1.

### VARYING Strings

In-line code is generated for assignment to VARYING character strings and concatenation of VARYING strings, provided that the maximum length is not greater than 256 bytes. Execution speed for these operations is improved by up to 1.5 to 1.

. Constant Subscripts

If a subscript to an array reference is a decimal integer constant and the corresponding multiplier is constant, then the addressing calculation is performed at compile time.

. Constant Expressions

Signed constants and concatenation of string constants are processed at compile time.

. Commoning of Base Registers

A common register is used for a number of references to the same variable, when the referencing of the variable requires more than one instruction.

**Usability Features**

. Dictionary Capacity

The capacity of the dictionary of the PL/I F compiler has been increased by 3.5 to 1 (1.5 to 1 if the SIZE compiler option specifies less than 52K bytes). This feature permits the successful compilation of programs which would previously have caused the dictionary to overflow.

There is a degradation of compile performance varying between 5% and 20% using this feature: it is therefore invoked by a compiler option EXTDIC.

. Data Set Communication with COBOL

Specification of COBOL in the ENVIRONMENT attribute permits the reading and writing of data sets created using the COBOL algorithm for mapping structures.

. Blocking Factors for SYSIN, SYSPRINT

The maximum blocking factor for SYSIN and SYSPRINT may be increased provided that sufficient core remains available to the compiler.

. Macro Deck Option

The use of compiler option MACDCK will cause the output from the compile time processor to be placed on the SYSPUNCH file.

. Source Listing Control

A third argument may be specified in the SORMGIN option to specify a column in the source records to be interpreted for carriage control for the source program listing.

**Planning Considerations**

. Incompatible Changes

The following incompatible changes may cause some programs to give different results under Third and Fourth Versions of the PL/I F compiler:

**Concatenation Operator**

The concatenation operator is moved above the comparison operators in the priority list determining the order of evaluation of an expression. Additional

parentheses will ensure compatible results. This change is provided to align PL/I with commonly accepted usage.

**String to Arithmetic Conversion**

Strings will be converted to arithmetic data of maximum rather than default precision in those cases where the precision cannot be deduced from the context. The FIXED built-in function may be used to ensure compatible results. This change prevents loss of high order significance.

**E and F Format Items**

Data written out with E and F format items will be rounded.

. Tasking

The tasking facilities provide an advanced, new function. Careful program development planning and debugging are necessary to assure proper program execution synchronization within programs using this feature. Additionally, while object execution performance may be improved by using the PL/I tasking facility, some additional object core will be required. The Programmer Guide C28-6594 will provide the appropriate guidelines for effective use of the tasking facility.

Use in the PL/I program of TASK, EVENT or PRIORITY options in a CALL statement requires MVT.

Use in the PL/I program of a WAIT statement with multiple events requires the Multiple Wait option to be used in System Generation.

Use of the TASK, EVENT or PRIORITY options in a CALL statement requires the programmer to specify TASK as an option in the OPTIONS list of each external procedure in the program.

. Data Management

The specification by the user of a REGIONAL or INDEXED data set organization, requires the presence in his generated system of BDAM and ISAM modules respectively.

The presence of BSAM/QSAM is always required.

. Publications

Details of these features are provided in the following revised publications:

IBM System/360 PL/I Reference Manual, C28-8201

IBM System/360 Operating System PL/I (F) Programmer's Guide, C28-6594

IBM System/360 Operating System PL/I Library, Computation Subroutines, C28-6590

The IBM System/360 PL/I Reference Manual, C28-8201 completely specifies the PL/I language in OS/360.



**FUNCTIONS AND FACILITIES OF CARE A/S INCLUDED IN SHAS**

This announcement cancels P67-140.

All hospital accounting program functions and facilities formerly announced as Clinical and Administrative Records System Accounting System (CARE A/S) will now be contained within the Shared Hospital Accounting System (SHAS) in a 32K non-Teleprocessing minimum configuration. The CARE A/S, announced for availability September 16, 1968, is withdrawn.

Customers affected by these changes should be notified promptly.

See below for more details, new schedules, and documentation.

**SHARED HOSPITAL ACCOUNTING SYSTEM (SHAS) TO BE RELEASED IN THREE PHASES**

This announcement supersedes P67-5, P67-6 and P67-104.

**Significant Changes:**

- Originally announced for 2Q68, SHAS will now be released in 3 phases between June 28 and October 30.
- Additional Program Facilities and Reports
- Minimum Configuration: The SHAS application programs without Teleprocessing will now operate in a 32K minimum core system. (64K minimum core still required for any system using any Teleprocessing functions including inquiry.)
- The 32K non-Teleprocessing version of SHAS was formerly announced as the CARE Accounting System.
- All program functions and facilities of both SHAS and CARE A/S are being provided except General Ledger Inquiry.

**Additional Information:**

- Inquiry Capability is clarified into 2 levels (see

Published by DP Sales Publishing Services, WTHQ

below).

- Special Installation Information has been added to the sales manual page which is most significant.

**Availability:**

- Phase 1 - June 28, 1968
  - Accounts Receivable System
  - Background Monitor Requirements
  - A/R Report Format Control Programs
  - A/R Hospital Profile Load Programs
  - A/R Balance and Edit Programs
- Phase 2 - September 16, 1968
  - Foreground Monitor System (SHAS Teleprocessing)
  - Accounts Receivable Inquiry
- Phase 3 - October 30, 1968
  - Patient Billing System
  - Billing Inquiry
  - General Ledger System
  - Cost Allocation Programs
  - Job Accounting Programs

**Additional Program Facilities and Reports: (Not previously announced)**

- Accounts Receivable
  - New Accounts Report
  - A/R Changes
  - Bad Debt Report
  - Deleted Bad Debts
  - Family Directory
  - Account Directory - Alpha and Numeric Sequence
  - Guarantor Directory

- Patient Billing
  - Religion Census
  - Census Summary
  - Daily Balance Forward on both regular and alpha census
  - Statistics
    - Medicare
    - Non-Medicare
    - Title XIX
    - Cumulative
    - Male/Female
    - Outpatient
  - Inpatient Bills
    - Medicare Cycle, Part A
    - Medicare Final, Part A
    - Summary Cycle
    - Summary Final
  - Outpatient Bills
    - Summary
  - Inquiry Bill Detail by Insurance Summary

Additional System Features

- Outpatients - three types with automatic discharge
- Revenue Information in Doctor Analysis
- Bad Debt Account Processing
- Proration Insurance Plan Coding Procedures
- Background Monitor Job Scheduler, including Uniform Restart Capability
- Contract Accounts Receivable Processing and Reporting
- Hospital Profile - with Load and Maintenance Programs
- Four Insurance Plans (Instead of three previously planned)

Inquiry Capability: (Available only with Teleprocessing)

Billing Inquiry: Two levels of billing inquiry are provided. The first level provides the most rapid response on the status of a patient account, while the second provides the most detail on the account.

At the first level, upon inquiry, a summary bill indicating patient and third party billing amounts by insurance classification is returned to the terminal. Each bill is retrieved from a billing index file created during the daily billing run, and is current as of that run. This inquiry is called Billing Index Inquiry.

At the second level, upon inquiry, a summary or detail bill is returned to the terminal. This bill has the same format as a final patient bill, listing specific insurance classifications as well as indicating patient and third party billing amounts as of the last update of the master file. This bill can be obtained either between jobs processed in the background partition or while the system is dedicated to the inquiry billing programs resident in the background partition (e.g. during peak checkout hours). When a background job is completed, the inquiry billing program processes pending inquiries and transmits prorated up-to-date billing information to inquiring terminals. This inquiry is called Billing Master Inquiry.

Therefore, Billing Index Inquiry provides the capability to obtain a summary patient bill quickly and without foreknowledge of the patient's dismissal from the hospital. Billing Master Inquiry can also be used to provide a prebilling capability. In this case, batches of anticipated patient dismissals can be entered via the terminal card reader or keyboard. More detailed bills are processed and returned to the terminal for later presentation to patients upon dismissal from the hospital.

Accounts Receivable Inquiry: In A/R similar inquiry support is provided. At the first level, account status including account number, name, and patient balance is returned to the inquiry

terminal from the information on the A/R Index. The second level inquiry provides A/R Index information or account status information in the form of the A/R Status report. The second level inquiry response, like its billing counterpart, is created between jobs being processed in the background.

Ledger Inquiry for General Ledger will not be provided.

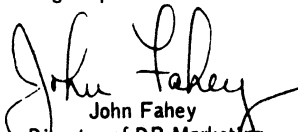
Availability and form number of a new Application Description Manual will be announced in a Publication Release Letter. Preliminary copies may be obtained from your Medical Industry Marketing Representative. The current manual (H20-0302-0) is now obsolete.

A series of customer classes for SHAS will be conducted on a schedule to be announced by Medical Industry Marketing.

Customers affected by these changes should be notified promptly.

The revised sales manual text appears on the next page.

For further information contact your Medical Industry Marketing Representative.



John Fahey  
Director of DP Marketing

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed concurrently to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

- All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.
- Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.
- When a new version of a program is announced, current users must order it; they will not receive it automatically nor will they necessarily receive a prepunched request card in their Area.
- Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.
- All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.
- Any reference made to DPD Departments (or regions) as sources of information or for manuals, etc. should be understood to mean the comparable WT Department (or corresponding organizational level).
- Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.
- References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

**Shared Hospital Accounting System (SHAS):** SHAS provides hospital accounting for the multiple hospital environment. The member hospitals are tied to the central computer facility by Teleprocessing terminals. The accounting applications are Patient Billing, Accounts Receivable and General Ledger. Accounting for both in-patients and outpatients is provided. In addition to Medicare cost allocation, SHAS determines Medicare insurance proration facilitating the preparation of the Medicare Inpatient and Outpatient billing forms. The design of SHAS facilitates the addition of clinical or administrative user written programs. SHAS programs are designed to provide better administrative and operational control and reduce the ever increasing clerical load associated with hospital administration.

**Description:** The SHAS programs and the System/360 using remote terminals encompass the application areas of Patient Billing, Accounts Receivable and General Ledger for multiple hospitals.

The SHAS applications operate in two modes: on-line entry of data and receipt of reports by means of Teleprocessing terminals and off-line data entry and reporting at the central data processing location. The SHAS programs provide the on-line facility for those applications where immediacy of the information is significant (entry of charges, cash payments, request for demand bills, etc.). For other applications, receivable statement writing, etc., the central facility (with its high speed printer) is used directly.

#### Features:

##### General

- Input Edit Tables and Report Format Control provide flexibility at the user's option to tailor the input and output for each application.
- Hospital Profile provides for individual hospital processing decisions and parameters tailoring SHAS program processing to each hospital on the system.
- The SHAS Executive provides the capability for processing foreground and background programs. Several terminals can transmit and receive data concurrently through foreground programs while batch applications are processed by background programs.
- Job Accounting statistics including terminal and CPU utilization are logged internally and are available in report form.
- Security is attained through input and data set identifications to limit access of data. Each hospital is permitted to inquire into or modify its data only.

##### Executive

Manage communications lines ... Handle the timer ... Handle interrupts (e.g., demand bill request and inquires) ... Queue messages ... Manage input/output.

##### Patient Billing

Setting up patient's files upon admission to hospital ... Central pricing of hospital services ... Charge posting ... Census ... Insurance proration (including Medicare) ... Record cash payments ... Daily Balance Forward printed at the hospital ... Inquiry on the status of patient accounts (detail and summary patient bills) ... Automatic preparation of patient bills ... Automatic printing of insurance statements ... Automatic transfer to accounts receivable ... Accumulation of revenue and usage data for Medicare requirements.

##### Accounts Receivable

Preparation of statements ... Recording cash payments ... Receivable accounts stored either off-line or on-line ... Inquiry on the status of receivables ... On-line account validity check for off-line receivables ... Listing of accounts which require a final diagnosis ... Listing of receivables by financial class ... Aged trial balance ... Listing of accounts which have insurance receivables ... Listing of accounts which fail to meet installment payments ... Consolidated statement for family billing ... Bad debt reports.

##### General Ledger

Ledger posting ... Trial Balance ... Comparative Income and Expense Report ... Balance Sheet ... Operating Statement ... Cost allocation methods suitable for Medicare - stepdown and double apportionment.

**Special Sales Information:** Designers of specific Teleprocessing line configurations should consider the impact of increasing memory requirements for DOS Supervisor, QTAM, or compiled COBOL modules.

The application programs include the provision to read and write at the central facility all input and output data that is normally transmitted from terminals. This feature is applied to implement systems without Teleprocessing capabilities.

**Special Installation Information:** SHAS is a powerful, sophisticated, and complex hospital data processing system.

Customers involved with SHAS installations must have a thorough working knowledge of DOS and COBOL, and of QTAM if the installation will have Teleprocessing. The flexibility features e.g. hospital profiles, that let SHAS serve the individual needs of each hospital, also increase its complexity of operation and length of required learning time.

In considering the installation and conversion effort and support, a separate system is being installed in each using hospital - not just one central computer. Each hospital becomes a computer system user and an IBM customer. Data preparation must be carefully analyzed by the central SHAS site to ensure that proper controls are maintained. Accounts Receivable should be installed first to provide a base of experience with SHAS. These programs use a small number of master files, have a low user urgency if daily running may be delayed, and provide a logical entry into the patient accounting use of SHAS. Special attention should be focused on the preparation of accurate A/R

data files for entry into the system. A/R volumes also should be accurately determined in advance to make sure file space is adequate. A non-TP System installed first will give the user SHAS experience prior to installing terminals in the hospitals.

SHAS proposals involving multiple users or Teleprocessing should be reviewed by Systems Assurance.

**Use:** The SHAS system processes input data against patient and account master files. These files are established through procedures supported by the SHAS programs. Patient admissions and dismissals, charges, payments, and accounting transactions are processed for multiple or single hospitals. Teleprocessing provides an alternate input method and an alternate output for certain operational reports and inquiries. Volume output reports are printed centrally in a Teleprocessing system. File update and report jobs are controlled by the central operator through a higher level function language (series of cataloged job steps).

Balance and edit, maintenance, and error reporting programs process data for all applications. Update programs in each application maintain and back-up tape and Indexed Sequential disk master files. Report programs can select data for individual hospitals from billing and receivables tape and disk files. The Background Monitor supports function initiation and uniform restart capabilities for operator control. The Teleprocessing Foreground Monitor is assembled from user Teleprocessing network specifications.

**Customer Responsibilities:** A thorough understanding of the system (by personnel in the central facility) before installation ... a thorough understanding of DOS and COBOL, including operating experience with DOS ... a thorough understanding of QTAM for installations with Teleprocessing ... selection of terminal site ... creation of master files ... terminal operation manuals for clerical personnel affected ... preprinted forms for certain reports ... customize formats specified by the user by means of SHAS Input Edit Tables and Report Format Control modules ... create hospital profile parameter records ... make necessary arrangements for communication lines and equipments.

**Programming Systems:** The Shared Hospital Accounting System (SHAS) operates under DOS/360. The application programs are written in COBOL and Assembler Language. Also used are Sort/Merge and Utility Programs. Teleprocessing programs utilize Queued Teleprocessing Access Method (QTAM).

**Minimum Teleprocessing System Requirements:** 2030F Processing Unit (64K), Decimal Arithmetic (#3237), Floating Point Arithmetic (#4427), Interval Timer (#4760), Selector Channel - 1st (#6960), Selector Channel - 2nd (#6961), Storage Protection (#7520) ... 1052 Printer-Keyboard with appropriate attachments ... 2821 Control Unit Model 1, 100 lines per minute Printer Adapter (#3615) ... 1403 Printer Model N1 ... 1416 Interchangeable Train Cartridge ... 2540 Card Read Punch Model 1 ... 2841 Storage Control Model 1 ... three 2311 Disk Storage Drives Model 1 ... 2415 Magnetic Tape Unit and Control Model 1 ... 2701 Model 1 Data Adapter Unit, Terminal Adapter - Type 1 (#4645) or, 2702 Model 1 Transmission Control, Terminal Control - Type 1 (#4615), Selective Speed (#9684), and IBM Line Adapters as required. System control terminal at the central computer site includes 1051 Control Unit Model 2, First Printer Attachment (#4408) ... 1052 Printer-Keyboard Model 2.

Terminal configuration at each hospital uses 1050 series equipment. Recommended are 1051 Control Unit Model 2, First Printer Attachment (#4408), First Reader Attachment (#4411), IBM Line Adapter (#469X), Line Correction (#4795), Line Correction Release (#4796) ... 1052 Printer-Keyboard Model 2 ... 1056 Model 1 Card Reader ... 29 Card Punch Model A22\* ... 59 Card Verifier Model 2.

\*Self-Checking Number (#7062) may be additionally specified for card punch as desired by the user.

**Minimum Non-Teleprocessing Machine Configuration:** (Formerly announced as the CARE Accounting System.) A 2030 Processing Unit Model E (32K) with Decimal Arithmetic (#3237), Floating Point Arithmetic (#4427), Interval Timer (#4760), Selector Channel - 1st (#6960), Storage Protection (#7520) ... 1052 Printer-Keyboard with appropriate attachments ... 2821 Control Unit Model 1 ... 1403 Printer Model 2 ... 2540 Card Read Punch Model 1 ... 2841 Storage Control Model 1 ... three 2311 Disk Storage Drives Model 1 ... one 2415 Magnetic Tape Unit and Control Model 1.

**Program Support Material:** Shared Hospital Accounting System (SHAS) Application Description Manual, H20-0302-1. The previous manual, H20-0302 is obsolete.

For further information contact your Medical Industry Marketing representative.

Brackets have been eliminated because of the many changes to the SHAS program.



**DOS/360 EXTENDED TO SUPPORT 2826 PAPER TAPE CONTROL UNIT MODELS 1 AND 2, 1017 PAPER TAPE READER AND 1018 PAPER TAPE PUNCH**

Programming Support for the 2826 Model 1, the 1017, and the 1018 will be an extension of the DOS/360 Consecutive Paper Tape IOCS. Support for the 2826 Model 2, the 1017, and the 1018 will be an extension of the current DOS/360 Basic Telecommunications Access Method (BTAM). Details are below.

Availability will be July 31, 1969.

*John Fahey*  
John Fahey  
Director of DP Marketing

**CONSECUTIVE PAPER TAPE IOCS**

The DOS/360 Consecutive Paper Tape IOCS is being expanded to include:

- 2826 Control Unit Model 1
- 1017/1018 Paper Tape Reader/Punch

This new programming support is that of the 2671 Paper Tape Reader expanded to meet the 2826/1017/1018 requirements. The existing programming support for the 2671 is not affected by this extension.

The extended parts are:

- The declarative macro-instruction DTFPT and
- The declarative macro-instruction PTMOD in the Logical IOCS.
- The transient error routine for the 1017/1018 devices in the Physical IOCS.

**Minimum System Configuration ...** System/360, 16K bytes of main storage ... Multiplexer Channel ... Otherwise, configuration (CPU Features, number and types of I/O devices and channels) required by the Disk Operating System.

**Devices supported ...** 1017/1018 Paper Tape Reader/Punch ... 2826 Control Unit Model 1. This Control Unit can operate up to two readers and two punches simultaneously. It must be attached to the Multiplexer Channel.

**Publications ...** A Technical Newsletter to IBM System/360, Disk Operating System Supervisor and Input/Output Macros, C24-5037 will be announced in a future Publications Release Letter.

**BASIC TELECOMMUNICATIONS ACCESS METHOD**

The DOS/360 Basic Telecommunications Access Method is being expanded to include the:

- 2826 Control Unit Model 2
- 1017/1018 Paper Tape Reader/Punch

The 2826 Control Unit Model 2 allows attaching up to eight readers and eight punches. Only one reader and one punch can operate simultaneously via the I/O multiplexer channel. One subchannel is assigned to the readers and one to the punches.

The system uses the "service request" concept; that is, the 1017 Paper Tape Reader signals to the CPU, through the 2826 Control Unit, that data is to be requested from a device. "Service request" is initiated by operating the start key of the reader which causes "Device End" to be sent to the CPU. Then the device is in the ready state. The program contacts the readers which are in the ready state according to a scanning list specified by the user. This facility is not available to the 1018 Paper Tape Punch; the system punches the tape under control of the user's program, not upon "service request."

Integration of the 2826 support in DOS/BTAM is governed by the following rule: user's programs handling Teleprocessing devices other than the 1017 Paper Tape Reader and 1018 Paper Tape Punch with the existing DOS/BTAM will be able to run on DOS/BTAM supporting the 1017 and 1018 attached to the 2826 Model 2, without any changes at the source and the object-code levels.

The Teleprocessing functions performed by BTAM routines are extended to meet the 2826/1017/1018 requirements. The extended parts are:

- The declarative macro-instructions DTFBT and BTMOD
- The data-handling macro-instructions READ and WRITE

**Minimum System Configuration ...** System/360, 32K bytes of main storage ... Multiplexer channel, since the 2826 Control Unit, Model 2, is attached to this channel ... Otherwise, configuration required by the DOS/360 BTAM.

