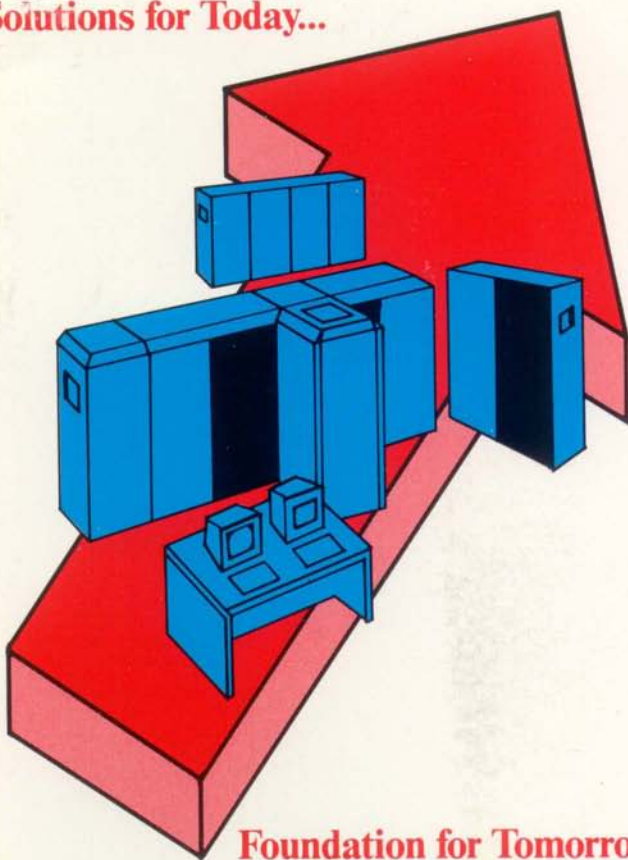


ES/3090 S Processor Complex Reference Card

Solutions for Today...



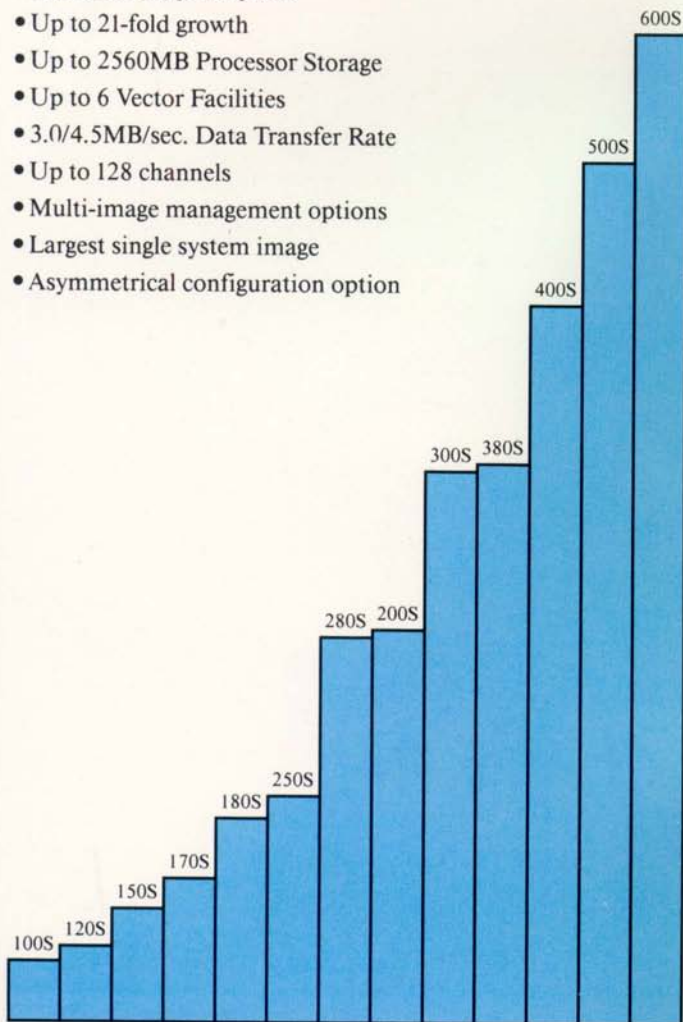
Foundation for Tomorrow

The Platform for Application Growth

IBM

IBM ES/3090 S Processor Family

- Enterprise Systems Architecture/370 (ESA/370)
 - Architecture base into the '90s
- Extensive granularity
- Numerous upgrade paths
- Up to 21-fold growth
- Up to 2560MB Processor Storage
- Up to 6 Vector Facilities
- 3.0/4.5MB/sec. Data Transfer Rate
- Up to 128 channels
- Multi-image management options
- Largest single system image
- Asymmetrical configuration option



