4361
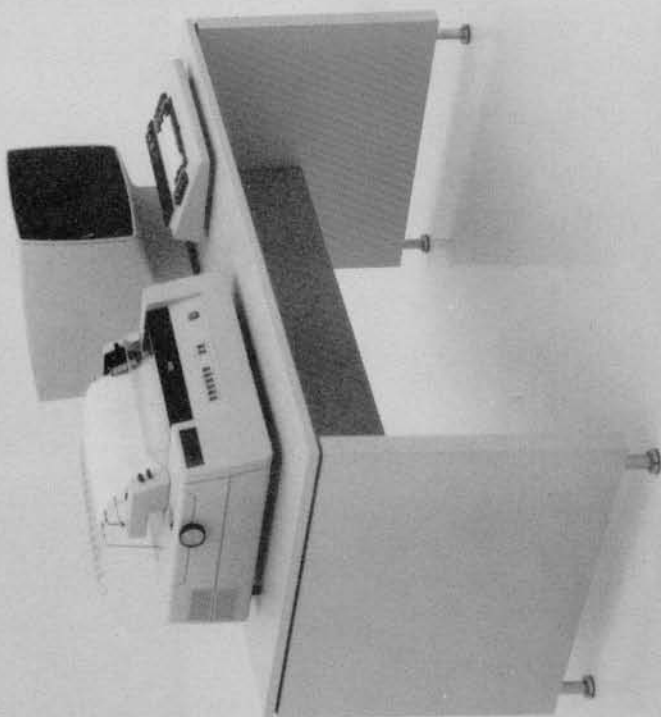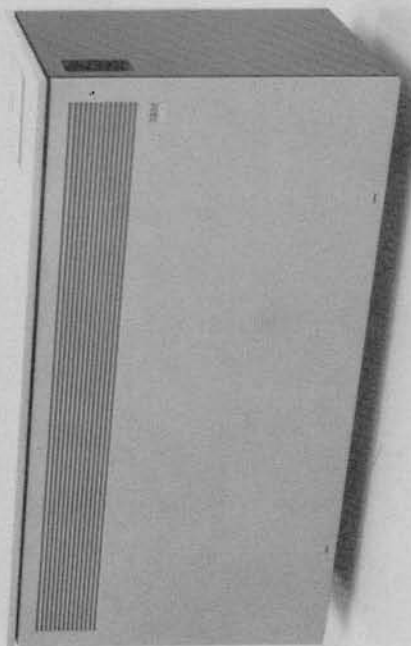
Models 4 and 5

PRODUCT DESCRIPTION

4361 Processor

The IBM 4361 Processor models 4 and 5 incorporate a new design concept that provides a new price and performance capacity as well as significant RAS improvements. The system is application program compatible with previous /370 systems and with 4331 or 4341 processors. Microcode diskettes shipped with the processor supply the complete microcode (maxilink) for diagnostics, standard functions, and all optional features.

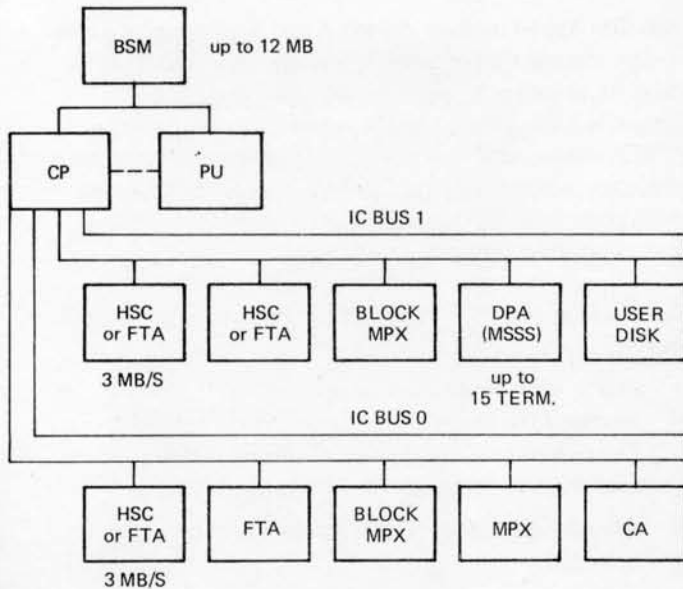Selectable at IPL time, the 4361 can operate in one of two modes:

- ECPS: VSE Mode (E—Mode)
- System /370 Mode
  For /370 Mode in addition 'VM assist' (ECPS: VM) and/or 'MVS assist' (ECPS: MVS) is selectable
- ☐ Emulation of other system architectures is not provided.
- ☐ Up to 3 times performance compared to a 4331—2 for commercial applications and up to 6 times for sientific applications.