**Devices supported ...** 1017/1018 Paper Tape Reader/Punch ... 2826 Control Unit Model 2.

**Publications ...** A Technical Newsletter to IBM System/360, Disk Operating System, Basic Telecommunications Access Method, C30-5001 will be announced in a future Publications Release Letter.

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Distribution: All Areas

SEE REVERSE SIDE FOR  
"NOTE TO WORLD  
TRADE READERS"

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**A NEW MODIFICATION TO VERSION 2  
OF SYSTEM/360 ATTACHED SUPPORT  
PROCESSOR (ASP) SYSTEM**

Extensions of the ASP system supporting the use of the OS/360 Multiprogramming with a Variable Number of Tasks (MVT) Control Program and allowing control of application job execution on the Support Processor will be available December 20, 1968. With these extensions, the ASP system will provide the performance advantages of Multiprogramming (MVT) with the operational advantages of the ASP system on from one-to three-processor systems.

With the support of OS/360 MVT, the ASP system adds the capability for supporting the concurrent execution of several jobs on the Main Processor. The number of jobs to be executed concurrently will be determined on a dynamic basis by the ASP system. Only as many OS/360 initiators will be started as there are jobs which may be concurrently executed. Available core storage will be automatically analyzed to determine whether an additional job may be started. In addition, the ASP system will schedule jobs for execution by programmer-supplied job classification to balance the Main Processor's workload.

This scheduling algorithm will attempt to maintain a balance between high and intermediate input/output and high-compute jobs to optimize CPU utilization.

Job execution on the Support Processor permits the Support Processor to execute jobs from the ASP job queue under control of the ASP system, which is executing as a high-priority task with OS/360 MVT. This feature allows an installation to utilize excess computing capacity of the Support Processor for the execution of jobs and provides a means of continuing system execution from an existing job queue when the Main Processor is unavailable (provided the system is suitably configured to support this mode of operation). In addition, this feature extends the ASP system to this single processor user, who may now obtain the operational advantage of ASP (except for 709X Emulation) by using ASP as a high-priority task to control job execution for his processor.

For details see the reverse side, the System Description Manual (H20-0466-1), which describes the facilities that are currently available in Version 2, Modification Level 0, and a revised System Description Manual (H20-0529) which includes a description of support for MVT and local execution.

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John Fahey  
Director of DP Marketing



**Attached Support Processor (ASP):** ASP is a multiprocessor operating system extension of System/360 Operating System (OS/360). (360A-CX-15X)

Version 2 extends ASP Version 1 to support Dual Main Processors. Improvements have also been added to enhance system operation and to facilitate implementation of local modifications and extensions. Through a reduction in required operator intervention, ASP provides an improved operational environment, enhancing system workload capacity and reducing turnaround time. The Version 2 configuration consists of two or three IBM System/360 computers connected via the channel-to-channel adapter. The Support Processor (Model 40 or larger) provides the support functions (including card reading, punching, and printing) under computer control, while one or two high-speed Main Processors (usually Models 50, 65, 75, or 85) perform the application workload. ASP also permits intermixing of OS/360 and 709X Emulator (360C-EU-729) jobs in the input stream, supports remote job processing from STR terminals, and permits other background functions to share Support Processor CPU time with the primary support functions.

**NOTE:** The Version 2 ASP system introduces a new resource scheduling concept and revised control table formats. Consequently, customer program modifications or extensions to ASP Version 1 must be converted to be used with a Version 2 system. Instructions for conversion of Dynamic Support Programs are contained in the ASP System Programmer's Manual - Version 2 (H20-0323-3).

**Description:** The ASP Supervisor operates as a single-step job in the Support Processor under control of OS/360. Either the Primary Control Program or the Multiprogramming with Fixed Number of Tasks (MFT) Control Program may be used. The ASP Supervisor schedules and initiates the various support and background functions. It is multiprogrammed within itself to minimize the overhead associated with the Sharing of CPU and channel time. Excess CPU capacity may be absorbed by other OS/360 tasks if MFT is utilized on the Support Processor.

The Main Processor operates under the OS/360 Primary Control Program. The system input and output devices for the Main Processor are replaced by the channel-to-channel connection with the Support Processor. Direct access storage devices for systems residence and program library are attached to the Main Processor, as are any input/output devices accessed during execution by the problem programs. The operating system in the Main Processor provides an environment for the problem program identical to a standalone system. The performance of the system is directly related to the throughput capability of OS/360 on the Main Processor.

Modifications incorporated into OS/360 permit 709X Emulator and OS/360 jobs to be intermixed in the input stream. Operating System/360 used in the Main Processor is modified to overlay itself with the Emulator program upon a signal from the Support Processor. The 709X Emulator program is similarly modified to overlay itself with OS/360 at the end of an emulation job or a group of consecutive emulation jobs. The Emulator program is also modified to recognize the channel-to-channel adapter as its system input and output devices. Thus, the system input and output streams for Emulator jobs are handled by the Support Processor in the same manner as are those for OS/360 jobs.

The ASP system will accept job streams from remote computer terminals over STR transmission lines. It will support three input/output data formats for remote job processing. One is compatible with the IBM 1974 or the IBM 1978 terminals (RPQ devices). The second is oriented toward IBM System/360 Model 20's and the third is designed for other System/360 processors equipped with proper STR features on a 2701 Data Adapter Unit and the IBM 1130 system. This data format is suitable for any computer which has an eight-bit byte data format and which can accept STR transmission. Note that the ASP system does not include the customer programming necessary in the remote terminals.

If the workload capacity at an installation exceeds one Main Processor, the ASP Support Processor can be expanded to support an additional Main Processor, balancing the total installation workload between the two. In this configuration, termed a Dual Main Processor System, the Main Processors need not be symmetric but, rather, may be any combination of permissible Main Processors. Jobs will be distributed to the available system based upon job priority, device requirements, and processor dependency (including the requirement for 709X Emulation). The application programmer will be responsible for specifying processor dependency (for example, data set dependency), via an ASP control card, if such a dependency exists. The system will provide the programmer with adequate information concerning job execution to enable him to direct subsequent job submissions to the correct processor if required.

**Future Modification:** The ASP system will be extended to support the use of OS/360 Multiprogramming Variable Number of Tasks (MVT) Control Program. With this extension, the ASP system will provide for the execution of several jobs concurrently. The ASP system maintains control of Main Processor execution, varying the depth of multiprogramming based upon the current job mix. An attempt is made to optimize the scheduling of jobs to balance the computer workload and to take maximum advantage of the available core storage. The ASP system will also be capable of supporting the execution of application programs on the Support Processor operating under the OS/360 Multiprogramming with Variable Number of Tasks (MVT) control program. This mode of execution permits the Support Processor to assume part of the application workload of the installation as if the Support Processor were another Main Processor, and may be used in a single processor environment.

**Features:** The special features of the ASP system are increased system workload capacity; reduction of turnaround time; improved operating efficiency; intermixed OS/360 and 709X Emulator jobs in the input stream (for a Model 65 Main Processor with the 709X Emulator feature); and workload balancing between two System/360 processors.

These features are made possible by:

1. Computer-controlled execution of support functions in a multiprogrammed mode on a lower cost Support Processor. This feature permits -- priority job scheduling ... automatic processing of system input and output data sets ... automatic switching between OS/360 and 709X Emulator jobs ... concurrent processing of peripheral and other user programs, such as Card-to-Tape, Tape-to-Tape, Tape-to-Printer, Tape-to-Card, Card-to-Printer, Card-to-Card, 7090/94 Direct Couple Operating System (DCS) Tape Format Deblocking, Remote Terminal Transmission, Remote Terminal Reception, User-written background programs.
2. Reduction of resource interference on Main Processor in terms of Core Storage -- core buffering of Main Processor input and output data sets in the Support Processor ... CPU Time -- multiplexer channel interference and interrupt service for peripheral input/output devices eliminated in Main Processor ... Data Channels -- selector channel data flow time for system input and output on Main Processor reduced ... Input/Output Devices -- algorithm provided for efficient management of direct access storage devices for system input and output data sets.
3. Pre-execution setup of removable input/output devices on Main Processor.
4. Support of multiple operator consoles for diversification of system operation.
5. Concurrent input/output background processing on Support Processor during emulation on Main Processor.
6. Selective job scheduling for Main Processors and Support Processor devices.
7. Remote job processing from STR terminals.

**Use:** Operational control of the ASP system is exercised by the operator from the console typewriter or an alternate operator console on the Support Processor. A command language is provided to start ASP, to delete and restart jobs, to initiate background processing, to change priority of jobs, and to determine the backlog of jobs in the queue.

ASP provides a standard sequence of functions for each job in the Support Processor: Input Service, Main Processor Service, Print Service, Punch Service, and job purge. This standard sequence may be altered by control cards for a particular job. Special control cards are not required for jobs using the standard sequence. The ASP control cards provide a simple means of altering this sequence for a particular job.

For jobs to be executed under the control of the 709X Emulator, the programmer must use an ASP JOB card and 709X Emulator control cards in addition to the control cards required by the 7090/94 programming system being used. The ASP system separates the ASP control cards and the 709X Emulator control cards from the job stream, presenting the 7090/94 programming system with its system input job stream only. The Support Processor may assume the functions of the on-line unit record devices for the 709X Emulator provided the operator is not required (by program logic) to attend to or examine these devices during program execution.

**Sales Information:** ASP is designed for the user whose computer installation is operated on a job shop basis. The degree to which an installation will realize the functional and performance advantages of the ASP system is determined by the nature of the job mix.

**Customer Responsibilities:** A customer using ASP must take the following steps prior to installation to ensure that the use of the system will be satisfactory:

1. The customer must be responsible for ordering and installing satisfactorily all required communications equipment.
2. Appropriate training must be given the application programmers and system operators in OS/360 and the 709X Emulator, in addition to training in the use and/or operation of ASP.
3. It is highly recommended that a customer system programmer become familiar with the internal operation of the system. This knowledge will enable him to customize the ASP system to the unique operational environment of his installation.
4. The customer is responsible for any programming of remote terminals necessary for their operation.
5. The customer is responsible for converting his own modifications and extensions of ASP from Version 1 to Version 2.

**Programming Systems:** The ASP systems programs are written in OS/360 Macro Assembler Language. Programs to provide additional functions, known as Dynamic Support Programs (DSP's), can be incorporated into the Support Processor by the customer at his installation. These programs also must be written in OS/360 Macro Assembler Language. The minimum OS/360 control program that will execute ASP includes the Primary Control Program, a linkage editor, and the OS/360 utility programs. The OS/360 Macro Assembler program (F-level) must be available if program modifications are anticipated.

ASP users must order these programming systems separately: OS/360, the 709X Emulator program (360C-EU-729), if used, and the Synchronous Transmit-Receive Access Method for OS/360 (360A-SE-33X), if STR terminals are to be used.

**Minimum System Requirements:** The configuration requirements for the Main Processor are identical with those of a standalone processor operating under OS/360, except that the channel-to-channel adapter replaces the normal system input and output devices. If the 709X Emulator is to be used, the Main Processor must have at least

one 2311 Disk Storage Drive for OS/360 and 709X Emulator Checkpoints. The modifications to the OS/360 Primary Control Program nucleus that are required for operation as an ASP Main Processor increase the nucleus by approximately 2500 bytes.

**Support Processor with OS/360 Primary Control Program:** The minimum Support Processor for executing under the Primary Control Program is a Model 40G with two selector channels (one dedicated to the channel-to-channel adapter), one 1052 Printer-Keyboard, Model 7 (Console Typewriter), one 2540 Card Read Punch, one 1403 Printer, Model 2 or N1, and three 2311 Disk Storage Drives. This configuration permits queuing of up to 30 jobs. (A job is considered equal to a combined input and output stream of 5,000 100-byte records.) System capability can be expanded by attaching 1403 Printers Model 2 or N1 ... 2540 Card Read Punches ... 2311 Disk Storage Drives ... 2401 Magnetic Tape Units (at least one nine-track or seven-track tape unit with Data Conversion feature is recommended for system maintenance); the ASP system supports 2401 Magnetic Tape Units for use by background programs.

In addition, a 2701 Data Adapter Unit with the Synchronous Data Adapter Type 1 may be attached for remote job processing. When the number of functions required or the workload capacity needed exceeds the capabilities of this configuration, larger core storage or a faster processor should be considered. An IBM 2314 Direct Access Storage Facility may be substituted for 2311 Disk Storage Drives as the ASP work queue device. The number and type of direct access storage devices, the type of processor, and the size of core depends upon the individual installation's workload. The user should refer to the ASP System Programmer's Manual (H20-0323-3), which contains an algorithm for estimating core storage needs.

The following devices are supported as auxiliary operator consoles in the ASP system:

- . IBM 2740 Communication Terminal attached on a dedicated line through an IBM 2701 Data Adapter Unit
- . IBM 2260 Model 1 Display Station attached through a directly attached IBM 2848 Display Control Model 3 (with the Line Addressing feature)
- . IBM 1443 Model N1 Printer (output only)
- . IBM 1053 Model 4 Printer attached through an IBM 2848 Display Control (output only)
- . IBM 1403 Model 2 or N1 Printer (output only)

**Support Processor with OS/360 MFT or MVT Control Program:** The minimum Support Processor for use of OS/360 Multiprogramming with Fixed Number of Tasks (MFT) Control Program in the Support Processor is the same as for the Primary Control Program except for the following additions:

- . The minimum processor for MFT is a Model 40H. For MFT operation, the minimum partition size for ASP is 100,000 bytes. This system permits independent scheduling of other partitions by OS/360.
- . At least one IBM 2740 Communication Terminal, attached through the 2701, or an equivalent set of console devices, must be added as the ASP operator terminal. Since the IBM 1052 Printer-Keyboard must be reserved for OS/360 system operations in an MFT environment, it is unavailable to the ASP system for operator communications.
- . Under MVT (future modification) if application programs are to run in the support processor, a Model 50I Processor is required. If support of a separate Main Processor is required in this mode of operation, the region size for ASP should be expanded to approximately 150,000 bytes. Consideration should be given to larger region sizes, commensurate with planned system facilities.
- . At least one IBM 2401 Magnetic Tape Unit (9-track or 7-track with Data Conversion feature) should be available for system maintenance.

**Support Processor -- Dual Main Processors:** The minimum Support Processor in a Dual Main Processor configuration is the same as the Support Processor with OS/360 Primary Control Program with the following exceptions:

- . The minimum Support Processor is a Model 50H. For reasons of system performance, the Model 40 is not recommended except under controlled conditions. For Dual Main Processor support, the minimum partition or region size is 200,000 bytes.
- . A minimum of four operator terminals, at least one of which must be an input terminal, must be available to ASP (for example, a 1052 and three 2740s attached through a 2701).
- . A 2314 Direct Access Storage Facility for Support Processor work queue or the equivalent 2311 Disk Storage Drive capacity.
- . At least one IBM 2401 Magnetic Tape Unit (nine-track or seven-track with Data Conversion feature) should be available for system maintenance.

**Note:** These are complex configurations and must be system assured.

**Engineering Change Levels:** In addition to the required engineering changes to run the supported levels of OS/360 and the 709X Emulator, the EC levels required for proper functioning of the ASP system are EC 705754 and EC 254902 on the Channel-to-Channel Adapter (#1850).

**Basic Program Material:**

**Publications \*** -- Application Programmer's Manual (H20-0322-2) ... Console Operator's Manual (H20-0321-3) ... System Programmer's Manual (H20-0323-3) ... Application Directory.

**Machine Readable \*\*** -- Object programs, source programs, OS/360 modifications, 709X Emulator modifications, and macro definitions may be obtained on one full reel of magnetic tape in either nine-track (800 or 1600 bpi) or seven-track (800 cpi, Data Conversion feature required) mode.

**Optional Program Material:**

**Machine Readable \*\*** -- An assembly listing tape may be obtained on one full reel of magnetic tape in either nine-track (800 or 1600 bpi) or seven-track (800 cpi, Data Conversion feature required) mode.

**Ordering Procedures:** See DP Sales Activity section of the Branch Office Manual.

\* If only the form numbered manuals are required, order from the IBM Distribution Center, Mechanicsburg -- not from PID.

\*\* If track and density requirements are not indicated on the back of the program order card, a nine-track tape (800 bpi) will be forwarded.

Magnetic tapes (2400') may be forwarded or ordered (the order card should accompany the tape order form).

**Additional Program Support Material:** System Description Manual (H20-0466-1) which describes ASP Version 2, Modification Level 0 ... System Description Manual (H20-0529) which includes MVT support and local execution.

For further information see the ASP Regional Marketing Representative.



**OS/360 RELEASE 14 REQUIRES EXTRA REEL OF TAPE OR DISK PACK**

Effective today, distribution of the complete OS/360 machine readable material for Release 14 requires an additional reel of tape or 1316 Disk Pack.

This additional tape or disk pack, which is used to contain Release 14 Compiler Maintenance Release as announced in P68-71, must be forwarded with all orders for OS/360 Release 14.

Change the Machine Readable paragraph on Page P 360S.11 of the sales manual to the following:

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed concurrently to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

- 1) All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.
- 2) Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.
- 3) When a new version of a program is announced, current users must order it, they will not receive it automatically nor will they necessarily receive a prepunched request card in their Area.
- 4) Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.
- 5) All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.
- 6) Any reference made to DPD Departments (or regions) as sources of information or for manuals, etc. should be understood to mean the comparable WT Department (or corresponding organizational level).
- 7) Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.
- 8) References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. **NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.**

Machine Readable -- The complete OS/360 is distributed:

For the three Drive 2311 User -- On four 2400 foot reels of magnetic tape, either 9-track (800 or 1600 bpi), or 7-track (800 cpi, Data Conversion feature required), or four 1316 Disk Packs.

For the 2314 User -- On two 2400 foot reels of magnetic tape, either 9-track (800 or 1600 bpi), or 7-track (800 cpi, Data Conversion feature required).

For the Two Drive 2311 User -- The customized OS/360 is distributed on three 2400 foot reels of magnetic tape, either 9-track (800 or 1600 bpi), or 7-track (800 cpi, Data Conversion feature required), or three 1316 Disk Packs.

Altered words are underlined.

**DOS/360 RELEASE 17 MAINTENANCE REQUIRES TWO REELS OF TAPE OR TWO DISK PACKS**

When ordering the DOS/360 Release 17 maintenance package submit:

For 2311 -- two 2400 foot reels of magnetic tape or two 1316 Disk Packs.

For 2314 -- two 2400 foot reels of magnetic tape. Maintenance for 2314 is not available on disk.

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John Fahey  
Director of DP Marketing

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Release Date: June 3, 1968  
Distribution: All Areas



Commercial Subroutine Package, Version 3: Provides the scientific user with added capabilities for handling functions and techniques applicable to commercial programming. All twenty-eight subroutines are callable by the FORTRAN programmer in a similar manner to such standard functions as sine, cosine, square root, etc. (1130-SE-25X)

Description: These subroutines will provide the scientific 1130 user with flexibility to add commercial applications such as payroll, cost accounting, and others.

Features: Variable length alphameric move, compare, edit and fill ... variable length conversion from EBCDIC to real, and from real to EBCDIC ... zone manipulation ... stacker select ... variable length decimal add, subtract, multiply, divide and compare ... sign manipulation ... overlapped printing and carriage control on the 1403 and 1132 Printers ... overlapped reading of cards with conversion of card codes on the 1442 and 2501 Card Readers ... punching of cards on the 1442 Model 5, 6, or 7 ... overlapped printing on the Console printer ... conversion from one character per word to two characters per word ... conversion from one character per word to three characters per word ... conversion from one digit per word to four digits per word.

Programming Systems: All subroutines are written in the 1130 Assembler Language. The internal format of data is one character per word.

Minimum System Requirements: An 8K 1130 card system will be required to execute a mainline program using the Commercial Subroutines. All I/O devices must use either FORTRAN I/O exclusively or Commercial Subroutine Package I/O exclusively.

Basic Program Material:

Publications\* -- Program Reference Manual, including operating instructions, listings, flowcharts and narrative, (H20-0241-3) ... Application Directory.

Machine Readable -- Object Decks and Sample Problem Decks available in card form.

Optional Program Material:

Machine Readable\*\* -- Source decks and sample problems as card images on a 9-track DTR (800 or 1600 bpi).

Ordering Procedure: See DP Sales Activity section of the Branch Office Manual.

\*If only the form numbered manual is required, order it from the IBM Distribution Center in Mechanicsburg -- not from PID.

\*\*DTRs supplied by PID; no tape submittal required.

Reference Material: Application Description (H20-0520) ... IBM 1130/1800 Basic FORTRAN IV Language (C26-3715).

For further information contact your Field Systems Center.



**IBM PROVIDES NEW DOS/360 FORTRAN IV COMPILER**

The new DOS/360 FORTRAN IV compiler will be available January 31, 1969. The full System/360 FORTRAN IV language is supported.

