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Prerequisite Newsletters GN24-0922

**IBM 4341 Processor
Model Group 2
Functional Characteristics
and Processor Complex
Configurators**

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11, 12

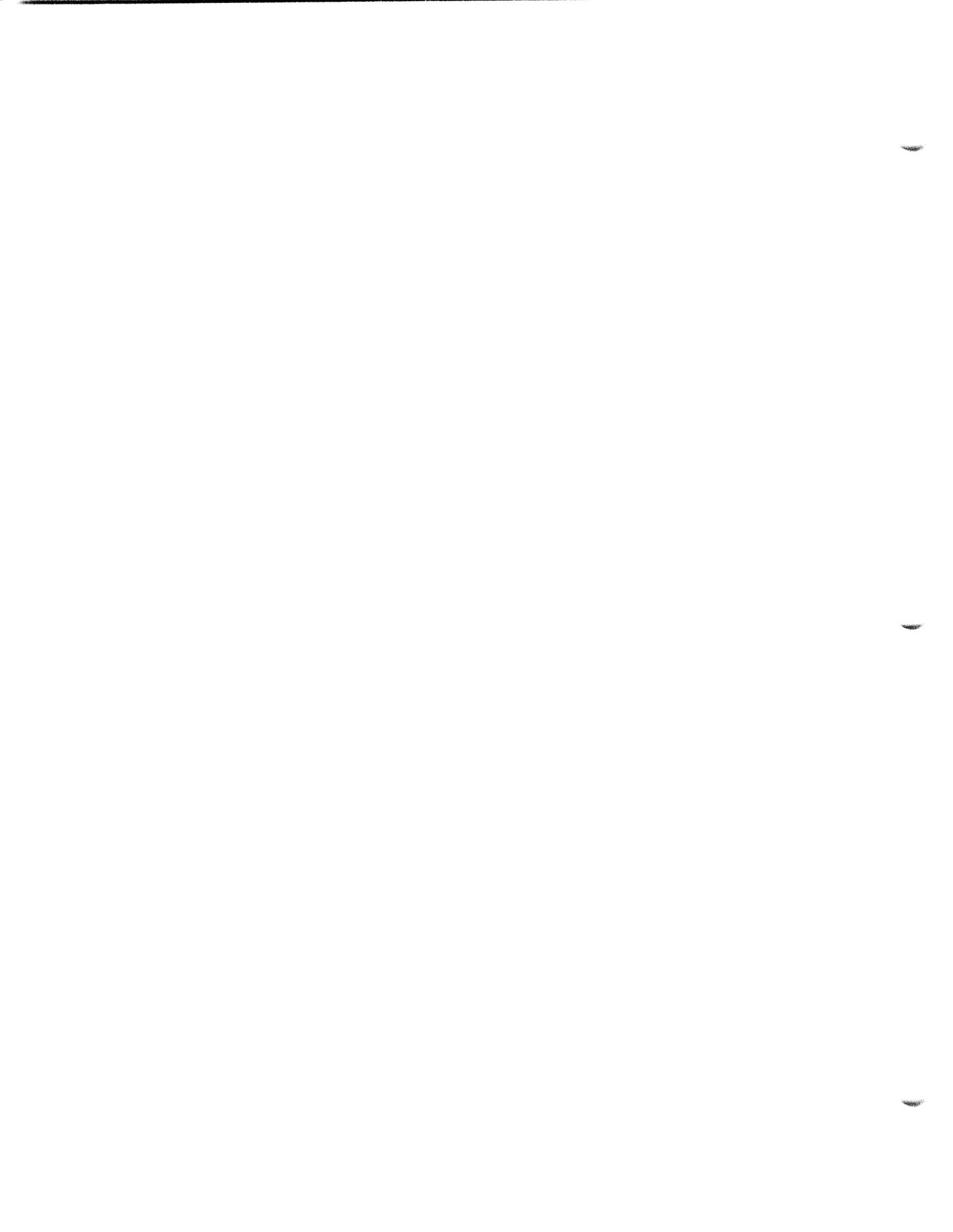
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Summary of Amendments

This document contains changes in system storage requirements and removes all references to the IBM 3370 Direct Access Storage Device (DASD).

Note: Please file this cover letter at the back of the manual to provide a record of changes.



- 1 Card Image I/O device* and
- 1 Direct Access device** and
- 2 Magnetic Tape devices*** and
- 1 Hard-Copy Output device,

or:

- 1 Card Image I/O device* and
- 3 Magnetic Tape devices*** and
- 1 Hard-Copy Output device.

- * *Card Image* is defined as:
- Any supported card reader, or
 - An addressable diskette input/output unit (such as a 3540) and key-to-diskette capability, or
 - A magnetic tape drive and provisions for entering card-image formatted records onto magnetic tape, or
 - Capability provided by the customer through his operating system facilities to create card-image format on either tape or diskette. The customer must supply an operator to key the card images at the direction of the service representative.
- ** Must be demountable Direct Access Storage Device (DASD).
- *** If 2400 Series, seven-track, magnetic tapes are used, Data Conversion features (No. 3228 and 3236) must be installed on the 2803 or 2804 Tape Control unit.