MODEL DIFFERENCES

		Model 4	Model 5
PU cache storage (high speed buffer)	:	8 KB	16 KB
Channels	:	4	6
Performance compared to 4331—2			
commercial	:	up to 2 X	up to 3 X
sientific	:	up to 6 X	up to 6 X
MVS assist mode	:	no	yes
Start I/O Fast	:	no	yes

Note: On the model 4 the SIO fast release instruction is executed as a SIO instruction.

CONFIGURATION EXAMPLE


```
         ┌──────┐
         │ BSM  │  up to 12 MB
         └──────┘
          │    │
      ┌──────┐ ┌──────┐
      │  CP  │─┤  PU  │
      └──────┘ └──────┘
       │                    IC BUS 1
 ──────┴──────────────────────────────────
  ┌──────┐ ┌──────┐ ┌──────┐ ┌──────┐ ┌──────┐
  │ HSC  │ │ HSC  │ │BLOCK │ │ DPA  │ │ USER │
  │or FTA│ │or FTA│ │ MPX  │ │(MSSS)│ │ DISK │
  └──────┘ └──────┘ └──────┘ └──────┘ └──────┘
   3 MB/S                     up to
                            15 TERM.
                    IC BUS 0
 ──────────────────────────────────────────
  ┌──────┐ ┌──────┐ ┌──────┐ ┌──────┐ ┌──────┐
  │ HSC  │ │ FTA  │ │BLOCK │ │ MPX  │ │  CA  │
  │or FTA│ │      │ │ MPX  │ │      │ │      │
  └──────┘ └──────┘ └──────┘ └──────┘ └──────┘
   3 MB/S
```

Processor Complex

- Processing Unit (PU)

- Processing of all /370 instructions
- Frequently used /370 instructions are implemented in hardware (40%)

- Channel Processor (CP)

- Processing of all I/O instructions
- Controls the integrated I/O attachments and the I/O interface channels.
- Controls two integrated channel buses max. aggregate data rate on each IC–bus is 5 MB/SEC

- Processor Storage (BSM)

- BSM sizes : 2,4,6,8,12 megabytes
- cards with 512 KB and/or 1024 KB each are used

- Service Subsystem (MSSS)

- Powers up and loads microcode of entire system
- Controls the maintenance and service functions
- Operator Console
- Controls locally attached displays, printers and the two diskette drives.

Standard Features

The 4361 includes many generally required features as standard. Configuring, ordering, and administration procedures are simplified.

- DPA   Display Printer Adapter with 16 ports
- System diskette drive
- I/O diskette drive (can be used by the customer after IML/IPL)
- MPX   Byte Multiplexer Channel (model 5 only)
- BMPX 1   Block Multiplexer Channel
- BMPX 2   Block Multiplexer Channel (model 5 only)
- ECPS: VM/370
- ECPS: MVS
- External signals
- SPI for connection of 16 CU's
- Floating point multiply hardware accelerator card
- RSF/ Remote Operator Console Feature (ROCF) (standard for microcode only)
- ACRITH high arithmetic facility
- DASD compatibility function

Optional Features

- Byte multiplexer channel (model 4 only)
- DASD/8809 adapter
- High speed BMPX channel
- Communication adapter (up to 8 lines)

Due to the enhanced microcode and hardware of the data mover and the IC–bus accelerated data rate, up to 6 channels can be attached on the 4361–5 and up to 4 channels on the 4361–4.

Programming Support

Current operating systems support the 4361. Enhanced support for 'SIO' fast release instruction will be provided:

- VSE/AF release 3.5
- VM/SP release 3 + SPE
- MVS release 3.8 + and MVS/SP 1.3.2. or higher + PTF
- VSE/SIPO release   1.4
- VSE/SP   release   1.1
- SSX/VSE release   1.3

RAS Improvements

Major RAS improvements are marked with an asterisk

- ECC   Error Correction Code

*   - SCRUB   Memory is scanned every 13.33 MS and soft failures found are corrected. The SCRUB function is initiated by a specific BSM diagnose CMD and runs under control of the channel processor.

*   - RETRY   Double bit errors (hard/soft bit failure) will be corrected through a hardware controlled RETRY function initiated by the BSM controller.

*   - BSM—Machine check handling

> To reduce system crashes, uncorrectable BSM errors are now handled on 4361 and will be reported to the operating system for storage deconfiguration, handled by the operating system page manager (if capable).