**Highlights**

Language Beyond Basic -- The language level is the same as that of the OS/360 FORTRAN IV (G) compiler. Some of the features which it offers beyond Basic FORTRAN IV are:

- . Data initialization statements
- . COMPLEX and LOGICAL data types
- . Logical IF statement
- . END and ERR parameters to allow testing for end-of-file and error conditions on input
- . Seven dimensions for arrays
- . Labeled COMMON

Language Beyond USASI -- The language is fully compatible with USA Standard FORTRAN IV and includes these extensions:

- . Support of direct access operations on 2311 and 2314
- . Debugging language statements
- . IMPLICIT statement allowing extended implicit classification by first character of a name
- . NAMELIST statement permitting input/output and conversion without an explicit I/O list and FORMAT statement
- . PAUSE statement option allowing output of messages
- . Generalized subscripts

**Features**

DOS/360 FORTRAN IV has:

- . The ability to combine object modules with those produced by Basic FORTRAN IV
- . Compilation of approximately 250 source statements in the minimum 40K bytes of

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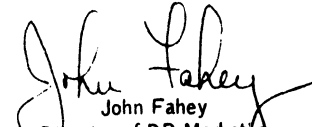
Cancels: Statement of Intent P68-33  
Release Date: June 10, 1968  
Distribution: All Areas

- . main storage
- . Automatic expansion to use additional core, as available, to compile larger programs
- . Batched compilation
- . Phase load overlay routines for object programs
- . An optional pseudo-assembly listing of compiler output
- . Input/output functions equivalent to those of Basic FORTRAN IV under DOS/360
- . Independent selection of LINK and DECK options

**Publications**

TNL N24-5277 to IBM System/360 Disk and Tape Operating Systems Concepts and Facilities, C24-5030-4 ... IBM System/360 FORTRAN IV Language, C28-6515-6.

The availability of a Programmer's Guide will be announced in the Publication Release Letter.

  
John Fahey  
Director of DP Marketing

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IBM World Trade Data Processing

## IBM SYSTEM/360 1287 INPUT CONVERSION PROGRAM IS AVAILABLE

The IBM Input Conversion Program for System/360 is available (360A-DR-07X). It translates cut-form document information from the IBM 1287 Optical Reader into computer-processable data. It requires no programming to implement, is general in nature, and can be applied by a majority of IBM 1287 users.

The scanning, editing, and posting of data are directed by user specified control statements. Inter-mixed document types, recorded with a variety of fonts including handprinting, can be processed by the program. The program will verify algebraic sums and self-check digit protected fields. Optionally, character reconstruction techniques are used when applicable. This will minimize document rejections and increase effective throughput.

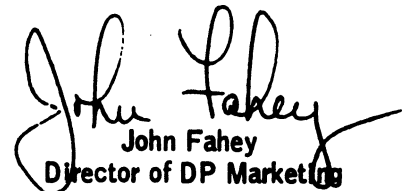
The IBM Input Conversion Program, in conjunction with the 1287, facilitates an economical systems solution for the expeditious and accurate data collection required by an advanced data processing system.

For the new sales manual write-up, see the reverse side. Forms used must be approved through Document Evaluation Program/Input Quality Analysis Program (see the Machines section of the sales manual, pages 1285 and 1287).

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John Fahey  
Director of DP Marketing

Published by DP Sales Publishing Services, WTHQ

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Release Date: June 12, 1968  
Distribution: All Areas

P68-80



**ADDITIONAL INFORMATION ON PROPERTY AND LIABILITY INFORMATION SYSTEM (PALIS)**

This announcement cancels Item B in P67-22 and should be read in its entirety.

The release plan for PALIS is:

- PALIS I program and documentation is now scheduled for release from the Program Library February 28, 1969.
- Certain items in PALIS II have been withdrawn. These are listed below.
- Three items (Master Record Reconstruction, Texas Auto, and Homeowners) have been deferred from PALIS I and will be included in PALIS II which is rescheduled for delivery September 30, 1969. PALIS II then becomes an integral part of the total PALIS program.

Requests for early release of PALIS I documentation or code will require normal Regional, DPD HQ, and DP Group approval. (See Memorandum to DP Branch Managers B68-99.)

Remote Inquiry and Process Other Lines Multilocation Records are withdrawn for 65K systems. The following items are withdrawn (details on back):

- Create Dummy Policy Records on 2321.
- Claims Arising Transactions via 1050 Remote Terminal.
- Process Agency Records.
- Confirm Coverage on Claim (Auto and Homeowners).

Because of pending legislative action in Massachusetts, we are unable to schedule a release date for Massachusetts Automobile Processing. Within 90 days of the date there is a final disposition on current legislative proposals, we will announce our support position on this phase of PALIS II.

All customers affected by these changes should be notified immediately.

For the new sales manual write-up, see page 3 of this announcement.

  
 John Fahey  
 Director of DP Marketing

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Distribution: All Areas

**Items Withdrawn from PALIS II ...** The following four items are withdrawn from PALIS II: Create Dummy Records on 2321 - Invalid transactions will not be maintained as dummy master records on the policy file. The following alternate method has been implemented and is part of Release I -- copies of the incorrect transaction, master record, and an advice on the type of error will be written out when a transaction fails the edit against the master record. Claims Arising Transactions via 1050 Remote Terminal - The entry of a claim through a remote 1050 and indication of a pending claims transaction in a master record will not be supported. Claims transactions may be entered by a batch processing. Process Agency Records - Agency header and trailer records will not be supported by PALIS. Release I of PALIS supports the file organization of policy number within company within agency number sequence and also straight policy number sequence. Confirm Coverage on Claim (Auto and Homeowners) - The automatic claims coverage confirmation will not be supported as the transaction.

**Clarification ... Editing -** The Edit Program provided checks validity of transactions only to insure their acceptance by the file maintenance run.

**Board and Bureau Standards -** The PALIS Author Team has consulted manuals of all boards and bureaus mentioned in the PALIS Application Manual. In our opinion PALIS conforms to most bureau standards and practices in effect on December 1, 1967. Changes in boards and bureaus rating rules, reporting standards, etc., after December 1, 1967, that may require program modification are the responsibility of the user.



## SALES MANUAL TEXT

**Property and Liability Information System for System/360:** Consists of programs which maintain an all lines policy master file. It provides the capability for direct access inquiry to these records.

**Description:** The system consisting of four programs, will perform the following functions:

- The Automobile and Homeowners Programs - rate and write new business ... automatic renewal ... endorsements both premium and non-premium ... cancellations ... provides risk experience ... claims arising ... claims payments and closings.
- The Other Lines Program - maintain a complete insurance record by processing ... endorsements both premium and non-premium ... cancellations ... provides risk experience ... claims arising ... claims payments and closing. These records encompass single location risks only for Release I but will encompass multi-location risks for Release II.
- PALIS Basic Program - provides billing and premium collection for direct billed business ... statistical contributions to bureau reports ... a program to build and update user tables for automobile and homeowners rates ... a program to edit all transactions for format and range of values ... utility programs to aid the installation and modification of PALIS ... programs to load, reorganize, reconstruct and restart the all lines policy file on the 2321 Data Cell ... status inquiry into the all lines policy file via local 2260 Display Terminals ... a run linkage program to interface between DOS/360 and PALIS insurance logic.

The following elements apply to the above PALIS programs:

**Features:** The system takes advantage of the powerful features of IBM System/360 ... The system functions in a Disk Operating System environment ... the flexibility of the system design allows for user defined configurations when processing loads exceed the capacity of the minimum configuration ... both the insurance logic and run linkages provide the flexibility required to make the system adaptable to most companies ... the all lines policy master file is housed in the IBM 2321 Data Cell Drive.

**Customer Responsibilities:** A thorough knowledge and understanding of the system before installation ... write conversion programs to create the master file ... write programming for editing ... write programming to format output for printing, punching, and entry into other systems ... write all routines to satisfy special company policies such as underwriting criteria, loss reserving standards, accounting procedures, etc. ... write any programming required to effect user changes to record format; e.g., expand contract routines, additional programming to handle new fields, etc.; generate and maintain tables for private passenger automobile and homeowners according to the specifications provided; write programs and procedures to provide input transactions to PALIS ... maintain the programs and documentation as changes to bureau requirements dictate changes in logic ... provide additional logic to format replies to inquiries beyond that supplied by PALIS.

**Special Sales Information:** The Property and Liability Information System substantially reduces the customer programming effort and provides the basis for uniformity and systems design throughout the industry ... the meaningful insurance-oriented documentation provided by System/360 COBOL greatly aids in the full understanding of the package ... the modular concept used to develop this system provides the means for the user to expand into a total management information system for all lines of business ... the Property and Liability Information System takes advantage of the advanced capabilities of the Disk Operating System/360.

**Programming Systems:** The insurance logic program modules can be easily understood by the insurance personnel of your company as well as the programming staff since they will be written in Disk Operating System/360 COBOL. The use of System/360 COBOL allows for ease of modifications to the various programs and simplifies program maintenance. Run linkage routines have been written to form an interface between the insurance logic and Disk Operating System/360. Just as the insurance logic program modules are written in a modular fashion, the run linkage is also written in a modular fashion to allow for a wider range of system configurations. The run linkage is written in assembler language.

PALIS uses the following components of the Disk Operating System and the user must become familiar with them -- System Control and Basic IOCS ... Consecutive Tape IOCS ... Direct Access Method ... Group I, II, and III Utilities ... Tape Sort/Merge ... Assembler Language ... COBOL ... DOS Supervisor (BK) ... and RPG.

PALIS also uses the following components of the Operating System/360 and the user must become familiar with them -- DASDI ... initialize 2321 Data Cell. In addition PALIS uses IBM System/360 Flow Chart (360A-SE-22X) for printing of PALIS Flow Charts.

PALIS operates under DOS/360, but does not restrict the users' use of DOS/360.

**Minimum System Requirements:** System/360 Model F30 with Decimal Arithmetic, Selector Channel, and I051 Attachment ... a 1051 Control Unit, Model N1, with CPU Attachment, Systems Console Attachment, First Punch, First Reader and First Printer Attachments controlling a 1052 Printer-Keyboard, Model 8 ... a 2841 Storage Control with 2321 Attachment Feature ... a 2321 Data Cell Drive, Model 1 and a 2311 Disk Storage Drive, Model 1\*\* ... four 2400 series Magnetic Tape Units (at least three of the Magnetic Tape Units must be nine track) ... the required Tape Control Unit(s) ... a 2821 Control Unit with a 1403 Printer, Model 2 and a 2540 Card Read Punch, Model 1\* ... a 2848 Display Control, Model 2 with one 2260 Model 2 Display Station with Display Adapter, Line Addressing, Non-destructive Cursor, and Non-destructive Cursor Adapter.

\*Alternate input/output units supported by DOS/360 may be substituted to satisfy individual company requirements. Consideration must be given to volumes of input and output in light of current throughput speed ... off line system availability ... requirements of programming systems for other user applications.

When inquiry via the 1050 remote terminal is available, the following items are required:

- 2701 Data Adapter Unit with Line Adapter (#4636) and Terminal Adapter (#4645)
- 1051 Control Unit with Line Adapter (#4790) Keyboard Request (#4770), and First Printer Attachment (#4408)
- 1052 Printer-Keyboard

\*\*Two or three 2311s will be required if the user rates auto and homeowners in all fifty states. The auto rate tables are relatively small. The homeowners rate tables are much larger. 2311 file requirements are dependent on the number of states in which the customer now writes automobile and homeowners. 900 tracks are available for the storage of rate tables. The following formulae will assist in the configuration of 2311 file requirements: (The formulae are expressed in number of tracks required).

#### Private Passenger Automobile

Two tracks for each state rated. (Each rate change within the state will require an additional track for that state.)

#### Homeowners

Homeowners are rated on a premium group basis.

Alabama, Arkansas, Arizona, California (1-5), Connecticut, Georgia, Maine, Maryland, Massachusetts, Montana, North Carolina, Nevada, Rhode Island, South Carolina, Utah, Vermont and Washington:  
7.5 tracks + (.8 x number of premium groups)

Alaska, Louisiana:  
8 tracks + (.8 x number of premium groups)

Hawaii, Tennessee, Wyoming:  
(5.5 tracks + (.8 number of premium groups))

Florida:  
10 tracks + (.17 x number of premium groups)

New Jersey:  
7.5 tracks + (.17 x number of premium groups)

Texas:  
163.71 tracks

New York:  
26.5 tracks + (1.2 x number of premium groups)

Virginia:  
13 tracks = (1.5 x number of premium groups)

California (ABC):  
5.6 tracks + (1.2 x number of premium groups)

New Hampshire:  
6 tracks + (.67 x number of premium groups)

All other states:  
5.5 tracks + (1.5 x number of premium groups)

**Program Support Material:** The Application Description Manual (H20-0283) is available from Mechanicsburg. However, this manual is currently being revised and a future Publication Release Letter will list the availability of the revised manual.

For further information contact your Insurance Industry Marketing Representative.



IBM SYSTEM/360 MODEL 20  
REQUIREMENTS PLANNING AND  
INVENTORY CONTROL SYSTEM

This program will be available March 31, 1969.

Description... The system provides manufacturing organizations with easy-to-modify routines to retrieve records or a series of records which have been organized and maintained by the System/360 Model 20 Bill of Material Processor announced in P Letter P67-119.

The package provides an integrated system for requirements planning and inventory control of manufactured and purchased items. It contains four programs which run under an application control program.

Order File Organization  
Status Updating  
Requirements Planning  
Order Policy

This program is designed for execution under the IBM System/360 Model 20 Disk Programming System. It is written in a modular manner to provide for maximum facility in tailoring a customized system with standard or user-specified input and output formats.

For detailed information, refer to the text on the attached sales manual page.

An Application Description Manual, Form H19-0007 will be available. Consult the Weekly Publications Release Letter for actual availability date.

  
John Fahey  
Director of DP Marketing

Attachments: P9021  
Release Date: June 12, 1968  
Distribution: All Areas



DOS/360 BTAM & QTAM TELEGRAPH SUPPORT

The Basic and Queued Telecommunications Access Methods under DOS/360 are being expanded to provide programming support for World Trade telegraph terminals. (See Product Announcement Letter 68-244).

This support will enable the IBM 2701, 2702, and 2703 to control the transfer of data between IBM System/360 and certain European telegraph terminals over leased point-to-point telegraph lines (single current or double current) at speed options of 50, 75 or 100 bits per second. Transmission may be in simplex mode or half-duplex contention mode using either the five-bit International Telegraph Alphabet #2 Code or the ZSC3 Figure Protected Code.

The same programming support will operate with either the existing 2701/2702 World Trade telegraph features, or with the new 2701/2702/2703 World Trade telegraph features being announced at this time.

Telegraph terminals supported are:  
Siemens T37, T68 and T100  
Lorenz LO 15C and LO 133  
Creed Models 75 and 444  
Olivetti Type T2  
Sagem Model SPE

Terminal components supported are the keyboard, printer, paper tape reader and paper tape punch.

Availability

This programming support will be released on November 15, 1968.

Publications

The following publications will be updated by Technical Newsletters to reflect this new support:

TNL N30-5023 to	IBM System/360 Disk Operating System
SRL C30-5001-4	Basic Telecommunications Access Method
TNL N30-5025 to	IBM System/360 Disk Operating System
SRL C30-5004-1	Queued Telecommunications Access Method Message Control Program

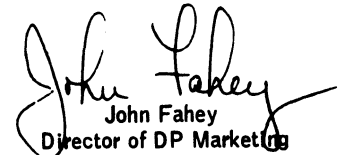
Consult your Weekly Publications Release Letter for actual availability.

Minimum System Configuration

Main storage:           32K bytes - BTAM  
                          64K bytes - QTAM

Standard instruction set  
Storage protection (QTAM)  
One selector channel for system residence  
One multiplexer channel for communication control units  
One card reader\*  
One printer\*  
One 1052 Printer-Keyboard  
One 2311 or 2314 Disk Storage Device  
Communication equipment necessary to interface to the communication line

\*See Sales Manual Programming page P360 N.8, "Minimum System Requirements", for acceptable units and possible substitutions.

  
John Fahey  
Director of DP Marketing



IBM World Trade Data Processing

**SYSTEM/360 MODEL 20 DPS INCLUDES  
MODIFICATION AND 1259 SUPPORT**

System/360 Model 20 Disk Programming System (DPS)  
is available with:

. An expanded program to support the 1259

and

. Modification to various current DPS programs

For details of these additional improvements, and  
ordering procedures, see the reverse side.



John Fahey  
Director of DP Marketing

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed concurrently to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

1. All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.
2. Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.
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5. All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.
6. Any reference made to DPD Departments (or regions) as sources of information or for manuals, etc. should be understood to mean the comparable WT Department (or corresponding organizational level).
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8. References made to Engineering Change requirements should be verified with the local CE office. Although E.C. requirements are identical for WT and IBM, availability and shipping dates will differ. **NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E.C. LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.**

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Distribution: All Areas

P68-83

**SYSTEM/360 MODEL 20 DPS INPUT/OUTPUT  
MACRO DEFINITIONS FOR THE IBM 1419 AND  
1259 (360W-10-193)**

Version 2 of the System/360 Model 20 Input/Output Control Systems for the 1419 has been expanded to include the 1259. The Macro Definitions provide the user with efficient and tested routines which by means of macro instructions and interrupt routines control and optimize Magnetic Character Reader input and printer output. It provides linkage to I/O-routines for card, tape and disk devices.

This program consists of two macro definitions, DTFPD and DSENG, to be included in the macro library of the system pack. If the DPS I/O and Basic Monitor Macro Definitions are expanded by these two macro definitions, the DPS Assembler will generate routines for the IBM 1419 or IBM 1259 as well as for card, tape and disk devices when encountering macro instructions in the user's source program.

**FEATURES:** The routines for the Magnetic Character Reader perform the following functions:

- Engaging and disengaging the MCR
- Document reading
- Document sorting (1419 only)
- Control of document input buffer
- Interrupt servicing
- Testing of field validity indicators and I/O error checking
- Optimized printer output
- Selective tape listing features control (1403 only)
- Programmable pocket light and batch numbering control (1419 optional features)
- Suspension of document feeding and reading to allow magnetic tape or disk operations

The user has to provide a routine for pocket selection, which is entered by the MCR routines under interrupt control. The user is provided a GET macro to retrieve document data from the input buffer. Document data is available sequentially to GET requests. Field error indications and pocket selection codes are associated with the corresponding document data.

**PERFORMANCE DATA:** For performance data refer to the SRL publication "IBM System/360 Model 20, Disk and Tape Programming Systems, Input/Output Control System for the IBM 1419 and 1259 Magnetic Character Reader" (C33-6001-2).

**LIMITATIONS:** The program is not upwards compatible with System/360 Model 30 and higher models.

Documents in the 1419 will reject and the 1259 reader will stop with the stacker command light on if user pocket selection routines exceed the time limits described in the performance section of the above mentioned SRL.

Document rejects may occur if any single user instruction exceeds 2.7 milliseconds. More time-consuming instructions must be split.

Document sorting (1419 only) must be based on fields read in the first 5.8 inches of the document.

**PREREQUISITES:** The DPS System/360 Model 20 I/O and Basic Monitor Macro Definitions (360W-10-192) must be contained in the macro library of the system pack and must be on current level.

**MINIMUM SYSTEM REQUIREMENTS:** The minimum requirement for assembly of programs containing macro instructions for the DPS MCR-10-routines is the configuration required by the DPS Assembler program.

The minimum configuration for execution of such programs depends on processing requirements. Required are:

- A 2020 Central Processing Unit, Model BC2 ... one card reading device (2501 Model A1 or A2, 2520 Model A1 or 2560 Model A1) for object program loading or for initial program loading of the disk-resident system ... a 1419 Magnetic Character Reader Model 1 or a 1259 Magnetic Character Reader Model 1.

**ADDITIONAL DEVICES SUPPORTED:** The DPS MCR-10-routines optimize throughput by providing the best balance between the MCR and

A printer (1403 Model 2, 7, or N1, or 2203 Model A1).

The 1419 MCR Model 1 special features supported are:

Batch numbering ... Dash symbol transmission ... Endorser ... Program control for pocket lights ... Sort Mode 2 ... 51 column sorting.

The 1403 special features supported are:

Interchangeable Chain Train Cartridge ... Universal Character Set ... Selective Tape Listing.

The 2203 printer Model A1 special feature supported is:

- 24 additional print positions

**SRL PUBLICATION:** TNL N33-9041 to IBM System/360 Model 20, Disk and Tape Programming Systems, Input/Output Control System for the IBM 1419 and 1259 Magnetic Character Readers (C33-6001-2).