Minimum Configuration with Nondemountable Direct Access Storage

For configurations with nonremovable direct access storage devices (DASD), the following devices constitute the minimum configuration for hardware maintenance, provided the first forty cylinders on a nonremovable drive (other than the system residence drive) are made available for the generation and maintenance of service programs. This space must be allocated for initial installation, for modifications to the configuration, and for the application of maintenance facility updates.

- IBM 4341 Processor
- IBM 3278-2A Display Console or 3279-2C Color Display Console
- Card Image I/O device (See * above)
- Nonremovable DASD:
IBM 3350 — The first 40 cylinders of a drive dedicated when required.

Note: *After use of the 3350 by the service*

representative, this drive may need to be reformatted by the customer for customer use.

- Magnetic Tape device
- Hard-Copy Output device.

Additional Requirements for Installation and Operational Maintainability

In all configurations, each processor must use IBM programs (or equivalent) that provide for error recording, with elements for handling machine check interruptions and for recording status of the processor when a failure is detected. Routines for error recording are contained in some releases of DOS/VSE, OS/VS1, OS/VS2-MVS, and VM/370. IBM's ability to service configurations that do not meet the above requirements may be impaired with an effect upon system availability.

To further enhance maintainability and availability, it is recommended that provisions be made for the Remote Support Facility.

System Residence and Maintenance Storage Requirements

Optimum performance and maximum availability are obtained when a disk-storage facility is provided. The DOS, VS1, MVS, and VM/370 operating systems *require* a disk storage facility. These storage requirements are assumed to be attached through a block-multiplexer channel.

System Storage Requirements

A portion of processor storage is required for dynamic tables. This reduces the amount of processor storage available for user programming. Depending on the processor configuration, the reduction of available processor storage may be from 18K bytes to 130K bytes. The reduction is the sum of the requirements of user selectable options:

- Installed storage size (processor model), plus
- Number of unit control words (UCWs) selected, plus
- Mode of operation, as shown in the following:

	Model K2 (2 Megabytes) Processor Storage Required	Model L2 (4 Megabytes) Processor Storage Required	Model M2 (8 Megabytes) Processor Storage Required	Model N2 (12 Megabytes) Processor Storage Required	Model P2 (16 Megabytes) Processor Storage Required
Mode of Operation					
ECPS:VSE System/370	49,152 Bytes 10,240 Bytes	51,200 Bytes 10,240 Bytes	55,296 Bytes 10,240 Bytes	59,392 Bytes 10,240 Bytes	63,488 Bytes 10,240 Bytes
Number of UCWs	Processor Storage Required				
128	8,192 Bytes				
next 32	+2,048 Bytes				
next 32	+2,048 Bytes				
etc.,	etc.,				
up to:	up to:				
1024	65,536 Bytes				

Compatibility with System/360, System/370, and other 4300 Processors

An important difference between the System/370 and the 4300 processors when operated in ECPS:VSE mode is the concept of virtual storage being mapped to real storage under hardware and microcode control. *Real storage* is the amount of storage that is physically installed. The apparent storage (called *virtual storage*) can be any amount of storage that an application requires, up to 16,777,216 bytes.

Any program written for IBM System/370 can operate on the 4341 Processor in System/370 mode, provided that it:

1. Is not time-dependent.
2. Does not depend on system facilities (storage size, I/O equipment, optional features, etc.) being present when the facilities are not included in the configuration.
3. Does not depend on system facilities (interruptions, operation codes, etc.) being absent when the facilities are included in the 4341.
4. Does not depend on results or functions that are defined in the *Principles of Operation* to be unpredictable or model-dependent.

Any program written for the 4300 processors in ECPS:VSE mode operates on the 4341 Processor, provided that it follows the above rules.

Any program written for the System/360 operates on the 4341 provided that it follows the above rules and does not depend on functions that differ between System/360 and System/370. The

System/370 functions that differ from System/360 functions are described in an appendix of the *IBM System/370 Principles of Operation*.

For additional information about compatibility, see *IBM 4300 Processors Principles of Operation for ECPS:VSE Mode, GA22-7070*.

An important aspect of compatibility is the disk data format. With System/360 and System/370, the Count-Key-Data (CKD) architecture is used. The 4341 supports disk units with both the CKD format and Fixed-Block Architecture (FBA) formats. Existing disk volumes can be mapped onto system disk devices.

Data Representation

The 4341 is both character- and word-oriented. The basic addressable unit is an eight-bit byte (a character, two decimal digits, or eight bits). This provides for efficient use of storage and for high effective input/output rates for decimal data, variable field lengths, broad and flexible code conversion, decimal arithmetic, 32-bit words and 16-bit halfwords for fixed-point arithmetic, 32-bit words and 64-bit doublewords for floating-point arithmetic, and for instructions for such functions as translate and edit.

Processor Storage Characteristics

The 4341 Model Group 2 is available in five processor storage sizes:

- Model K2: 2,097,152 bytes (2 megabytes)
- Model L2: 4,194,304 bytes (4 megabytes)
- Model M2: 8,388,608 bytes (8 megabytes)
- Model N2: 12,582,912 bytes (12 megabytes)
- Model P2: 16,777,216 bytes (16 megabytes)