*   - IC bus check

*   - Adapter—I/O reset handling (chnl check handling)

*   - Initial test / IML RAS

*   - System Event Trace (SET)
Facility to trace I/O device, adapter and channel operations concurrent to customer operations.

*   - Print screen to any line printer
Print function if console screen is in CE or customer MANOP mode.

*   - Configuration tool

*   - Increased check coverage

*   - Microcode fix diskette
Tool for quick microcode fix and update, this ensures fast microcode fix turn—around time.

*   - Maxi microcode link
Microcode for all features is contained on each set of diskettes.

*   - System verification   (customer accessible)

*   - System status display   (customer accessible)

Installability

Installation time of the new 4361 models is projected to be approximately 18 CE hours.

Upgradeability

The Systems 4331 model 1, 2 and 11 can be field upgraded to the 4361 mod 5.

Projected field upgrade time is approximately 16—20 system hours, depending on features.

The 4361 mod 4 can be upgraded to the 4361 mod 5.

Technology

- Logic technology similar to 4331
- Improved power distribution (DC to DC switching regulators)

Physical Characteristics

- Office environment
- Environmental conditions

> Temperature : Class B 10.0 to 32.0 degree C
> Humidity   : 8 to 80 % RH
> Noise rating : 56 DB

- Power

> Phases   : Single phase
> Load   : 2.6 KVA
> Fuse   : 16 A (max.)
> Frequency   : 50 HZ or 60 HZ

Manufacturing Locations

- Havant   UK
- Endicott   USA
- Yasu   Japan

Maintenance Package

The maintenance package consists of:

- Initial machine check out during IML via extensive automatic diagnostic run.
- First failure capture for reference code creation and error logging.
- Reference code for Problem Finder (PROFI)/Integrated Reference Code Analysis (IRECA) and Maintenance Analysis Procedure (MAP) entry
- PROFI to be used by the customer
- IRECA
- System Event Trace (SET)
- System status display
- MAP
- Microcode inline test
- Microcode fix diskette
- RSF

4361 Problem Finder (PROFI)

The 4361 'Problem Finder' is a new facility that can be invoked by the customer at the operator console at any time to search for possible problems and obtain guidance for problem determination and solution where possible.

- Takes the guess—work out of many unclear situations (hangs, hard waits, loops, etc.)
- Reduces system outage by already suggesting FRU's for initial customer service call.
- Is easy to use via screen prompted instructions.
- Can be used concurrently with applications.
- Is operational even when processing unit, main storage, channels or attachments are down.
- Gives telephone number of the responsible service location.

Remote Support Facility (RSF)

The 4361 may use the databank and datalink facilities of RETAIN in a remote support environment.

- Remote console mode allows control of the system from a RETAIN terminal.
- In databank mode the system works like a RETAIN terminal which allows access to RETAIN databank facility.

Customer Data Security

- Customer permission for RSF connection
- RSF connection is established at the customer location by the IBM Customer Engineer only.
- All data to be transferred are displayed on screen and can be monitored by the customer.
- Immediate break of RSF session by the customer via control command possible

Service Delivery (EMEA only)
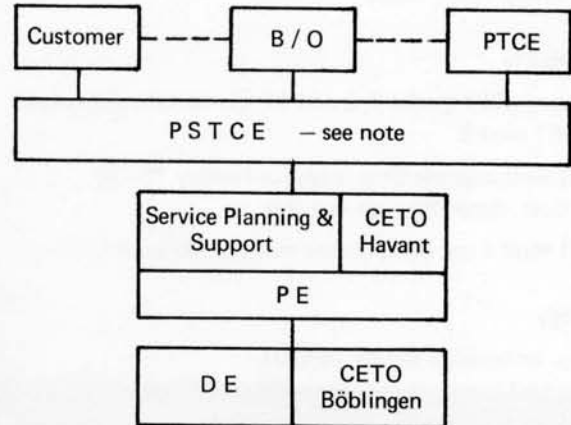
Note: Depending on country organisation, PSTCE will be involved immediately on every customer call (hardware central service) or by PTCE.
AFE: Will follow the 4300 support structure.

Maintenance Service (Maint. Agreement)

The IBM maintenance agreement enables IBM CE to provide optimal service and system availability and combines the above service components with limited customer involvement.

CE fully assumes responsibility to keep this machine in good working order. The IBM maintenance agreement is available at planable cost with minimum administrative impact to the customer.

The IBM maintenance agreement is the best way to protect customers investment. IBM CE will assist in the marketing of maintenance agreement.

CE Career Path

The 4361 processor complex is assigned to the "Account Systems" Career Path.