**MODIFICATIONS TO DPS PROGRAMS**

The programs that have been modified and their current status are listed below:

	Version	Modification
360W-CL-170	1	2
360W-CL-171	1	3
360W-SL-175	1	3
360W-SL-176	1	2
360W-SL-177	1	2
360W-SL-179	1	2
360W-RG-180	1	3
360W-AS-181	1	3
360W-SM-182	2	2
360W-UT-187	1	2
360W-UT-190	1	2
360W-IO-192	1	3
360W-IO-193	2	0

**ENGINEERING CHANGE**

For proper use of current Model 20 DPS programs, at least the following Engineering Change Levels are required:

2020 Central Processing Unit (microprogram)	12103 ECA 163
Storage Control (microprogram)	12448 ECA 316
I/O Channel (microprogram)	12107 ECA 188
Serial I/O Channel (microprogram)	12116 ECA 273
2311 Disk Storage Drive Model 11 or 12	411283
2415 Magnetic Tape Unit Model 1 - 3	730339 ECA 026
Model 4 - 6	730346 ECA 031
1419 Magnetic Character Reader	127244 CEM 167

**BASIC PROGRAM MATERIAL**

Publications -- System/360 Model 20 - Guide to the Disk Programming System, C33-6000 ... Disk Programming System, Operating Procedures, C33-6004-1 ... Disk Programming System, Control and Service Programs, C24-9006, TNL N33-9021 and TNL N33-9027 ... Disk Programming System, Disk Utility Programs, C26-3810-1 with TNL N33-9028, and TNL N33-9035.

Documentation -- Basic Program Material List.

Machine Readable -- Users ordering at least one of the DPS programs will receive the complete set of Model 20 DPS programs with exception of the Distribution Package Retrieval Program 360W-SL-178, which is contained only in distributions on magnetic tapes. The DPS programs are available on one 1316 Disk Pack, one 9-track tape (800 or 1600 bpi), or one 7-track tape (800 cpi) Data Conversion feature required.

The 1316 Disk Pack returned from the program library will contain a running system as well as the card-resident control programs and sample decks in card-image format to be punched. It will be accompanied by five Disk IPL cards to be used for initializing the loading of the running system, which is referred to as the DPS Disk Pack.

Users with 2415 Magnetic Tape Units attached to their Model 20 System should request the programs on tape. The tape will contain the Distribution Package Retrieval Program to be activated by one Bootstrap Card distributed with the tape. The retrieval program will:

- Initialize the first one hundred cylinders of a 1316 Disk Pack.
- Copy a running system as well as the card-resident programs and sample programs in card-image format on to a 1316 Disk Pack.
- Punch the cards for initializing the loading of the DPS Disk Pack.

**ORDERING PROCEDURE**

See DP Sales Activity Section of the Branch Office Manual.

If only the publications or if additional copies are required, order them from the IBM Distribution Center, Mechanicsburg -- not from PID.

If the track and density requirements are not indicated on the back of the program order card, 9-track (800 bpi) will be forwarded.

Magnetic tapes (2400 foot) may be forwarded to PID or ordered. The order card should accompany the tape or tape order form; disk packs must be forwarded to PID with the order form.

Current users will receive a prepunched Program Order Card and a letter announcing the availability of a Maintenance Package and a Replacement DPS/360 System. Also provided will be Ordering Instructions for either the Maintenance Package or the Replacement System. All orders are to be processed through the Branch Office using the prepunched order card.

DTRs are supplied for the Maintenance Package only, no tape submittal is required.

**ADDITIONAL PROGRAM SUPPORT MATERIAL**

The availability of TNL Y33-9028 to the PLM System/360 Model 20 Disk and Tape Programming System for 1259 and 1419, Y33-9009-1, will be announced in a Publications Release Letter.



**TOS/360 RELEASE 11 ADDS  
NEW FUNCTIONS AND  
OTHER IMPROVEMENTS**

**RPG - 360M-RG-408**

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- [5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.
- [6] Any reference made to DPD Departments (or regions) as sources of information or for manuals, etc. should be understood to mean the comparable WT Department (or corresponding organizational level).
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**Programs Modified**

TOS/360 Release 11 is now available.

It includes significant new functions, improved object code performance in RPG, and incremental improvements to existing components.

*New Functions*

- . Sequence checking of source statements will be performed and warning diagnostics produced for out-of-sequence statements.
- . Programmer control of data tape positioning at OPEN, CLOSE, EOJ. An additional entry on the File Description Specification permits the options of REWIND, NO REWIND, REWIND-UNLOAD.

*Object Code Performance Improvements*

- . Printer speed has been improved by overlapping processing with the printer output cycles.
- . Two input/output areas will be assigned to sequential files on card or tape if enough main storage is available. An additional entry on the File Description Specification identifies the relative priority of multiple files when a second area is to be assigned. An entry in the RPG control card specifies the amount of main storage available at object execution.
- . Extraneous logic pertaining to the LO indicator has been removed.

The following programs have been modified and are at the version and modification level indicated:

System Control	360M-CL-405	2 - 5
IOCS	IO-404	2 - 5
OCR IOCS	IO-417	2 - 3
OLTEP	DN-418	2 - 1
Sort/Merge	SM-400	2 - 3
RPG	RG-408	2 - 2
MPS Utilities	UT-411	2 - 1
FORTRAN	FO-409	2 - 1
COBOL	CB-402	2 - 3
Assembler	AS-465	2 - 3
Compiler I/O Modules	IO-412	2 - 5

For complete ordering procedure and program material see the reverse side.

Published by DP Sales Publishing Services, WTHQ

  
 John Fahey  
 Director of DP Marketing

FOR IBM INTERNAL USE ONLY

Release Date: June 18, 1968  
Distribution: All Areas

IBM Tape Operating System/360

**Basic Program Material:**

The following SRL publications and documentation appropriate to the components ordered are shipped by PID with each initial TOS/360 order. Machine readable material is distributed as indicated below.

**SRL Publications --**

System/360 Disk and Tape Operating Systems - Concepts and Facilities TNL <u>N24-5358</u>	<u>C24-5030-4</u>
System/360 Tape Operating System - System Generation and Maintenance TNL <u>N24-5362</u>	C24-5015-5
System/360 Tape Operating System - Performance Estimates TNL <u>N24-5361</u>	C24-5020-4
System/360 Tape Operating System - Operating Guide TNL <u>N24-5360</u>	C24-5021-3
System/360 Tape Operating System - System Control and System Service Programs TNLs <u>N24-5219, N24-5290, N24-5348</u>	C24-5034-1
System/360 Tape Operating System - Supervisor and Input/Output Macros	C24-5035-3
System/360 Tape Operating System - Data Management Concepts	C24-3430-3
System/360 Disk and Tape Operating Systems - Assembler Specifications TNL <u>N26-0582</u>	<u>C24-3414-5</u>
System/360 Disk and Tape Operating Systems - Tape Sort/Merge Program Specifications	C24-3438-3 Note 1
System/360 Tape Operating Systems - Autotest Specifications TNLs <u>N21-5054, N21-5074, N21-5080</u>	C24-3441-3
System/360 Disk and Tape Operating Systems - Utility Program Specifications	<u>C24-3465-4</u>
System/360 Disk and Tape Operating Systems - COBOL Language Specifications TNL <u>N28-0241</u>	C24-3433-4
System/360 Disk and Tape Operating Systems - COBOL Programmers Guide	<u>C24-5025-4</u>
System/360 Basic FORTRAN IV Language	<u>C28-6629-1</u>
System/360 Disk and Tape Operating Systems - FORTRAN IV Programmers Guide	<u>C24-5038-2</u>
System/360 Disk and Tape Operating Systems - Report Program Generator Specifications TNLs <u>N24-5195, N21-5055, N21-5077, N21-5086, N21-5090</u>	C26-3570-4
System/360 Disk and Tape Operating Systems - Utility Macro Specifications	<u>C24-5042-2</u>
System/360 Disk and Tape Operating Systems PL/I Programmers Guide TNL <u>N33-9034</u>	C24-9005-2
PL/I Subset Reference Manual TNL <u>N33-9015</u>	C28-8202-0
System/360 Disk and Tape Operating Systems, On Line Test Executive Program Specifications and Operating Guide	<u>C24-5066-2</u>

Form numbers which have changed since previous release are underlined.

- Note 1:** SRL C24-3438-1 plus TNLs N21-5021, N21-5036, N21-5042, N21-5050, N24-5064 and N24-5131, or SRL C24-3438-2 plus TNLs N21-5036, N21-5042 and N21-5050 may be used in lieu of the SRL C24-3438-3.
- Note 2:** SRL C24-3433-3 plus TNLs N24-5188, N28-0232, N28-0237 and N28-0241 may be used in lieu of the SRL C24-3433-4 plus TNL N28-0241.

**Documentation -- Program Material List; Attachment I--Temporary Restrictions; Attachment II -- Retention of Supporting Documentation.**

**Machine Readable --** TOS/360 is distributed on one 2400 foot reel of magnetic tape, either 9-track (800 or 1600 bpi), or 7-track (800 cpi) Data Conversion feature required.

**Ordering Procedures**

If only the numbered publications or additional copies of the publications are required, order them from the IBM Distribution Center, Mechanicsburg -- not from PID.

**New Users --** TOS/360 is distributed as -- one pre-generated system with a 6K Supervisor (360M-SV-413) ... or one pre-generated system with an 8K Supervisor (360M-SV-414).

Each TOS/360 order includes the entire collection of machine readable program components in both Core Image and Relocatable Libraries, listed below.

The System Control component and one of the two Supervisor components are required. To order these components, specify on the IBM Program Order form IBM System/360 Operating Systems (20-1411) -- System Control and Basic IOCS, 360M-CL-405 and Supervisor (6K), 360M-SV-413 or Supervisor (8K), 360M-SV-414, and any other components you may select from the list below. Each component for which program documentation and maintenance material is required must appear on the order form.

If a supervisor component is not specified, the 6K Supervisor will be shipped.

Supervisor (6K)	360M-SV-413 or
(8K)	360M-SV-414
System Control	360M-CL-405 *
IOCS	360M-IO-404 *
MPS Utility Macros	360M-UT-411 *
Utilities	360M-UT-403
Tape Sort/Merge	360M-SM-400 *
Assembler	360M-AS-465 *
COBOL	360M-CB-402 *
FORTRAN IV	360M-FO-409 *
RPG	360M-RG-408 *
+ Compiler I/O Modules	360M-IO-412 *
Autotest	360M-PT-407
Optical Character Reader	360M-IO-417 *
PL/I	360M-PL-410
OLTEP	360M-DN-418 *

\* Change from previous release

+ Should be ordered if either COBOL (360M-CB-402) or RPG (360M-RG-408) is ordered.

If the distribution media is not specified on the IBM Program Order, 9-track tape at 800 bpi will be forwarded.

Magnetic tapes may be ordered or forwarded in accordance with current procedures as described in the DP Sales Activity Section of the Branch Office Manual.

**Current Users --** Current users will receive a prepunched Program Order Card and a letter announcing the availability of System Release 11 and its Maintenance Package. This card, following IBM Branch Office approval, must be used to order either the Maintenance Package or a replacement TOS/360 from PID.

The maintenance package for TOS/360 system release 11 is available on one 2400 foot reel of magnetic tape, either 9-track (800 bpi or 1600 bpi), or 7-track (800 cpi, Data Conversion feature required.)

Complete ordering instructions are provided in the letter to users.

Maintenance Packages will be available from PID for a period of 60 days following the availability announcement of System Release 11.



**SYSTEM/360 MODEL 20  
PROGRAMMING EXTENSIONS  
INCLUDE SUPPORT OF SUBMODEL 5**

Extension of the programming systems for the Model 20 to support Submodel 5 will be available April 15, 1969.

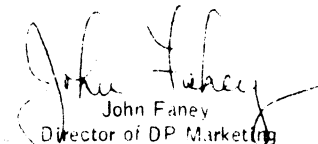
These extensions include support of the expanded capabilities of the newly announced Submodel 5 under new versions of the Tape and Disk Programming Systems (TPS, DPS).

The modified versions of TPS and DPS allow user-written programs to take advantage of the faster CPU speed, additional core storage, additional Disk Storage Drives and the overlap capability. The 2152 Printer-Keyboard is supported under DPS RPG and Assembler/IOCS. Additionally, the existing BSCA IOCS and 1259/1419 IOCS programs will be available for use with the new CPU models on April 30, 1969.

**Reference Publications ...** The following SRLs and TNLs to the Model 20 Systems with the new 2020 Processing Units are available from the IBM Distribution Center, Mechanicsburg.

IBM S/360 Model 25, 20 Mode Feature, A24-3524 ...  
IBM S/360 Model 20 DPS/TPS IOCS for the 1419/1259, C33-6001-3 ... IBM S/360 Model 20 Extension to DPS, C33-6005-1 ... TNL N33-9035 to IBM S/360 Model 20 DPS Utility, C26-3310-1 ... TNL N33-9036 to IBM S/360 Model 20 DPS Sort/Merge, C26-3806-2 ... TNL N33-9037 to IBM S/360 Model 20 DPS IOCS, C24-9007-3 ... TNL N33-9038 to IBM S/360 Model 20 DPS/TPS RPG, C24-9001-3 ... TNL N33-9039 to IBM S/360 Model 20 DPS/TPS Assembler, C24-9002-3.

The remainder of this letter contains descriptions, minimum system requirements and various tables of core storage and timing estimates.

  
John Faney  
Director of DP Marketing

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Page 1 of 4

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Distribution: All Areas

P68-85



**Programming Description ...** With the exception of the TPS and DPS Monitor Programs, the system programs do not use the overlap capability. The Assembler, RPG and Sort/Merge programs use the 24K and 32K core storage capacities. Object programs generated by the TPS/DPS Assembler/IOCS and RPG fully support overlap and the 24K and 32K core storage sizes. Model 20 Card Programming Support (CPS) does not use or support the 24K and 32K core sizes. The 1259/1419 IOCS programs do not support the overlap feature.

To enable the TPS or DPS user to make optimum use of the overlap capability, a double buffering technique is available in IOCS and RPG, whereby a second I/O area may be specified, on a per-file basis, for tape and sequential disk files. (See appropriate SRL publication for details of new macro instructions and RPG control card and specification sheet entries supporting this option.)

New CSERV and MSERV library functions will be included in the revised versions of the TPS programs. These new functions are available to Model 20 Tape System users operating under the tape resident version of TPS. The CSERV or MSERV programs require a Model 20 with at least the following features and units:

2020 Processing Unit with 8,192 bytes of core ... a card reader ... a card punch, if punching is specified ... a printer, if listing is specified ... a 2415 Magnetic Tape Unit, Model 1 or 4 with at least one 9-track drive. Both drives are used.

The revised version of TPS RPG allows the user to specify up to 9 matching fields (M1 - M9 in columns 61-62 of the Input Specifications). The number of input files that can be matched will remain 3.

In addition to the support for 24K - 32K core storage and the overlap capability outlined above, DPS provides support for up to four 2311 Disk Storage Drives, Models 11 or 12. Changes to Job Control and IPL allow user programs to address four 2311s. The DPS Sort/Merge program allows input/output on up to four different drives. Additionally, the DPS Disk Utility Programs support up to four disk drives as input/output devices.

### Monitor Description

*Tape Programming System (TPS)* - The TPS Monitor supports the 24K or 32K core storage sizes. Two new codes for 24 and 32 are used in the // CONFIG card to enter the appropriate core size into the communication region.

The scheduler and the part of the Start I/O routine which support overlap are generated as part of the Monitor by the Job Control Program at execution time. The user specifies in a // EXEC RWC statement that his program is to be executed in the overlap mode. The overlap monitor requires approximately 2400 bytes of core storage.

*Disk Programming System (DPS)* - The generative Monitor concept, announced as part of the 2152 Printer-Keyboard support (See P68-1 and SRL C33-6005), is extended to support the new features available with the 2020 Processing Unit, Model 5. Three Monitor generation macros and a set of 16 inner macros are included in the DPS macro library. By means of these macros, the user can generate a Monitor "tailored" to his requirements, and the features and devices comprising his Model 20 System.

Page 3 contains the table of core estimates for various monitor routines and areas to calculate approximate monitor sizes.

**System Design Considerations ...** Due to increased core storage requirements for the overlap monitors, and additional I/O areas to support the overlap capability, the system design for 8K Tape Systems, 12K Disk Systems and 16K Tape/Disk Systems should be examined closely. Careful attention should be given to block lengths, the number of files to be supported and in disk or tape/disk systems, the type of file organization and method of file processing to be used.

The monitor core estimates given on page 3 plus the information in SRL publications IBM System/360 Model 20, Tape Programming System Performance Estimates: (C24-9010) and IBM System/360 Model 20, Disk Programming System, Performance Estimates (C33-6003) may be used to estimate core storage requirements.

**Performance Estimates ...** See pages 3 and 4 for the tables that show examples of core storage estimates and timing estimates relating to TPS and DPS program usage on the Submodel 5.

**Minimum System Requirements ...** The minimum system requirements are the same as for the existing Model 20 programs, except for those programs designed to operate on a CPU with 4,096 bytes of core storage. Since a 2020 CPU Model 5 with 4,096 bytes of core storage is not available, these programs will run on a system with 8,192 bytes of core storage.

Routine or Description	core storage requirements in bytes		
	RWC=NO	RWC=YES	QUEUES=NO
Reserved Hardware Locations	168	168	168
PLDA, LUB, PUB; included are 28 LUB entries and 10 PUB-entries	294	294	294
PIOCS, DERR: transient,	0 Tapes, 1 Disk	1530	1830
	0 Tapes, 2 Disks	1630	1930
	0 Tapes, 4 Disks	1650	1950
	6 Tapes, 2 Disks	1730	2040
	6 Tapes, 4 Disks	1760	2060
	not transient,	0 Tapes, 1 Disk	1500
0 Tapes, 2 Disks	1600	1900	
0 Tapes, 4 Disks	1620	1920	
6 Tapes, 2 Disks	1690	2000	
6 Tapes, 4 Disks	1720	2020	
Tape Error Recovery, transient	0	0	0
not transient	510	540	540
Tape Error Statistics, transient	100	100	100
not transient	170	170	170
HSCA; HPR-abort-connection, interrupt distribution	100	100	100
PIOCS, Printer-Keyboard	300	300	300
Inquiry/Printer-Keyboard; attention routine inquiry initialization	300	300	300
Printer-Keyboard Input area, default value	20	20	20
Printer-Keyboard Output area, default value	125*	125*	125*
Fetch; card-resident system	350	450	350
disk-resident system	360	460	360
transient system	300	400	300
Monitor I/O area	270	270	270
Monitor Transient area, additional to Monitor I/O area, 580 bytes in length	310	310	310
Maintenance area	90 - 180		
Contingency - for the scheduler		75	30

\* Note: The Printer Keyboard output area can be overlaid by any program. In this case, the main program does not run overlapped with output to the Printer Keyboard resulting from an inquiry.

TPS IOCS TIME REQUIREMENTS (MS)

MACRO	RECFORM	TIME REQUIREMENTS (MS)	
		1 I/O	2 I/O
GET	FIXUNB	0.5 + 5.2 = 5.7	0.7 + 5.2 = 5.9
GET	FIXBLK		
	FIRST REC. IN BLOCK	0.9 + 5.2 = 6.1	1.2 + 5.2 = 6.4
	SUBSEQ. REC	0.4 = 0.4	0.6 = 0.6
PUT	FIXUNB	0.4 + 5.2 = 5.6	0.6 + 5.2 = 5.8
PUT	FIXBLK		
	FIRST REC. IN BLOCK	0.9 + 5.2 = 6.1	1.0 + 5.2 = 6.2
	SUBSEQ. REC	0.4 = 0.4	0.5 = 0.5

CORE STORAGE REQUIREMENTS FOR SEQUENTIALLY ORGANIZED DISK FILES IN DPS RPG

Routines for	Bytes basic	Bytes added
Input files with 1 I/O area	160	
with 1 or 2 I/O areas	250	
for each file using 1 I/O area		100
for each file using 2 I/O areas		110
Output files with 1 I/O area	270	
with 1 or 2 I/O areas	360	
for each file using 1 I/O area		120
for each file using 2 I/O areas		130
Update file with 1 I/O area	220	
for each file		110
Update file with 2 I/O areas	390	
for each file		130

TPS IOCS CORE STORAGE REQUIREMENTS (IN BYTES)

OUTPUT FILES DTFMT	BASIC	
	1 I/O	2 I/O
FIXBLK, NO WORKA	218	236
WORKA, RECSIZE ≤ 256	210	246
WORKA, RECSIZE > 256	218 *	254 *
VARBLK, NO WORKA	220	238
WORKA, RECSIZE ≤ 256	258	294
WORKA, RECSIZE > 256	286	322
FIXUNB, NO WORKA	102	120
WORKA, RECSIZE ≤ 256	120	136
WORKA, RECSIZE > 256	128 *	144 *
VARUNB, NO WORKA	120	150
WORKA, RECSIZE ≤ 256	136	150
WORKA, RECSIZE > 256	146 *	162 *
UNDEF, NO WORKA	106	124
WORKA, RECSIZE ≤ 256	122	138
WORKA, RECSIZE > 256	132 *	148 *

FOR INPUT AND OUTPUT FILES: FILABL = STD: 70 BYTES. CONTROL = YES: 8 BYTES.

\*\*n.6 n=1 WHERE RECSIZE ≤ 512, n = 2 WHERE RECSIZE ≤ 768, AND SO ON IN INCREMENTS OF 256 BYTES.

FOR INPUT FILES: \*\*IF ERRIO IS SPECIFIED ONLY WITH 2 I/O ADD 6 BYTES. CKPT=LC = YES, 2 I/O: 50 BYTES, 2 I/O: 58 BYTES, IF FILABL = STD, ADD 6 BYTES; IF 2 I/O AND READ = BACK, ADD 6 BYTES.

TPS CONTROL + CRO CORE STORAGE REQUIREMENTS (IN BYTES)

INPUT			OUTPUT	INPUT + OUTPUT		
READ FORW	READ BACK	READ FORW. + BACK		READ FORW.	READ BACK	READ FORW. + BACK
50	50	58	34	62	62	70

TPS RPG CORE STORAGE REQUIREMENTS (IN BYTES)

BASIC REQUIREMENT	INPUT		OUTPUT	
	BASIC	ADDED	BASIC	ADDED
FIXED LENGTH RECORDS	160			
BLOCKED RECORDS	20			14
EACH FILE FOR EACH 256 BYTES RECORD LENGTH		66		80
VARIABLE LENGTH RECORDS	100		60	
BLOCKED		60		70
BLOCKED > 256 BYTES		80		50
EACH FILE WITH 2 I/O AREAS		40		40

TPS IOCS CORE STORAGE REQUIREMENTS (IN BYTES)

INPUT FILES DTFMT	BASIC		WLR ERR = NAME **	WLRERR=NAME ERROPT= NAME SKIP IGN ORE			WLRERR=b ERROPT= NAME SKIP IGNORE			READ = BACK		
	1	2		**	**	1	2	1	2	1	2	
	I/O	I/O										I/O
FIXBLK, NO WORKA	196	240	2	16	12	0	14	10	-30	-30	2	6
WORKA, RECSIZE < 256	260	284	2	16	12	0	14	10	-30	-30	2	6
WORKA, RECSIZE > 256	270*	294*	2	16	12	0	14	10	-30	-30	2	6
VARBLK, NO WORKA	192	226	2	16	12	0	14	10	-18	-22	-	-
WORKA, RECSIZE < 256	282	314	2	16	12	0	14	10	-18	-22	-	-
WORKA, RECSIZE > 256	322	354	2	16	12	0	14	10	18	-22	-	-
FIXUNB, NO WORKA	110	148	2	16	12	0	14	10	-14	-14	0	6
WORKA, RECSIZE < 256	150	170	2	16	12	0	14	10	-14	-14	0	6
WORKA, RECSIZE > 256	160*	176*	2	16	12	0	14	10	-14	-14	2	6
VARUNB, NO WORKA	118	168	2	16	12	0	14	10	21	-28	46 <sup>1)</sup>	52 <sup>4)</sup>
WORKA, RECSIZE < 256	158	184	2	16	12	0	14	10	21	-28	46 <sup>1)</sup>	52 <sup>4)</sup>
WORKA RECSIZE > 256	168*	190*	2	16	12	0	14	10	21	-28	46 <sup>1)</sup>	58 <sup>6)</sup>
UNDLF, NO WORKA	104	142	-	-	-	-	16	12	0	0	0	10
WORKA, RECSIZE < 256	144	164	-	-	-	-	16	12	0	0	10	10
WORKA, RECSIZE > 256	154*	170*	-	-	-	-	16	12	0	0	10	10

IF WLRERR = b AND ERROPT = IGNORE ARE SPECIFIED,  
READ = BACK REQUIRES 1) 10, 2) 10, 3) 6 BYTES

4) 12, 5) 18 6) 18 BYTES

Core-storage requirements for remaining IOCS disk routines

Addition in DTFDA to support 4 disks on line	50 bytes
Addition in ISFMS for Retrieve-, Add-or Add retrieve-files	30 bytes
Addition in DTFEN to support 4 disks on line for DTFDA	30 bytes

DPS Core-Storage Requirements for Sequential Disk Files for DTFSD (in bytes)

TYPE OF FILE	Single File Routine	COMROUT - YES					Max.
		DTF block	FIXUNB WORKA	FIXBLK	FIXBLK WORKA	FIXBLK WORKA	
			FIXUNB	FIXUNB	FIXUNB WORKA	FIXBLK	
INPUT, 1 I/O area							
FIXUNB	170	50					
FIXUNB, WORKA	210	130	170	150	200	230	240
FIXBLK	230	140					
FIXBLK, WORKA	260	130					
INPUT, 2 I/O areas							
FIXUNB	230	150					
FIXUNB, WORKA	270	130	250	230	280	300	320
FIXBLK	260	140					
FIXBLK, WORKA	290	130					
UPDATE, 1 I/O area							
FIXUNB	320	220					
FIXUNB, WORKA	350	210	290	300	360	390	400
FIXBLK	430	220					
FIXBLK, WORKA	450	210					
UPDATE, 2 I/O areas							
FIXUNB	420	220					
FIXUNB, WORKA	450	210	430	440	500	520	540
FIXBLK	510	220					
FIXBLK, WORKA	530	210					
OUTPUT, 1 I/O area							
FIXUNB	190	150					
FIXUNB, WORKA	210	150	190	180	210	240	260
FIXBLK	260	150					
FIXBLK, WORKA	280	150					
OUTPUT, 2 I/O areas							
FIXUNB	250	150					
FIXUNB, WORKA	270	150	270	260	290	310	340
FIXBLK	290	150					
FIXBLK, WORKA	310	150					
For options' add:							
CONTROL	60	10	1)	1)	1)	1)	1)
Verification	6	6					

1) 120 bytes if input files and output files. 90 bytes if either input files or output files. 70 bytes if update file.



**SYSTEM/360 AUTOMATED CHEMISTRY  
IS AVAILABLE**

System/360 Automated Chemistry Program (CARE-360 ACP), 360A-UH-12X, is now available. This program supports the 1080 Data Acquisition System in the Clinical Laboratory.

System/360 ACP processes the punched card output of the 1080 ... establishes the calibration function from control standards ... checks quality of control standards used ... computes the test result ... adjusts the result for instrument drift and specimen interaction ... compares the result with the mean and standard deviation for all results for that test ... associates each result with the proper specimen identification number.

System/360 ACP prepares a quality control report which includes test result calibration control information, dilution factor (if any), abnormal indication for 1 or 2 standard deviations, and specimen number.

System/360 ACP also sets up a file by specimen number and test results for each test ordered ... the data from this file can be transferred to and integrated with a Patient Master Record by user-written routines.

See the attached sales manual page (P 360A.43) for details.

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John Fahey  
Director of DP Marketing

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Attachments [9]: P 360A.13, P 360A.15, P 360A.21, P 360A.41, P 360A.43, P 360A.45, P 360N.1, P 1130.15, and P 1130.17  
Release Date: June 20, 1968  
Distribution: All Areas

P68-86



## DOS/360 QTAM REQUIRES INTERVAL TIMER FOR 2740 MODEL 2 WITH BUFFER RECEIVE

The Queued Telecommunication Access Method (QTAM) under DOS/360 requires the Interval Timer to support 2740 Communication Terminal Model 2 with the Buffer Receive feature (1499). This requirement applies to the additional support for DOS/360 QTAM announced in P67-127.

Availability for the support is August 15, 1968.

Customers affected by this announcement should be notified.

**Minimum System Configuration DOS/360 QTAM ...**  
Main storage -- 64K bytes\*\* ... Standard Instruction Set ... Storage Protection ... Interval Timer ... One selector channel for system residence ... One multiplexer channel for communication control units ... One card reader\* ... One printer\* ... One 1052 Printer-Keyboard ... One 2311 or 2314 Disk Storage Device ... Communication equipment necessary to interface to the communication line.

\* See Page P 360N.8, "Minimum System Requirements," for acceptable units and possible substitutions.

\*\* Present releases of DOS/QTAM can allow proposal of minimal, dedicated, or message switching configurations within the 48K limitation of the Model 25. Additional functional improvements to QTAM, in subsequent releases, may increase core requirements beyond 48K. Therefore, a growth plan to a Model 30 or a Model 40 should be included in these proposals.

**Publication... System/360 Disk Operating System - Queued Telecommunications Access Method - Message Control Program, C30-5004-2 will be updated. Availability of the TNL will be announced in a future Publication Release Letter.**

  
John Fahey  
Director of DP Marketing

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Release Date: June 19, 1968  
Distribution: All Areas

P68-87



IBM World Trade Data Processing

## TIME-SHARED REMOTE SYSTEM (RAX) TO BE AVAILABLE FOR MODEL 44 CUSTOMERS

Remote Access Computing System (RAX), to be available September 27, 1968, is a time-shared, remote computing system for the IBM System/360 Model 44. RAX users can submit Model 44 Programming System (44 PS) FORTRAN and Assembler Language jobs for compilation and time-sliced execution from local and remote terminals, simultaneous with similar operations at the on-line computer site.

Programmers can compile, modify, and execute programs from their terminals, while non-computer oriented users can be conversationally interacting with programs previously saved in the RAX library.

This system will provide its users the capabilities of a United States of America Standards Institute (USASI) full FORTRAN language as well as an assembly language capability. The languages available to the terminal user will be subsets of the language available under the 44 PS.

The modularity and compatibility capabilities of the System/360 Models 30, 40, and 50 RAX Program (360A-CX-17X) are continued with the System/360 Model 44 RAX system.

This means, for the 44 RAX user:

- . A common terminal command language.
- . SYSGEN tailoring of RAX to fit the specific installation requirements.
- . The same type terminal support.
- . The same data management facility.

Sales manual writeup is attached to P68-86.

## MODIFICATION 3 TO VERSION 2 OF THE BILL OF MATERIAL PROCESSOR TO BE DISTRIBUTED TO REGISTERED USERS

Modification 3 to Version 2 of the Bill of Material Processor, 360A-ME-06X, is available. Current users need not reorder as it will be distributed to them automatically.

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Release Date: June 21, 1968  
Distribution: All Areas

In addition to normal maintenance, the modification includes:

- . Accommodation of the DOS/360 Release 16 change requiring CATALR cards to be read from SYSIPT instead of SYSRDR. (Note: The pseudo device independence functions removed in DOS Release 14 have been reinstated in DOS Release 17, once again allowing tape to be used as intermediate storage in the BMP SYSGEN procedure.)
- . 2314 support for user data files. This support is operational only under DOS/360.

### Special Sales Information

- . For simplification of documentation and distribution procedures, the BMP system (General Source File, etc.) is to be resident on 2314 in 2311 mode. The GSF utility programs (Customizer, etc.) will operate only against 2311-mode files. The 2311-mode disk pack need be on line only during BMP-SYSGEN procedures.
- . Object program modules resulting from BMP SYSGEN procedures are cataloged in DOS libraries, which may be in native-mode residence.
- . Customer data files are maintained in native mode. This point, together with the point above, provide for the 2314 customer day-to-day operations in native mode.
- . 2311 to 2314 reorganization of user data files is a standard feature of the revised program.
- . If the user has application programs which reference Bill of Material Processor files, he is not required to modify or reassemble as a result of BMP revisions for 2314 support. He may, however, be required to modify and/or reassemble for the following reasons:
  - a. device-type dependencies in his own code.
  - b. changes he desires to implement at conversion time.
  - c. incorporation of correction to existing errors in IBM-supplied BMP-macros.
- . The FILEORG, REORG, and I/O modules of the Bill of Material Processor require cus-

Side 1 of 2

P68-88

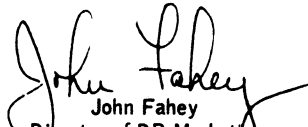
tomizing and assembly for conversion to 2314. This preparatory work may be accomplished with 2311's prior to 2314 delivery. MAINLINE modules will function properly in their present form.

- . Registered program users will automatically receive a package of program changes, rather than a completely new program. The facility to incorporate the changes is a standard part of the BMP package. The user converting from 2311 to 2314 may transfer the contents of his present BMP residence pack from 2311 to 2314 in 2311-mode using the standard DOS Disk-Copy utility included in 360N-UT-461. The BMP modification package may be processed either before or afterward.
- . Other than to incorporate program error corrections, the customer continuing on 2311 need not regenerate his BMP program modules except under one condition. When the user desires to change options of one module, companion modules may require regeneration for compatibility of internal code. This condition is fully described in the recipients letter that accompanies the modification.
- . At a minimum, DOS release 17 is required for use with this modification. BOS users must be at release 11 or above.

New orders for initial distribution will include all revisions of Modification Level 3. The distribution media may be 7-track or 9-track magnetic tape or 1316 disk pack. Distribution will not be made on 2316 disk pack.

A memo to users, application directory, TNLS N20-1870 and N20-1865, and patch cards or DTR as originally requested in your initial order will be forwarded to current users.

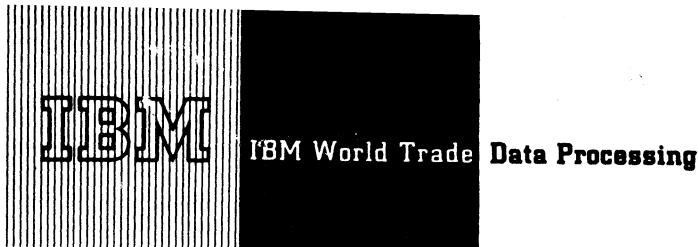
For details, see sales manual page (P 360A.43) attached to P68-86.

  
John Fahey  
Director of DP Marketing

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## MODIFICATION TO CNDP/360 HAS FOUR MAJOR IMPROVEMENTS

Modification Level 2 to Version 1 of the Communication Network Design Program/360 (360A-SE-28R) is available. It includes four major improvements:

- 1. Multiple Centers ...** With the addition of the multiple center feature, the network configuration capability of CNDP/360 has been extended. This feature allows the user to identify more than one location as a possible center into which the remote points may be multipointed. With this new capability, CNDP/360 has become a more versatile tool, especially where remote multiplexing, wide band and microwave are involved.
- 2. Response Time Analysis Models ...** The formulas used to evaluate line loading based on a response time criterion have been revised. In the case of half-duplex, a new method has been incorporated which will better reflect the impact on line loading due to additional terminals on the line. For the full-duplex, the routine has been upgraded to handle data that it was unable to evaluate.
- 3. City Data Card Processing ...** The routine for processing city data cards has been improved so that scanning of a card does not stop with the first error encountered.
- 4. Error Message Statements ...** A more complete error detection procedure has been incorporated. To facilitate the correction of input data card errors, a new error message format has been implemented. Complete error statements with implied corrective actions will be printed.

**Current Users ...** The following material, which is necessary for using the new features incorporated into Modification Level 2 of Version 1, is being forwarded to all current users.

- Memorandum to Users.
- Revised Application Directory.
- Revised Program Description and Operations Manual (Y20-0207).
- One 9-track (800 or 1600 bpi) or one 7-track DTR (800 cpi -- Data Conversion feature required), containing a complete program replacement.

Because of these improvements, minimum system requirements have been raised from a 2030 Model E to a 2030 Model F.

**Change in Classification of Manuals ...** The classification of the Application Description Manual and the Program Description and Operations Manual was formerly IBM Confidential. With this modification level, the manual numbers have been changed from Z20-1811 to Y20-0206 and Z20-0833 to Y20-0207. With local Branch Management approval, these manuals may be made available to customers on a restricted distribution basis.

A new sales manual writeup is attached to P68-86.

  
John Fahey  
Director of DP Marketing

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**SYSTEM/360 POWER SYSTEM PLANNING (PSP)  
PROVIDES A NEW TYPE II PROGRAM FOR  
THE ELECTRIC UTILITY INDUSTRY**

The System/360 Power System Planning Program will be available September 15, 1969. It provides the electric utility planning engineer with a means of obtaining an accurate and rapid solution to electric network problems. PSP allows the engineer to study the steady state and transient operational characteristics of present and projected power networks, including interconnections. The use of direct access on-line storage of data considerably reduces the time needed for gathering and validating input data for each simulation run. Simulation program results can be stored on-line for easy retrieval and reuse.

**COMPONENTS OF PSP:**

- . **POWER FLOW** - Using the most modern accepted techniques - (e.g., Newton-Raphson, sparse matrix manipulation), simulates the steady state operating conditions of the actual or proposed power system.
- . **SHORT CIRCUIT** - Using the Z matrix approach, simulates the performance of a specified portion of the total system under various abnormal short circuit conditions.
- . **TRANSIENT STABILITY** - Simulates the operation of specified generating facilities during periods of possible unstable operation.
- . **ENGINEERING DATA MANAGEMENT SERVICE** - Provides data validation, cataloging, storage and retrieval services to assist the engineer in organizing and maintaining the data required by the PSP simulation programs.

**HIGHLIGHTS:**

- . Eliminates the need for the manual preparation of data for each simulation.
- . Automatically checks and validates electric network data.
- . Prepares the desired network, runs the simulation and produces results in one continuous run.
- . Has the capacity to simulate an electric network of up to 1000 buses.
- . Written in PL/I under Operating System/360.
- . Offers various output options to match user's needs.

**PROGRAM SUPPORT MATERIAL:**

Application Description Manual (H20-0532).

Details are on sales manual page P 360A.46 attached to P68-86.

  
John Fahey  
Director of DP Marketing

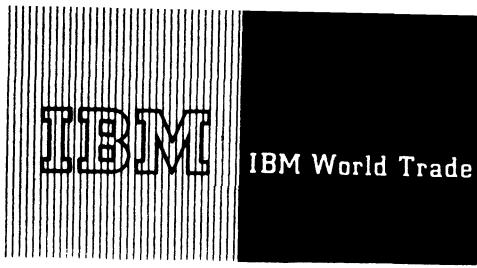
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**NEW VERSION OF I/O MACRO DEFINITIONS FOR MODEL 20 INCLUDES 1259**

Version 3 of Model 20 TPS I/O Macro Definitions expands the 1419 I/O routines to include support for the 1259. It is now available as Model 20 TPS Input/Output Macro Definitions for the 1419 and 1259 Magnetic Character Readers under 360U-IO-152. Current users will receive the new version automatically.

The program (which is integrated in the Input/Output and Basic Monitor Macro Definitions Program, 360U-IO-151) consists of four macros DSENG, DTFPA, DTFFC and DTFFD.

These macros operate in conjunction with the I/O and Basic Monitor Macro Definitions, which must be at Version 2, Modification Level 2.

The TPS Assembler will generate routines for the IBM 1419 and 1259 as well as for card and tape devices when encountering macro instructions in the user's source program.

**Basic Program Material ...** Current users will receive the following:

Documentation -- Memo to Users.

SRL Publications --

TNL N33-8535 to Disk and Tape Programming Systems Tape Sort/Merge Program, C26-3804-2

TNL N33-8536 to Disk and Tape Programming Systems Tape Utility Programs, C26-3808-2

TNL N33-9038 to Disk and Tape Programming Systems Report Program Generator, C24-9001-3

TNL N33-9039 to Disk and Tape Programming Systems Assembler Language, C24-9002-3

Tape Programming System Control and Service Programs, C24-9000-3

Tape Programming System Input/Output Control System, C24-9003-3

Disk and Tape Programming Systems Input/Output Control System for the IBM 1419 and 1259 Magnetic Character Readers, C33-6001-3

**Machine Readable Material --** The updated version on a 9-track DTR (800 or 1600 bpi) or a 7-track DTR (800 cpi Data Conversion feature required), according to their original order.

New users will receive this version incorporated in the Model 20 Tape Programming System distributed from PID.

Note to World Trade Readers

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Published by DP Sales Publishing Services, WTHQ

**FOR IBM INTERNAL USE ONLY**

*John Fahey*  
John Fahey  
Director of DP Marketing



IBM World Trade Data Processing

**TELEPROCESSING ANALYSIS AND DESIGN PROGRAM/360 (TPAD) IS AVAILABLE ON AN IBM CONFIDENTIAL BASIS**

Send a copy of the Letter of Authorization to the Manager of Department HO4, Building 850, DPD Technical Center, P.O. Box 390, Poughkeepsie, New York.

A new sales manual write-up is attached to P68-94.

Teleprocessing Analysis and Design (TPAD) is a Type II program that is available on an IBM Confidential basis (360A-SE-27R). TPAD provides the account team with an easy and quick method of designing and analyzing a Teleprocessing system. The program is a general purpose design tool with specific support for:

- System/360 hardware -- including disks, data cell, tapes, terminals, channels, communication control units, and CPUs.
- OS/360 MFT logic and timings for Models 30, 40, and 50 -- including the supervisor with multiprogramming, data management, and telecommunication access methods (QTAM BTAM).

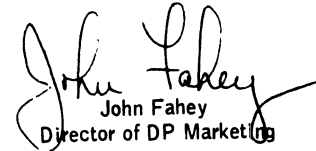
The account team may use TPAD to get the customer involved early in the design phase. The input required by this program can be expressed in simple or detailed terms depending on what information is currently available. The output is in terms of averages and will provide key statistics needed to determine if a configuration is feasible and identify the critical design areas.

**Special Sales Information ...** In no case may the program be given to a customer. However, its output and input may be shown and discussed with him.

The logic and timings included in TPAD reflect MFT-I. However, because of the similarities in program execution parameters, it is reasonable to use this data to plan for MFT-II system design and installation.

The program is not to be modified by the IBM user due to the sensitivity of the algorithms used.

**Special Ordering Information ...** To order TPAD, the user must submit a Program Order Card and a Letter of Authorization from the Field System Center Manager to PID. The letter from the Field System Center must state that there is a need for the IBM Confidential program and that the Branch Systems Engineers know how to use the program. (One Program Order Card must be submitted with each request.)



John Fahey  
Director of DP Marketing

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Published by DP Sales Publishing Services, WTHQ

FOR IBM INTERNAL USE ONLY

Release Date: June 28, 1968  
Distribution: All Areas

P68-92

**TYPE II PROGRAMS NOW AVAILABLE IN DISTRIBUTION, PUBLISHING INDUSTRIES**

This letter announces the availability of two Type II programs. They are:

- Retail IMPACT Fashion System under DOS/360 (360A-DR-08X)
- Text Processor - HYPHENATION/360 (360A-DP-07X)

**RETAIL IMPACT FASHION SYSTEM UNDER DOS/360**

The Retail IMPACT Fashion System provides for effective highlighting of items requiring action to maximize the profit potential in fashion departments.

The Fashion System uses probability analysis to help the buyer respond quickly to styles performing significantly above or below other competing styles, based on profitability. Automatic Recommendations are made for reorder, return, markdown, and transfer based on sophisticated statistical techniques which accurately analyze the potential of a style early in its life. The basic yardsticks used for making recommendations are dynamic class (or group) standards that respond to seasonal and style-mix changes and are based on profitability (the interaction of turnover and markup).

The maintenance of complete records at the style level eliminates tedious and sometimes inaccurate updating of manual records. Appropriate documentation and interfaces are provided for the user who wishes to maintain size and color detail. Status Inquiry at buyer request (vendor status, etc.) is available; also various merchandise management reports can be created from the style master records (aging, stock status, etc.). This combination of exception reporting and automatic maintenance of style records reduces the amount of clerical effort on the part of the buyer and his staff and enables them to achieve optimum results by concentrating on the creative aspects of fashion merchandising.

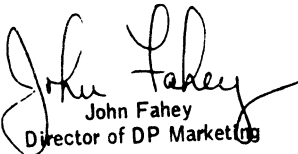
Availability of the various Retail IMPACT Systems (as announced in P67-149) is listed on page 2 of this announcement.

**TEXT PROCESSOR - HYPHENATION/360**

The HYPHENATION/360 module of the System/360 Text Processor consists of control and functional routines that provide for division of words in text-processing applications. This permits the addition of word syllables to meet justification requirements rather than forcing the line to end with the complete word. It can be implemented under control of DOS/360, and linked with a user's System/360 text composition program to form the basis for a comprehensive text processing system.

Newspapers, book publishers, technical manual publishers, and in-house publishers involved in the transcription of textual information are potential users of this program.

Additional details are in the new sales manual write-up attached to P68-94.

  
John Fahey  
Director of DP Marketing

Published by DP Sales Publishing Services, WTHQ

FOR IBM INTERNAL USE ONLY

**Retail IMPACT System:** Retail IMPACT is a total inventory management system designed specifically for the Retail Industry. Two Independent systems are provided: one applies to staple merchandise and the other, to fashion. These two systems enable retail management to increase the opportunity for sales by increasing the availability of merchandise and at the same time to maintain a balanced inventory consistent with management objectives. They also provide for effective highlighting of items requiring action to maximize the profit potential in a department.

#### Availability of the Retail IMPACT Systems:

##### OS/360 Version

- Retail IMPACT Fashion System (360A-DR-04X)
- Retail IMPACT Staple System (Control, Forecasting, & Simulation Subsystems.) January 2, 1969

##### DOS/360 Version

- Retail IMPACT Fashion System (360A-DR-08X)
- Retail IMPACT Staple System
  - (a) Version 1 - Control Subsystem (65K) ONLY. January 15, 1969
  - (b) Version 2 - Control Subsystem (65K) plus Forecasting (131K) and Simulation (131K) Subsystems. April 30, 1969

#### Staple System:

**Description --** This system uses an advanced forecasting subsystem which employs adaptive forecasting, probability and statistical science with appropriate decision rules to forecast demand, determine order points, and order up to levels. An advanced control subsystem is provided tailored to the needs of the retail industry which creates purchase orders, controls merchandise on order, and monitors the performance of the system in terms of inventory and level of service.

This system also provides for the simulation of a number of management policies, as well as for projecting demand and inventory behavior over an extended period, resulting from a particular policy or set of policies. With this feature, management will be able to establish a priority for departments to be implemented and obtain an estimate of the system's potential in these departments. The system reduces the difficulty of maintaining large inventories in multiple locations, typical of today's retail industry. For the first time retail management can achieve the highest possible level of service for a specific level of inventory.

Optimum use of the system is achieved through the capture of daily sales information at the point of sale. For those few classes of merchandise or departments where the direct capture of daily SKU data is not feasible, the user may wish to employ stock counts to derive periodic sales.

Appropriate documentation and interfaces are provided so that the Retail IMPACT Staple System can be used in conjunction with the customer's own stock counting procedures. Certain types of output, such as daily service measurement, cannot be provided if stock counting is employed.

**Features --** A comprehensive Control Subsystem which provides for automatic re-order of forecasted items and items with ordering parameters specified by store personnel ... purchase order creation ... vendor lead time control by signaling irregular lead times ... generalized transactions which allow for file updating for a group of items with only one input transaction for size, color, style, store and/or department ... source records available for additional reports ... continual system monitoring of service level, inventory investment and sales ... store performance report for each department.

An advanced Forecasting Subsystem which employs adaptive forecasting, probability and statistical analysis for determining trends and seasonal behavior, editing "bad" data, and handling high and low volume items ... initial forecasting "models" developed automatically from sales history, buyer estimates, or by adapting models taken from similar items ... automatic adjustment of forecasting models, weighted according to currentness of data ... signaling of significant variation in items sales patterns ... scientifically determined decision rules based on forecasted sales, desired level of service, pack size, etc. ... forecast model by item, or by group of items.

An advanced Simulation Subsystem which determines the effects of alternative management policies--before and after installation ... the ability to anticipate the inventory status at specified intervals during the year, number and value of purchase orders placed, and expected level of service ... analysis of vendor lead times including average, deviations, correlations with quantity ordered and season.

#### Fashion System:

**Description --** This system uses probability science to help the buyer respond quickly to styles performing significantly above or below other similar styles, based on their profitability. The maintenance of complete records at the style level eliminates tedious and sometimes inaccurate updating of manual records. Appropriate documentation and interfaces are provided for the user who wishes to maintain size and color detail. The combination of exception reporting and automatic maintenance of style records reduces the amount of clerical effort on the part of the buyer and his staff and enables them to achieve optimum results by concentrating on the creative aspects of fashion merchandising.

**Features --** Automatic recommendations for re-order, return, markdown and transfers based on sophisticated statistical techniques which accurately analyze the potential of a style early in its life ... the basic yardsticks used for making recommendations are dynamic class (or group) standards, based on profitability (which reflects the interaction of turnover and markup) to respond to the over-all seasonal changes ... automatic maintenance of files to replace manual records at the style level ... status inquiry at buyer request (vendor status, etc.) ... various merchandise management reports can be created from the style master records (aging, stock status, etc.)

**Use:** These systems are designed to initialize and operate a complete department. The library programs do both the initializing and regular operation. The user does not have to write any programs to use the systems. However, the user may desire to modify the operational programs in the Staple Control Subsystem and Fashion reporting areas and will probably write additional programs to extend the reports produced by the system.

Additionally the user may wish to employ the Forecasting Subsystem to aid in developing seasonal forecasts as inputs to the planning process at the department and class level. Appropriate documentation and interfaces to the Forecasting Subsystem are provided.

#### Customer Responsibilities:

1. **Program Requirements --** In general, the Staple and Fashion Systems are complete systems. However, since some users may have unique requirements in the way of significant transactions or reports, etc., some minor additions to the Retail IMPACT programs may be necessary. The following represent areas where user-generated programs may be required.

Changes to existing outputs of Retail IMPACT -- as an example, a basic purchase order is provided as part of the Staple System. If the user desires his own purchase order format, a program must be provided by the user to print in his format from the files that contain the Retail IMPACT purchase order information.

Additional merchandise management reports -- the user may wish to produce merchandise management reports beyond the basic reports provided by the Staple and Fashion Systems. The use of report generation techniques make the production of many additional reports feasible.

Any modification to the standard Retail IMPACT programs -- as an example, any transaction unique to a particular user -- would require a user-written modification. Users of the Fashion System who desire complete Black Book replacement or maintenance of summary records, users of the Staple System who desire stock count inputs, and users who wish to employ the Forecasting Subsystem to aid in developing planning forecasts will need to write required I/O and file maintenance routines. Appropriate flowcharts and interfaces to the Staple Control Subsystem, the Forecasting Subsystem and the Fashion System are provided.

2. **Staffing --** Capable user personnel are requisite to positive results. Needed to insure Retail IMPACT System benefits are Top Management Representative ... Project Director ... System Analyst ... System/360 Programmers ... and Clericals. The description of their qualifications and duties is detailed in the Application Description Manual (E20-0188).
3. **Education --** Knowledge of the Retail IMPACT System, its implementation requirements, and its operation is achieved by user personnel through attendance in the following schools -- 2 1/2-day Executive Retail IMPACT System ... 5-day Retail IMPACT System Implementation - Fashion ... 10-day Retail IMPACT System Implementation - Staple.
4. **Evaluation --** A very important responsibility of the customer is to establish a base for comparison of Retail IMPACT System results with those of the system replaced. Sales, inventory, and level of service represent minimum parameters for comparison. Further information regarding the need to evaluate and techniques for evaluation is detailed in the Application Description Manual (E20-0188).

**Programming Systems:** The programs are designed to operate under the OS/360, PL/I Level F; or DOS/360, PL/I.

**Minimum System/360 Configuration for Fashion under OS/360 or DOS/360, PL/I and Staple Control Subsystem under DOS/360, PL/I:** System/360 Model F30 (65K) with Decimal Arithmetic (#3237), Floating Point Arithmetic (#4427), 1051 Attachment (#7915) ... 1051 Control Unit Model N1, 3130 CPU Attachment (#3130) ... 1052 Printer-KeyBoard Model 8 ... 1442 Card Read Punch Model N1 ... 1443 Printer Model N1 with Selective Character Set (#6402) and the 63 Character Set Type Bar (#9089)\* ... 24 Additional Print Positions (#5558) ... 2841 Storage Control ... 2311 Disk Units (4 required) ... 2415 Tape Unit Model 1.\*\*

**Minimum System/360 Configuration For Staple under OS/360, PL/I and Staple Forecasting and Simulation Subsystems under DOS/360, PL/I:** System/360 Model G 40 (131K) with Decimal Arithmetic (#3237), Floating Point Arithmetic (#4427), 1052 Adapter (#7920) ... 1052 Printer-KeyBoard Model 7 ... 1442 Card Read Punch Model N1 ... 1443 Printer Model N1 with Selective Character Set (#6402) and the 63 Character Set Type Bar (#9089)\* ... 24 Additional Print Positions (#5558) ... 2841 Storage Control ... 2311 Disk Units (4 required) ... 2415 Tape Unit Model 1.

\*Users ordering a 1403 printer will require a QN2 or PN2 print train.

\*\*Users Operating the Fashion System who do not intend to implement "Black Book" replacement, summary files, or the Staple System will require one less disk or tape.

**Basic Program Material for Retail Impact Fashion System/OS (360A-DR-04X):**

**Publications\*** -- Application Directory ... Program Description Manual H20-0480  
... Operations Manual H20-0481.

**Machine Readable\*\*** -- Source programs with narrative and sample problem decks are available on one 9-track DTR (800 or 1600 bpi) or on one 7-track DTR (800 cpi -- Data Conversion Feature required).

**Optional Program Material for 360A-DR-04X:**

**Machine Readable\*\*** -- Flowcharts in print line images are available on one 9-track DTR (800 or 1600 bpi) or one 7-track DTR (800 cpi -- Data Conversion Feature required).

**Basic Program Material for Retail Impact Fashion System/DOS (360A-DR-08X):**

**Publications\*** -- Application Directory ... Program Description Manual H20-0540  
... Operations Manual H20-0541.

**Machine Readable\*\*** -- Source programs with narrative and sample problem decks are available on one 9-track DTR (800 or 1600 bpi) or on one 7-track DTR (800 cpi -- Data Conversion Feature required).

**Optional Program Material for 360A-DR-08X:**

**Machine Readable\*\*** -- Flowcharts in print line images are available on one 9-track DTR (800 or 1600 bpi) or one 7-track DTR (800 cpi -- Data Conversion Feature required).

**Ordering Procedure:** See the DP Sales Activity section of the Branch Office Manual.

\*If only the publications, or if additional copies of the publications are required, order from the IBM Distribution Center, Mechanicsburg -- not from PID.

\*\*DTRs will be supplied by PID; no tape submittal is required. If the track density requirements are not specified on the back of the Program Order Card, 9-track at 800 bpi will be supplied.

**Additional Program Support Material:** Application Description Manual (E20-0188).

For further information contact your Industry Marketing - Distribution Representative.

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DP SALES MANUAL -- PROGRAMMING SECTION CHECK LIST

STATUS AS OF P68-94

To order missing Programming pages, circle the page numbers of the required pages on this sheet, fill in your name, position title, and address, and send the form to

DP Sales Publishing Services
IBM World Trade Corporation
240 Westchester Avenue
White Plains, New York 10604

Requests for more than twenty pages require management approval.

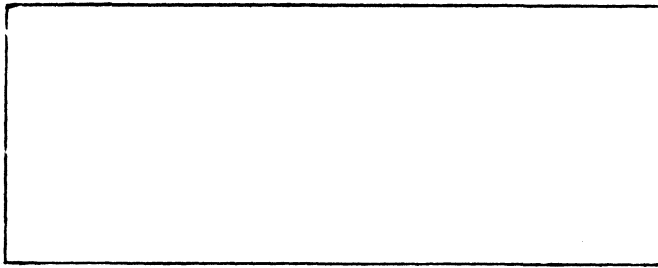


Table with columns for programming type, page number, date, revision, and page ID. Includes categories like Programming, System/360 Application Programs, BOS/360, System/360 Conversion Programs, 360/44, and 360/67.

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Table with columns for programming type, page number, date, revision, and page ID. Includes categories like TOS/360, DOS/360, BPS/360, OS/360, 360/20, 1130, 1800, and 9000.

Cancels: P68-57

Attachments [25]: [1 thru 7] P 360A.23, P 360A.25, P 360A.27, P 360A.29, P 360A.31, P 360A.33, P 360A.47 ... [8 and 9] P 360C.5, P 360C.7 ... [10 thru 16] P 3, P 5, P 7, P 9, P 11, P 13, P 19 ... [17] P 360M.5 ... [18] P 360N.9 ... [19 thru 23] P 360T.1, P 360T.3, P 360T.5, P 360T.7, P 360T.9 ... [24 and 25] 9013 and 9015.

Release Date: July 1, 1968

Distribution: All Areas



IBM World Trade Data Processing

P68.95

## PHASE 1 OF SHAS (TYPE II) INCLUDES MONITOR AND ACCOUNTS RECEIVABLE PROGRAMS

You can now order Phase 1 of the Shared Hospital Accounting System (SHAS); shipments will begin the week ending July 12. The order number is 360A-UH-11X.

SHAS provides hospital accounting for the multiple hospital environment. The accounting applications are Patient Billing, Accounts Receivable and General Ledger. Accounting for both inpatients and outpatients is provided. In addition to Medicare cost allocation, SHAS determines Medicare insurance pro-ration which makes easy the preparation of the Medicare Inpatient and Outpatient billing or administrative user written programs. SHAS programs provide better administrative and operational control and reduce the ever increasing clerical load associated with hospital administration.

The SHAS applications operate in two modes. They are:

- On-line entry of data and receipt of reports by means of Teleprocessing terminals.
- Off-line data entry and reporting at the central data processing location.

The SHAS programs provide the on-line facility for applications when immediacy of the information is significant (entry of charges, cash payments, request for demand bills, etc.). For other applications, receivable statement writing, etc., the central facility (with its high speed printer) is used directly.

This announcement is for availability of the accounts receivable application in a non-teleprocessing environment. Availability of other phases is:

- Phase 2 - September 16, 1968
  - Foreground Monitor System (SHAS Teleprocessing)
  - Accounts Receivable Inquiry
- Phase 3 - October 30, 1968
  - Patient Billing System
  - Billing Inquiry
  - General Ledger System
  - Cost Allocation Programs
  - Job Accounting Programs

Write or call your Regional Medical Industry Representative if you want preliminary copies of the System Manual, as the manual will not be available from Mechanicsburg until July 31.

See the reverse side for the new sales manual write-up.



John Fahey  
Director of DP Marketing

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Release Date: June 28, 1968  
Distribution: All Areas

P68-95



**Shared Hospital Accounting System (SHAS):** SHAS provides hospital accounting for the multiple hospital environment. The member hospitals are tied to the central computer facility by Teleprocessing terminals. The accounting applications are Patient Billing, Accounts Receivable, and General Ledger. Accounting for both inpatients and outpatients is provided. In addition to Medicare cost allocation, SHAS determines Medicare insurance proration facilitating the preparation of the Medicare Inpatient and Outpatient billing forms. The design of SHAS facilitates the addition of clinical or administrative user written programs. SHAS programs are designed to provide better administrative and operational control and reduce the ever increasing clerical load associated with hospital administration. (360A-UH-11X)

**Description:** The SHAS programs and the System/360 using remote terminals encompass the application areas of Patient Billing, Accounts Receivable and General Ledger for multiple hospitals.

The SHAS applications operate in two modes: on-line entry of data and receipt of reports by means of Teleprocessing terminals and off-line data entry and reporting at the central data processing location. The SHAS programs provide the on-line facility for applications where immediacy of the information is significant (entry of charges, cash payments, request for demand bills, etc.). For other applications, receivable statement writing, etc., the central facility (with its high speed printer) is used directly.

#### Features:

##### General

- Input Edit Tables and Report Format Control provide flexibility at the user's option to tailor the input and output for each application.
- Hospital Profile provides for individual hospital processing decisions and parameters tailoring SHAS program processing to each hospital on the system.
- The SHAS Executive provides the capability for processing foreground and background programs. Several terminals can transmit and receive data concurrently through foreground programs while batch applications are processed by background programs.
- Job Accounting statistics including terminal and CPU utilization are logged internally and are available in report form.
- Security is attained through input and data set identifications to limit access of data. Each hospital is permitted to inquire into or modify its data only.

##### Executive

Manage communications lines ... handle the timer ... handle interrupts (e.g., demand bill request and inquiries) ... queue messages ... manage input/output.

##### Patient Billing

Setting up patient's files upon admission to hospital ... central pricing of hospital services ... charge posting ... census ... insurance proration (including Medicare) ... record cash payments ... Daily Balance Forward printed at the hospital ... inquiry on the status of patient accounts (detail and summary patient bills) ... automatic preparation of patient bills ... automatic printing of insurance statements ... automatic transfer to accounts receivable ... accumulation of revenue and usage data for Medicare requirements.

##### Accounts Receivable

Preparation of statements ... recording cash payments ... receivable accounts stored either off-line or on-line ... inquiry on the status of receivables ... on-line account validity check for off-line receivables ... listing of accounts which require a final diagnosis ... listing of receivables by financial class ... aged trial balance ... listing of accounts which have insurance receivables ... listing of accounts which fail to meet installment payments ... consolidated statement for family billing ... bad debt reports.

##### General Ledger

Ledger posting ... Trial Balance ... Comparative Income and Expense Report ... Balance Sheet ... Operating Statement ... cost allocation methods suitable for Medicare - stepdown and double apportionment.

**Special Sales Information:** Designers of specific teleprocessing line configurations should consider the impact of increasing memory requirements for DOS Supervisor, QTAM, or compiled COBOL modules.

The application programs include the provision to read and write at the central facility all input and output data that is normally transmitted from terminals. This feature is applied to implement systems without Teleprocessing capabilities.

**Special Installation Information:** SHAS is a powerful, sophisticated, and complex hospital data processing system. Customers involved with SHAS installations must have a thorough working knowledge of DOS and COBOL, and of QTAM if the installation will have teleprocessing. The flexibility features (e.g., hospital profiles) that let SHAS serve the individual needs of each hospital also increase its complexity of operation and length of required learning time.

In considering the installation and conversion effort and support, a separate system is being installed in each hospital using the system - not just one central computer. Each hospital becomes a computer system user and an IBM customer. Data preparation must be carefully analyzed by the central SHAS site to ensure that proper controls are maintained. Accounts Receivable should be installed first to provide a base of experience with SHAS. These programs use a small number of master files, have a low user urgency if daily running may be delayed, and provide a logical entry into the patient accounting use of SHAS. Special attention should be focused on the preparation of accurate A/R data files for entry into the system. A/R volumes also should be accurately determined in advance to make sure file space is adequate. A non-Teleprocessing system installed first will give the user SHAS experience before installing terminals in the hospitals.

SHAS proposals involving multiple users or Teleprocessing should be reviewed by Systems Assurance.

**Use:** The SHAS system processes input data against patient and account master files. These files are established through procedures supported by the SHAS programs. Patient admissions and dismissals, charges, payments, and accounting transactions are processed for multiple or single hospitals. Teleprocessing provides an alternate input method and an alternate output for certain operational reports and inquiries. Volume output reports are printed centrally in a Teleprocessing system. File update and report jobs are controlled by the central operator through a higher level function language (series of cataloged job steps).

Balance and edit, maintenance, and error reporting programs process data for all applications. Update programs in each application maintain and back-up tape and Indexed Sequential disk master files. Report programs can select data for individual hospitals from billing and receivables tape and disk files. The Background Monitor supports function initiation and uniform restart capabilities for operator control. The Teleprocessing Foreground Monitor is assembled from user Teleprocessing network specifications.

**Customer Responsibilities:** A thorough understanding of the system (by personnel in the central facility) before installation ... a thorough understanding of DOS and COBOL, including operating experience with DOS ... a thorough understanding of QTAM for installations with Teleprocessing ... selection of terminal site ... creation of master files ... terminal operation manuals for clerical personnel affected ... preprinted forms for certain reports ... customize formats specified by the user by means of SHAS Input Edit Tables and Report Format Control modules ... create hospital profile parameter records ... make necessary arrangements for communication lines and equipments.

**Programming Systems:** The Shared Hospital Accounting System (SHAS) operates under the IBM System/360 Disk Operating System (DOS/360). The application programs are written in COBOL and Assembler Language. Also used are Sort/Merge and Utility Programs. Teleprocessing programs utilize Queued Teleprocessing Access Method (QTAM).

**Minimum Teleprocessing System Requirements:** 2030F Processing Unit (64K), Decimal Arithmetic (#3237), Floating Point Arithmetic (#4427), Interval Timer (#4760), Selector Channel - first (#6960), Selector Channel - second (#6961), Storage Protection (#7520) ... 1052 Printer-Keyboard with appropriate attachments ... 2821 Control Unit Model 1, 100 lines per minute Printer Adapter (#3615) ... 1403 Printer Model N1 ... 1416 Interchangeable Train Cartridge ... 2540 Card Read Punch Model 1 ... 2841 Storage Control Model 1 ... three 2311 Disk Storage Drives Model 1 ... 2415 Magnetic Tape Unit and Control Model 1 ... 2701 Data Adapter Unit Model 1, Terminal Adapter - Type 1 (#4645) or 2702 Transmission Control Model 1, Terminal Control - Type 1 (#4615), Selective Speed (#9684), and IBM Line Adapters as required. System control terminal at the central computer site includes 1051 Control Unit Model 2, First Printer Attachment (#4408) ... 1052 Printer-Keyboard Model 2.

Terminal configuration at each hospital uses 1050 series equipment. Recommended are 1051 Control Unit Model 2, First Printer Attachment (#4408), First Reader Attachment (#4411), IBM Line Adapter (#469X), Line Correction (#4795), Line Correction Release (#4796) ... 1052 Printer-Keyboard Model 2 ... 1056 Card Reader Model 1 ... 29 Card Punch Model A22\* ... 59 Card Verifier Model 2.

\* Self-Checking Number Feature (#7062) may be additionally specified for card punch as desired by the user.

**Minimum Non-Teleprocessing Machine Configurations (formerly announced as the CARE Accounting System):** A 2030 Processing Unit Model E (32K) with Decimal Arithmetic (#3237), Floating Point Arithmetic (#4427), Interval Timer (#4760), Selector Channel - first (#6960), Storage Protection (#7520) ... 1052 Printer-Keyboard with appropriate attachments ... 2821 Control Unit Model 1 ... 1403 Printer Model 2 ... 2540 Card Read Punch Model 1 ... 2841 Storage Control Model 1 ... three 2311 Disk Storage Drives Model 1 ... one 2415 Magnetic Tape Unit and Control Model 1.

A 2025 Processing Unit Model E (32K) with Floating Point Arithmetic (#4427), Interval Timer (#4760), Selector Channel (#6960), Storage Protection (#7520) ... Integrated 1403 Attachment (#4590) ... 1403 Printer Model 2 ... Integrated 2540 Attachment (#4595) ... 2540 Card Read Punch Model 1 ... Integrated 2311 Attachment (#4598) ... three 2311 Disk Storage Drives Model 1 ... one 2415 Magnetic Tape Unit and Control Model 1.

##### Basic Program Material for Phase 1 (Accounts Receivable and Background Monitor):

Publications -- Application Directory ... Shared Hospital Accounting System Program Description Manual (H20-0533) ... Operations Manual (H20-0534).

If only the form numbered manuals are required, order from the IBM Distribution Center, Mechanicsburg -- not P.D.

**Machine Readable --** One 9-track 2400' reel of magnetic tape (800 or 1600 bpi) or one 7-track 2400' reel of magnetic tape (800 cpi) (Data Conversion feature required). The machine readable material contains the source program modules and catalog control cards, model job control statements, and data set file describe image and source library for program operation. Also included is a sample problem with control cards for execution.

If the distribution medium required is not indicated on the back of the program order card, 9-track tape at 800 bpi will be forwarded.

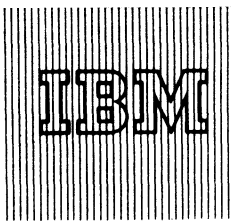
Magnetic tape (2400') may be forwarded or ordered. (The order card should accompany the tape order form.)

**Ordering Procedure:** See Branch Office Manual, DP Sales Activity section.

**Additional Program Support Material:** Application Description Manual (H20-0302)

... Availability of a System Manual will be announced in a Publication Release Letter.

For further information contact your Medical Industry Marketing representative.



**1800 MPX, REAL-TIME MULTIPROGRAMMING OPERATING SYSTEM, IS NOW AVAILABLE**

The 1800 Multiprogramming Executive System (MPX), 1800-OS-010, is now available. MPX is a real-time multiprogramming operating system capable of increasing the efficiency and throughput of the IBM 1800 Data Acquisition and Control System computer.

It is designed to asynchronously time-share several independent processes with concurrent background batch processing functions. The increased throughput provided by MPX is accomplished through sophisticated input/output handling techniques making the central processing unit available during all I/O operations. The capability exists for the MPX system to be configured into a maximum of 26 unique multiprogramming areas.

**Features ...** To increase throughput, the MPX enables programs, core storage space, input-output facilities and control of the processor-controller to be allocated and concurrently shared among several process functions. These facilities permit multiprogramming, that is, they permit several process functions to be performed concurrently and to share the basic resources of the computing system.

The MPX operating system helps to ensure that more of the total system is kept busy performing productive work more of the time. This is accomplished by efficiently allocating the available resources of the system to more than one function, and switching control from one function to another as a delay is encountered while awaiting an event, such as the completion of an input-output operation, or the end of a timing interval.

Among the services provided by MPX to allow concurrent operation are:


- . Loading programs and routines into main storage
- . Scheduling the use of programs and routines in main storage
- . Switching control of the processor-controller from one function to another, based on I/O and timer operation
- . Controlling the execution of the various functions in accordance with a user defined hierarchy of priority

The system also provides for queuing of I/O operations and allows the user to achieve maximum overlap of I/O and computing. On the lowest level of operation, a batch processing monitor is provided. With the batch processing monitor, assemblies, FORTRAN compilations, and user programs can be executed in a stacked job mode.

**Advantages**

- . High throughput
- . Fast response
- . Efficient use of processor-controller time
- . Ease in time-scheduling program execution
- . Ability to modify in-core user written routines on-line
- . Ability to modify IBM processors on-line
- . Ability for the IBM Field Engineer to run on-line diagnostics for the 1442, 1443, 2310, 1053, and analog input (Direct Program Control)
- . Time-sharing of foreground and background (batch processing monitor) operations

For complete details see the sales manual text printed on the inside pages.

  
 John Fahey  
 Director of DP Marketing

Published by DP Sales Publishing Services, WTHQ

FOR IBM INTERNAL USE ONLY

Release Date: June 28, 1968  
Distribution: All Areas

**Multiprogramming Executive System (MPX):** MPX is a real-time multiprogramming operating system capable of maximizing the efficiency and throughput of the IBM 1800 Data Acquisition and Control System computer. It is designed to asynchronously time-share several independent processes with concurrent background batch processing functions. (1800-0S-010)

Among the services provided by MPX to allow concurrent operation are: Loading programs and routines into main storage ... Scheduling the use of programs and routines in main storage ... Switching control of the processor-controller from one function to another, based on I/O operation ... Controlling the execution of the various functions in accordance with a flexible hierarchy of priorities.

#### Advantages

High throughput ... Fast response ... Efficient use of Processor-Controller time ... Ease in time-scheduling program execution ... Ability to modify in-core user written routines on-line ... Ability to modify IBM system programs on-line ... Ability for the IBM Field Engineer to run on-line diagnostics for the 1442 Card Read Punch, 2310 Disk Storage Drive, 1053 Printer, and analog input (Direct Program Control) ... Time-sharing of multiple foreground (Process) and background (batch processing monitor) operations.

The IBM 1800 MPX is a "n" area multiprogramming system. (Where "n" is determined as 27 minus the number of levels used by I/O devices.) Multiprogramming is regulated on the basis of I/O operation; when an I/O operation is initiated in one area, that area is put in a suspended state until the I/O operation is completed and during this time, a program in a lower priority area is executed. The programmed interrupt feature is used by the system to regulate level of operation, and thus to determine which area is in execution at any given time. In this way, the 1800 hardware is utilized to achieve multiprogramming.

The system also provides for queuing of I/O operations and allows the user to achieve maximum overlap of I/O and computing. On the lowest level of operation, a batch processing monitor is provided. With the batch processing monitor, programs may be assembled or compiled or user core loads may be executed.

The IBM 1800 MPX consists of a System Executive by which data acquisition and process control applications are serviced in a real time mode and a Batch Processing Monitor by which normal data processing is performed in a batch processing mode. MPX operates in a batch processing mode under control of BOM (Basic Operating Monitor) and in a real time mode under control of the System Executive. To assist the user in making efficient use of the system, a Subroutine Library is also included in MPX.

1. **System Executive** - that portion of the system that resides in core during the execution of various disk resident programs. It includes such functions as handling of interrupts, controlling user-specified sequence of process control programs, and controlling the time-sharing of batched data processing programs. The nucleus of the System Executive is the Executive Director Program. The Executive Director has as its subcomponents:
  - a. Master Interrupt Control routine (MIC)
  - b. Program Sequence Control routine (PSC)
  - c. Interval Timer Control routine (ITC)
  - d. Time-Sharing Control routine (TSC)
2. **Batch Processing Monitor** - provides various batch processing functions, and operates under the control of BOM when control of the system is not held by the System Executive. The Batch Processing Monitor subcomponents are:
  - a. **Batch Processing Supervisor** - The Batch Processing Supervisor recognizes certain system control cards and transfers to the system program specified. It also initializes the data processing system when a job control card is recognized.
  - b. **Disk Management Program (DMP)** - The Disk Management Program is a group of generalized on-line utility and maintenance routines that are necessary in the day to day operation of the MPX system. These routines store user programs on disk, delete programs from disk, dump programs from disk and perform numerous other functions of a utility nature.
  - c. **Assembler Program** - A one-for-one symbolic assembly program that produces object programs that can be used with the 1800 MPX from symbolic card input or 2310 disk input.
  - d. **FORTRAN Compiler Program** - Accepts 1800 FORTRAN language input in card form and produces object programs that can be used with the 1800 MPX system.  
Both the FORTRAN written and Assembler written programs call on subroutines to perform various arithmetic and input-output functions.
  - e. **Builder** - Builds core loads and the System Executive.
3. **BOM (Basic Operating Monitor)** - controls the system generation process, provides for the definition of the system to the System Generation process, and controls the Batch Processing operations when MPX is operating in a batch processing mode.
4. **Subroutine Library** - consists of input/output, data conversion, arithmetic, functional, selective dump, various machine function and real time system subroutines.

#### Efficiency

The efficiencies listed in the following sections vary depending on the machine configuration, disk and core layout, and the user program size and type. Execution times are based on large programs and a 2 usec memory.

Approximate core storage and execution times:

#### Assembler

Core Storage	Minimum 5120 at the high end of core	
Disk Storage	29 sectors	
Speed, Card Input		
With 1442 Model 7	- No listing	320 cds/min
	- 1443 (Mod. 1) listing (52 char. set)	103 cds/min
	- 1443 (Mod. 2) listing (52 char. set)	140 cds/min
With 1442 Model 6	- No listing	250 cds/min
	- 1443 (Mod. 1) listing (52 char. set)	95 cds/min
	- 1443 (Mod. 2) listing (52 char. set)	125 cds/min
	- 1053	16 cds/min
Speed, Disk Input		
With 2310-A2		
Source file not on Drive 0, no listing		1000 cds/min
Source file on Drive 0, no listing		285 cds/min
With 2310-C2		
Source file not on Drive 0, no listing		1050 cds/min
Source file on Drive 0, no listing		900 cds/min

#### FORTRAN Compiler

Core Storage	Minimum 5120 at the high end of core	
Disk Storage	95 Sectors	
Speed	Assuming a 150 statement program:	
With punching		47 statements/min
With punching (assume 50 cds pch)		38 statements/min

#### Disk Management Program

Core Storage	5120 at the high end of core	
Disk Storage	106 Sectors	
Speed	The STORE operation varies in speed depending on the size of the program and the number and distance of the disk arm movements needed. This can vary from about 15 seconds to one minute to execute the STORE routine for a short program under worst case conditions. Normally an assembled program will be stored in 35 or 40 seconds after the STORE control card is read by DMP.	
	However, depending on whether the routine is reentrant or not reentrant makes a considerable difference in time to complete the STORE function. A reentrant routine causes the moving of all the non-reentrant routines in compliance with the system design of having all reentrant routines in one area and all non-reentrant routines in a separate area.	
	Since other DMP operations will not be performed too often in most 1800 installations, the time they require is not significant to the total use of the 1800.	

#### Batch Processing Supervisor (with Builder)

Core Storage	5120 at the high end of core	
Disk Storage	40 Sectors	
Speed	The control card analyzer operates at card read speed for most control cards. The Builder requires from several seconds to about two minutes under the worst conditions. The normal time for an 8K core load is 30 to 40 seconds.	

#### System Executive

Core Storage	Minimum System (24K) must provide at least 7500 words for the in core System Executive and 5120 words for the Batch Processing Monitor or mainline area. The rest of core may be shared between the System Executive, SPAR, core load areas and the mainline area.	
Disk Storage	The system can support 16K for very limited functions. 24 to 87 Sectors	
Speed	The speed of the execution of process core loads is dependent on what they have been programmed to do. The reading of core loads by the System Executive is done with disk addresses that are in core when the new core load is called, for minimum delay. All process core loads are in core image and are obtained at disk read speed.	
	Interrupt servicing routines may be permanently in the System Executive, on disk as interrupt core loads or in SPAR core loads. Interrupts may also be serviced by programs queued to areas. The routines in the System Executive are entered most quickly, those in the current SPAR core load almost as quickly, those interrupts ser-	

viced by queued programs much more slowly since they must be read into core from disk, and the interrupt core loads least quickly since they must be read into core after saving the current contents on disk.

Times to execute various interrupt routines, assuming the interrupt is not masked and no cycle stealing is occurring, are:

1. Time to execute first user instruction for an in-core system executive ISS Subroutine is 100 usec.
2. Time to execute first user instruction in an in-core system executive process interrupt subroutine is 302 usec.
3. Time to execute first user instruction of an in SPAR process interrupt subroutine is 343 usec.

#### Minimum System Requirements

To obtain the full capabilities of the IBM 1800 Multiprogramming Executive System, the machine configuration should be at least: an 1801/1802 Processor-Controller with a minimum of 24K words of core storage ... 1053 Printer or IBM 1816 Printer ... Keyboard ... 1442 Card Read Punch ... 2310 Disk Storage Unit, Model A2 or C2.

The system can support an 1801 or 1802 Processor-Controller with 16K of core storage, one 2310 Disk Storage Drive, a 1053 Printer and a 1442 Card Read Punch for very limited MPX functions.

#### Machine Features Supported

In addition to the above, the optional machine units and features supported by the MPX system are: Process-Controller with 32K words of core storage ... up to three 1053 Printers ... up to three 2310 Disk Storage Drives ... a 1443 Printer ... up to two 2401 Magnetic Tape Units ... 1627 Plotter ... 1054 Paper Tape Reader ... 1055 Paper Tape Punch ... Analog Input ... Digital Input ... Analog/Digital Output ... a second 1442 Card Read Punch.

#### Reference Material

MPX System Introduction C26-3718-0.

#### Basic Program Material: - 1800-OS-010

SRL Publications -- 1800 Multiprogramming Executive Operating System, Programmer's Guide, C26-3720-1; 1800 Multiprogramming Executive Operating System, Operating Procedures, C26-3725; 1800 Multiprogramming Executive Operating System, Error Messages and Recovery Procedures, C26-3727.

Documentation -- Program Material List ... Attachment to Users.

Machine Readable -- The MPX system is available on one 2315 Disk Cartridge in addition to a deck containing seventeen (17) cards or in card form (disk dump - 2414 cards) with an additional packet containing 465 cards.

#### Ordering Procedures

See the DP Sales Activity Section of the Branch Office Manual.

If only the form numbered copies of the publications are required, order them from the IBM Distribution Center, Mechanicsburg -- not from PID.

If MPX is to be obtained on a disk cartridge, a 2315 Disk Cartridge must be forwarded to PID with the Program Order Card.

#### Additional Program Support Material

##### Program Logic Manuals

1130/1800 Programming Systems, Card/Paper Tape	Y26-3620
1800 Time-Sharing Executive System	Y26-3702
1800 Multiprogramming Executive Operating System	Y26-3726

Program Listings: Listings are available on microfiche from -- IBM Corporation, Department 906, Highway 52 and Northwest 37th Street, Rochester, Minnesota 55901. When ordering specify:

##### Group Code

- 3010 for 1800 Card/Paper Tape System
- 3030 for 1800 Time-Sharing Executive System - Phase 2 and TSX System Non-Reentrant
- 3070 for 1800 Multiprogramming Executive System (MPX)

Optional Program Material (Symbolic Modules): The optional program components are pre-packaged on magnetic tape (2400). One reel of tape is required for each program group (each program group is bracketed below).

Distribution will be made on S/360 9-track magnetic tape (800 bpi or 1600 bpi). The requester must forward or order one reel of magnetic tape following the current ordering procedures in the Branch Office Manual, DP Sales Activity. The external tape label must show any one of the program numbers listed below as well as the information required under the current procedures.

If either 9-track 800 bpi or 1600 bpi is not specified on the order form, 9-track 800 bpi will be supplied.

Program Component Name	Program Number		
1800 Card Utilities	1800-UT-001	} one reel	
Paper Tape Utilities	1800-UT-002		
Card Subroutines	1800-LM-003		
Paper Tape Subroutines	1800-LM-004		
Card Assembler	1800-AS-005		
Paper Tape Assembler	1800-AS-006		
Card FORTRAN	1800-F0-007		
Paper Tape FORTRAN	1800-F0-008		
Time-Sharing Executive System - Phase 2 (Version 3)	1800-OS-001		} one reel
TSX System Non-Reentrant	1800-LM-009		} one reel
1800 MPX Programming Executive	1800-OS-010	} one reel	

#### Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed concurrently to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

1. All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.
2. Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.
3. When a new version of a program is announced, current users must order it; they will not receive it automatically nor will they necessarily receive a prepunched request card in their Area.
4. Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.
5. All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.
6. Any reference made to DPD Departments (or regions) as sources of information or for manuals, etc. should be understood to mean the comparable WT Department (or corresponding organizational level).
7. Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.
8. References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

**A NEW VERSION IMPROVES ACCAP**

Version 2 of the 1400 Autocoder to COBOL Conversion Aid Program (ACCAP) (360A-SE-19X) is available. This System/360 conversion aid program assists customers planning to convert their 1400 series Autocoder or SPS programs to System/360 COBOL.

Significant changes reflected by this version are:

- . Improved ACCAP execution time through the use of split cylinder concept for master file.
- . An option for recognizing and generating the record mark position when specified as part of the DA statement.
- . Correction to generate proper field sizes for DA subfields where only the low-order position is specified and to properly process DA subfields regardless of input sequence.
- . Elimination of optional additional devices for added capacity. Up to 10,000 input statements can be processed.
- . Incorporation of a control program to call in successive phases (reducing Job Control requirements by 80%).
- . Correction to recognize X04 to X15 in 1401, 1440, 1460 programs as a label.
- . Correction to generate labels, when used, for all OPEN and CLOSE statements.
- . Correction to cause program to go to End of Job if control card is invalid or missing or if system capacity (10,000 input statements) is exceeded.
- . Inclusion of support for the following I/O devices: 1442, 1443, 2501 and 2400 series tape units on selector channel 3.
- . Correction to previously reported program problems.

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed concurrently to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

- [1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.
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- [3] When a new version of a program is announced, current users must order it; they will not receive it automatically nor will they necessarily receive a prepunched request card in their Area.
- [4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.
- [5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.
- [6] Any reference made to DPD Departments (or regions) as sources of information or for manuals, etc. should be understood to mean the comparable WT Department (or corresponding organizational level).
- [7] Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.
- [8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. **NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.**

Current users will receive a letter announcing the availability of Version 2 and a prepunched program order card that they must use to order Version 2.

See the sales manual page (P 360A.27) attached to P68-94 and the Application Description Manual (H20-0352) for additional information.

  
John Fahey  
Director of DP Marketing

Published by DP Sales Publishing Services, WTHQ

FOR IBM INTERNAL USE ONLY

Release Date: June 28, 1968  
Distribution: All Areas

P68-97



**TSS/360 IMPROVED WITH AVAILABILITY OF VERSION 2**

Version 2 of the Time Sharing System/360 is now available. It provides incremental improvements in the area of:

- Performance**
- Reliability**
- Human Factors**
- Maintenance**

These new features are summarized below.

**Performance**

TSS now supports 32 bit mode addressing. In addition to being extended to provide full 32 bit addressing, the dynamic address translation support routines have been rewritten to minimize fragmentation of real core.

The minimum allocation of Virtual Memory is now eight bytes instead of 4096 bytes (1 page).

The improved performance of the task monitor permits sharing of certain tables, eliminates certain save area pages, and simplifies the program logic which eliminates the requirement for multiple calls when processing privileged programs.

A new dispatcher added to the system provides a significant improvement in batch throughput and a smaller deviation in (terminal) response time.

In addition to the changes noted above, other modifications to the Supervisor VAM and TAM routines further reduce core requirements, paging activity and concomitant systems overhead.

**Reliability**

ABEND -- rewritten to enhance systems reliability.

MSAM -- error handling routines tested.

I/O Supervisor and DASDI modified to increase the number of retry attempts when drum and disk errors are encountered.

**Human Factors**

Hex option added to the MODIFY command.

New command TIME added to TSS. This command permits the user to set the maximum amount of CPU time his task may run before the system prompts him in the foreground or ABENDs him in the background mode.

To support the floating point hardware change, the FORTRAN library floating point underflow and overflow routines have been modified to work on both modified and unmodified machines. This change is transparent to FORTRAN programs.

**Maintenance**

Version 2 contains solutions to 160 APARs.

**Additional Program Support Material**

All of the optional program components are now available on three source tapes instead of sixteen. Each group of components, identified below by a Distribution Volume Number, is distributed as volume restore tapes for either the 2311 or the 2314. See sales manual page P360G.5 for additional information before ordering.

<u>Distribution Volume Number</u>	<u>Program Component Name</u>
1	CEA - Supervisor CEI - Auxiliary Programs CGC - Service Routines CHB - System Tables CSF - Support for Time Sharing
2	CEC - Access Methods CEY - Linkage Editor CFA - Command System
3	CEB - Independent CEK - Fortran Compiler CEV - Assembler CHC - Fortran Library Sub-routines CMA - Diagnostics

The reverse side of this letter contains minimum system configuration, requisite EC levels, basic program material and ordering instructions.

  
 John Fahey  
 Director of DP Marketing

Published by DP Sales Publishing Services, WTHQ

FOR IBM INTERNAL USE ONLY

Release Date: July 1, 1968  
Distribution: All Areas

## Minimum System Configuration

The minimum system configuration is: One 2067 mdl 1; two 2365 mdl 2s; one 2860 mdl 2 or two 2860 mdl 1s; one 2870 mdl 1; one 2821 mdl 1 or 5; one 1403 mdl 2 or (3 or N1 with one 1416 Mdl 1); one 2540 mdl 1; one 2820 mdl 1; one 2301 mdl 1; one 2314 mdl 1 or one 2841 mdl 1 and five 2311s; one 2803 mdl 1 and two 2401 mdl 1, 2 or 3s or one 2402 mdl 1, 2, or 3 or one 2403 mdl 1, 2, or 3 and one 2401 mdl 1, 2 or 3; one 2702 mdl 1; one 1052 mdl 7; one 2741 mdl 1 or one 1051 mdl 1 or 2 and one 1052 mdl 1 or 2; five 1316 or 2316s.

See "P 360/67 Programming Pages" in the Sales Manual for additional hardware features and RPOs required.

## Engineering Changes

The following engineering change levels are a requisite for correct operation of the Time Sharing System.

<u>Unit</u>	<u>Level</u>
2067-1,2*	EC 705321 ECA 41 (In addition to these EC Levels customer engineering retain messages 2067-02 (CEM 2067 - Service Aid 34) and 2067 - 14 must be employed.)
2365-12	EC 705306 ECA 37
2365-2	EC 257197 ECA 28
2846-1	EC 705292 ECA 1 (EC 705319 ECA 2 only if 2314 with two-channel switch is on system)
2860	EC 708892 ECA 34 (+REA 93960 and REA 21910 if 2314 with two-channel switch is on system)
2870	EC 705770 ECA 16
2167	EC 705202 ECA not applicable

\*If 32 Bit feature is used, customer engineering retain message 2067-6 (CEM 2067 - Service Aid 41) must be employed.

## Reference Material

Assembler Language, C28-2000-2, and TNLs N28-3000, N28-3015 ... Command Language Users Guide, C28-2001-1, and TNLs N28-3003, N28-3013, N28-3027 ... Concepts and Facilities, C28-2003-2, and TNLs N28-3005, N28-3016, N28-3022 ... Assembler User Macro Instructions, C28-2004-1, and TNLs N28-3006, N28-3020, N28-3021 ... Linkage Editor, C28-2005-1, and TNLs N28-3001, N28-3025 ... FORTRAN IV, C28-2007-1, and TNLs N28-3007, N28-3023 ... System Programmers Guide, C28-2008, and TNLs N28-3008, N28-3018, N28-3028 ... Terminal Users Guide, C28-2017-1, and TNLs N28-3010, N28-3029 ... FORTRAN Programmers Guide, C28-2025-1, and TNL N28-3031 ... FORTRAN IV Supplied Sub-routines, C28-2026, and TNL N28-3032 ... Assembler Programmers Guide, C28-2032-1, and TNL N28-3030 ... Support for Time Sharing, C28-2035, and TNL N28-3019.

## Basic Program Material

SRL Publications -- System Generation and Maintenance, C28-2010-2 ... Command Language for Managers and Administrators, C28-2024, and TNLs N28-3004, N28-3026 ... Operators Guide, C28-2033-2 ... System Messages, C28-2037-2 ... Independent Utilities, C28-2038, and TNLs N28-3002, N28-3024 ... Addendum, C28-2043-3 ... IBM System/360 Basic Programming Support Operating Guide Card and Tape Utility Programs, C24-5027-3 and TNL N28-2337.

Documentation -- Program Material List ... Methods of Printing the TSS System Prose.

Machine Readable -- The complete TSS/360 is distributed:

For the five Drive 2311 User, 360G-CL-625 -- On two 2400 foot reels of magnetic tape (9-track, 800 or 1600 bpi).

For the 2314 User, 360G-CL-626 -- On four 2400 foot reels of magnetic tape (9-track, 800 or 1600 bpi).

## Ordering Procedure

### Controlled Marketing

Because of the unique characteristics of TSS, the TSS Controlled Marketing Policy remains in effect. Accordingly, Model 67 systems may not be proposed or sold without prior approval of the office of the Regional Vice President.

Current users of the program will receive a pre-punched program order card and a letter announcing the availability of the new version, and instructing the users to order the new version through the local branch office. Current users must use this pre-punched program order card to order the new version.

When ordering the Time Sharing System/360, the requester will receive all Program Components. There are none available separately.

There are two types of System Residence available for the Time Sharing System. The requester must indicate the type of System Residence by specifying the appropriate program number on the Program Order Card:

Use 360G-CL-625 when System Residence is the 2311.

Use 360G-CL-626 when System Residence is the 2314.

If only the publications or if additional copies are required, order them from the IBM Distribution Center, Mechanicsburg -- not from PID.

Magnetic Tapes (2400') may be forwarded to PID with the program order card or ordered.

**Note to World Trade Readers.** This is a reprint of an IBM P-Letter and was mailed concurrently to USA and WT offices. The following changes should be applied to the text for WT use. [1] Programs announced as available have been shipped to WT Program Libraries. Programs may be ordered as indicated on pages 9013-9017, PGM. Sec., WT DP Sales Manual. [2] Advance copies of form numbered publications mentioned above have been shipped or will be, when available. Availability will be announced in the Weekly Publications Letter. [3] When a new version of a program is announced current users must order it; they will not receive it automatically. [4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated. [5] References made to PID means the appropriate WT Program Library. [6] Any reference made to DPD Depts. (or Regions) as sources of information means the comparable WT Dept. (or corresponding organizational level). [7] Communications facilities may be required which are not offered in all WT countries. In case of doubt as to availability of suitable facilities, consult the country TP Coordinator. [8] References made to Engineering Changes required should be verified with the local CE Office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. **NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.**



IBM World Trade Data Processing

F58-99

**1401/1440/1460 EMULATION UNDER DOS/360**

- . COMPATIBILITY SUPPORT/30
- . COMPATIBILITY SUPPORT/40

Compatibility Support/30 and 40 (CS/30, CS/40) allow 1401/1440/1460 and System/360 programs to run in a single intermixed DOS/360 job stream with full multiprogramming capability.

CS/30 and CS/40 highlights are:

- . INCREASED SYSTEM THROUGHPUT
- . MULTIPROGRAMMING CAPABILITY
- . INTERMIXED JOB STREAM
- . FLEXIBLE CONFIGURATION SELECTION

*... Advantages, Features, Minimum System Requirements, Publications, and Availability Dates are on the inside pages.*

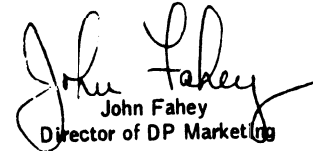
These programs will help you attain 1968 sales objectives as well as improve our customers' capability to upgrade:

- . MODEL 30 TO MODEL 40
- . ADD MORE CORE AND I/O
- . REPLACE 1401/1440/1460

Note to World Trade Readers

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- [1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.
- [2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.
- [3] When a new version of a program is announced, current users must order it; they will not receive it automatically nor will they necessarily receive a prepunched request card in their Area.
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John Fahey  
Director of DP Marketing

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P68-99



**Advantages ...** CS/30 and CS/40 are designed to run 1401/1440/1460 Model 30 and Model 40 Emulators under the Disk Operating System and thus provide all the features that accompany an operating-system environment. CS/30 and CS/40 offer the following advantages:

- . Increased throughput, since 1400 I/O is performed in System/360 mode and overlapped with processing according to the channel configuration of the System/360.
- . Multiprogramming capability: Teleprocessing, concurrent peripheral operations, or other user programs may be executed as foreground programs while executing a background 1400 program. In addition, the 1400 referenced card reader, card punch, and/or printer may be simulated on a magnetic-tape unit or a 2311 or 2314 disk unit.
- . 100-percent stacked-job processing. 1400 and System/360 programs can be intermixed in the job stream.
- . Up to five 1311 Disk Storage Drives or one module of 1301 Disk Storage may be simulated on 2311 Disk Storage Drives; alternately, up to five 1311 drives and/or one module of a 1301 drive may be simulated on 2314 Direct Access Storage Facilities.
- . 1400 disks need not be on the multiplexer channel and 1400 tapes need not be on a single selector channel.
- . Provides compatibility support for 1405 and 1301 disk drives on a 2311 or a 2314.
- . Operator-service functions initiated from the console provide a wide variety of capabilities, including a 1400 storage dump or display, the ability to change sense-switch settings, tape-drive logical assignments, and disk-drive logical assignments, the alteration of 1400 registers and 1400 storage, and, when an error is detected, automatic end of 1400 processing upon operator request.
- . Provides the ability to catalog and fetch 1400 programs in and from the System/360 Core-Image Library except for multiphase 1400 programs on Model 40. Programs cataloged by the Model 30 Emulator Program can not be fetched and executed by the Model 40 Emulator Program, and vice versa.
- . Support for 1440 operations is provided.
- . Provides compatibility support for the 1404 Printer.

- . Provides exits that allow the user to add routines to simulate devices that are not supported by the Compatibility Features and/or the Emulator Programs.
- . Full advantage of the read-while-write capabilities of the 2804 Tape Control Unit may be realized.
- . Elimination of the Compatibility Initialization Deck (CID) for the Model 30 and the emulator program deck for the Model 40. Sense-switch settings and I/O assignments are accomplished through the standard DOS Job Control Language and through Emulator operator services.
- . Offers, as an option, verification of volume serial numbers of disk packs.
- . Provides automatic transition to DOS Job Control upon recognition of 1400 EOJ halts.

**Features ...** CS/30 and CS/40 are a means of incorporating standard 1400 emulation into the System/360 Disk Operating System. To accomplish this, 1400 I/O operations are executed by physical IOCS of the Disk Operating System. As a result, if the Emulator Program is used on a System/360 with two selector channels, 1400 tape operations can be performed on a read-while-write basis. This has the effect of improving 1400-program throughput.

There is no requirement that a 2311 disk drive be attached to the multiplexer on the Model 30 or on the selector channel on the Model 40. Instead, they may be attached to any channel on the system. This will provide added flexibility to both 1400 and System/360 direct-access operations. Initialization and clearing of disk packs is performed by options in the DOS Initialize Disk Utility program and in the DOS Clear Disk Utility program.

Another DOS/360 feature that the emulator programs support is stacked-job processing. To do this, all 1400 halts and error conditions are trapped by the Emulator. Subsequently, the Emulator Program will release to DOS/360 Job Control so that the next job may be brought in from the device assigned to SYSRDR.

The Emulator Program itself is called by DOS/360 Job Control and handles all initialization and loading without the use of a Compatibility Initialization Deck for the Model 30 or the emulator program deck for the Model 40. 1400 error conditions either cause an abnormal end of job or, if the program is being run in Test mode, 1400 program errors are trapped automatically to the operator (a control-card option).

Finally, the user may operate in a multiprogramming

mode with concurrent peripheral operations, or Tele-processing under DOS being executed in conjunction with emulation. Existing 1400 programs are run as background programs in a multiprogramming environment without alteration, if written consistent with 1400 SRL manuals published by IBM.

Use ...CS/30 and CS/40 are called from the DOS Core-Image Library using standard DOS conventions. If a User Program Switch Indicator (UPSI) card is included in the job control statements, it will be used to set 1400 sense switches. Any I/O device assignment can be changed from its assembled assignment with DOS ASSGN cards. Once loaded into storage, the Emulator Program reads a // 1400 control card. This card contains a number of optional parameters that describe Emulator options.

These options include: The name of the 1400 program, the initial load device for the 1400 program, the selection of the simulation support desired for 1400-program "process" errors and halts (other than standard end-of-job halts), and other options.

If 1400 magnetic-tape operations are being simulated, the Emulator Program will optionally read // TAPE control cards if the user elects to reallocate tape buffer areas. If 1400 disk operations are being simulated, the Emulator Program will optionally read a // DVOL control card(s) if the user elects to identify and verify a given volume serial number(s) for a disk pack(s). If 1400 printer operations are being simulated, the Emulator Program will optionally read a // CCTL control card if the user elects to provide a carriage-control-tape image at 1400 program execution time.

After analyzing the control cards and setting appropriate switches, the Emulator Program performs initialization. The next input record is read and then a console message giving the name of the program and, if available, the time of day is displayed. The Compatibility instructions are then enabled and the next phase (the main phase) of the Emulator Program is called. The base registers are then established and the tape-block-size allocations are made. The 1400 program load device then is determined. The Disk Operating System is then given the address of the Emulator Program operator communication routine. If the 1400 program is to load from cards, a 1400 Read Card instruction is passed to the Compatibility Feature. The card is read, simulating pressing of the LOAD button on the 1400. If the 1400 load device is tape, a similar simulated load function is performed by the Emulator Program.

Each time the 1400 executes an I/O instruction, the Compatibility Feature selects the proper routine. The Emulator Program then takes control, simulates the I/O, and then switches back into Compatibility mode.

End-of-job halts and error conditions are handled as explained previously, and the 1400 program ends with either a standard or operator-determined end of job and a subsequent release to DOS Job Control.

**Performance ...** Throughput under emulation is determined by the mix of CPU operations (executed by Ready Only Storage), I/O operations (executed by the emulator program), 1400 instructions, and the amount of interference from higher-priority partitions. Assuming a normal distribution of the above considerations, a minimum throughput of one to one with the original equipment can be expected. However, this will vary by application.

**Minimum Systems Requirements ...** The minimum requirements for the 1401/1440/1460 Emulator Programs under DOS are the same as for a 24K Model 30 or 32K Model 40 Disk Operating System and the 1400 Compatibility Features, except that 1400 disks need not be on the multiplexer channel and 1400 tapes need not be on a single selector channel. The Model 30 1400 I/O Compatibility Features for unit-record equipment are not required by the Model 30 Emulator Program. The 1401/1440/1460 DOS Compatibility Feature (4460) is required by CS/40.

Note 1: When the 1401/1440/1460 DOS Compatibility Feature 4460 is installed the operation of the Model 40 Emulator Program 360C-EU-074 is excluded on the system.

Note 2: COS-40 (Type III) will not run after Feature 4460 is installed.

The total storage requirements of the 1401/1440/1460 Emulator Programs under DOS are the sums of:

1. Size of the user's Disk Operating System supervisor for the Model 30 or the constant 16,384 (beginning of 1400 memory) for the Model 40.
2. Size of the 1400 system to be simulated.
3. Amount of storage reserved for tape and disk I/O buffers.
4. Size of the generated Emulator Program.

To calculate the total storage requirements of the DOS

system, add the amount of storage reserved for multi-programming.

Requirements (1) through (3) can be determined from the user's configuration. The size of the generated Emulator Program, requirement (4), can be estimated by using the list of storage estimates for the Model 30 or 40 Emulator Program in the publication System/360 Disk Operating System: 1401/1440/1460 Emulator Programs for System/360 Models 30 and 40, C27-6940.

With the added features, improved performance and FE Support of CS/30 and CS/40, PID will not distribute the Type III COS Programs following the availability of these two new Type I programs.

**Reference Publications ...** Preliminary planning information is contained in the following publication, which is available now:

IBM System/360 Disk Operating System: 1401/  
1440/1460 Emulator Programs for IBM System/  
360 Models 30 and 40, C27-6940

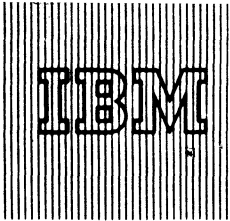
Preliminary information also will be contained in a Technical Newsletter to IBM System/360 Disk and Tape Operating Systems: Concepts and Facilities, C24-5030. Availability of this TNL will be announced in a future Publication Release Letter.

A promotional brochure will also be published in 30 days.

#### **Availability**

CS/30 - January 30, 1969

CS/40 - April 30, 1969



**1130 TYPE I AND II PROGRAMS DISTRIBUTED ON DISK; OPTIONAL MATERIAL AVAILABLE**

Memorandum to DP Branch Managers B68-69 stated that certain 1130 Type I and II programs will be distributed on the 2315 Disk Cartridge, but that certain programs may also be obtained in card form if the customer's configuration does not include a disk drive.

The following 1130 Type I and II programs are now distributed only on disk.

Disk Monitor	1130-OS-001
Statistical System	1130-CA-06X
LP-MOSS	1130-CO-16X
Project Control System	1130-CP-05X
Data Presentation System	1130-CX-14X
Type Composition, Card	1130-DP-04X
Route Accounting System	1130-DX-01X
Mechanism Design System	1130-EM-01X
Optical System Design	
Typewriter	1130-EO-11X
Printer	1130-EO-12X
Work Measurement Aids	1130-MF-03X

When ordering these programs on disk, the user must provide PID with a 2315 Disk Cartridge for each program. The returned cartridge will contain the program along with a starter card to retrieve the program.

**Action Required**

This information has not been distributed to users. Affected customers should be notified.

**Optional Material Available**

The FORTRAN source code for the two Optical System Design programs is now available on magnetic tape. It must be ordered under 1130-EO-12X only.

*John Fahey*  
John Fahey  
Director of DP Marketing

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