**IBM Enterprise Systems
Architecture/370**

IBM ES/3090 S Processor Family

Upgrade Performance Comparison (ITR)

| Model From-To | MVS/ESA Commercial | Numerically Intensive Computing | | VM/XA SPX CMS |
|------------------|-----------------------|------------------------------------|---------|------------------|
| | | Scalar | Vector | |
| 100S-120S | 1.3-1.4 | 1.0-1.4 | 1.2-1.5 | 1.3 |
| 120S-150S | 1.5-1.6 | 1.6-2.2 | 1.0-1.5 | 1.6 |
| 120E-150S | 1.5-1.6 | 1.6-2.2 | 1.0-1.5 | 1.6 |
| 150S-170S | 1.1-1.3 | 1.0-1.4 | 1.1-1.4 | 1.1 |
| 150E-170S | 1.4-1.5 | 1.0-1.4 | 1.0-1.3 | 1.4 |
| 170S-180S | 1.3-1.5 | 1.2-1.4 | 1.2-1.5 | 1.3 |
| 150E-180S | 1.9-2.2 | 1.3-1.7 | 1.3-1.6 | 1.9 |
| 180E-180S | 1.2-1.3 | 1.2 | 1.1-1.3 | 1.2 |
| 150E-250S | 2.0-2.4 | 1.6-2.5 | 1.6-2.1 | 2.4 |
| 150S-250S | 1.9 | 1.7-1.9 | 1.7-1.9 | 1.9 |
| 250S-280S | 1.5-1.8 | 1.3-1.6 | 1.4-1.8 | 1.5 |
| 180S-280S | 1.8-1.9 | 1.9-2.0 | 1.9-2.0 | 1.9 |
| 180E-280S | 2.3-2.5 | 2.3-2.5 | 2.3-2.6 | 2.4 |
| 280E-280S | 1.2-1.3 | 1.2 | 1.2-1.3 | 1.2 |
| 180S-200S | 1.8-1.9 | 2.0 | 1.9-2.0 | 1.9 |
| 180E-200S | 2.4-2.6 | 2.3-2.5 | 2.3-2.6 | 2.4 |
| 200E-200S | 1.2-1.3 | 1.2 | 1.1-1.3 | 1.2 |
| 200E-380S | 1.8-1.9 | 1.7-1.9 | 1.7-2.0 | 1.7 |
| 200S-380S | 1.4-1.5 | 1.5 | 1.4-1.5 | 1.4 |
| 280E-380S | 1.8-2.0 | 1.8-1.9 | 1.7-2.0 | 1.8 |
| 280S-380S | 1.4-1.5 | 1.5 | 1.4-1.5 | 1.4 |
| 200S-300S | 1.4 | 1.5 | 1.3-1.5 | 1.4 |
| 200E-300S | 1.8-1.9 | 1.7-1.9 | 1.7-1.9 | 1.7 |
| 300E-300S | 1.2-1.3 | 1.2 | 1.1-1.3 | 1.2 |
| 280S-400S | 1.8-1.9 | 2.0 | 1.8-2.0 | 1.8 |
| 200S-400S | 1.7-1.9 | 2.0 | 1.7-2.0 | 1.8 |
| 380S-400S | 1.2-1.3 | 1.3 | 1.2-1.3 | 1.2 |
| 300S-400S | 1.2-1.3 | 1.3 | 1.2-1.3 | 1.2 |
| 280E-400S | 2.3-2.5 | 2.3-2.5 | 2.2-2.6 | 2.2 |
| 200E-400S | 2.3-2.5 | 2.3-2.5 | 2.1-2.6 | 2.2 |
| 300E-400S | 1.6-1.7 | 1.5-1.6 | 1.5-1.7 | 1.5 |
| 400E-400S | 1.2-1.4 | 1.2-1.3 | 1.2-1.4 | 1.2 |
| 300S-500S | 1.5-1.6 | 1.6-1.7 | 1.5-1.6 | 1.5 |
| 400S-500S | 1.2 | 1.2 | 1.2 | 1.2 |
| 300E-500S | 1.9-2.1 | 1.9-2.1 | 1.8-2.1 | 1.9 |
| 400E-500S | 1.5-1.7 | 1.5-1.6 | 1.4-1.7 | 1.5 |
| 500E-500S | 1.2-1.4 | 1.2-1.3 | 1.2-1.4 | 1.2 |
| 300S-600S | 1.7-1.8 | 1.9-2.0 | 1.6-2.0 | 1.8 |
| 400S-600S | 1.4 | 1.5 | 1.3-1.5 | 1.4 |
| 500S-600S | 1.1 | 1.2 | 1.1-1.2 | 1.1 |
| 300E-600S | 2.2-2.4 | 2.3-2.5 | 2.0-2.6 | 2.2 |
| 400E-600S | 1.7-1.9 | 1.8-1.9 | 1.6-2.0 | 1.7 |
| 500E-600S | 1.4-1.6 | 1.4-1.5 | 1.3-1.6 | 1.4 |
| 600E-600S | 1.3-1.5 | 1.2-1.3 | 1.2-1.4 | 1.2 |

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using IBM Benchmark Workloads

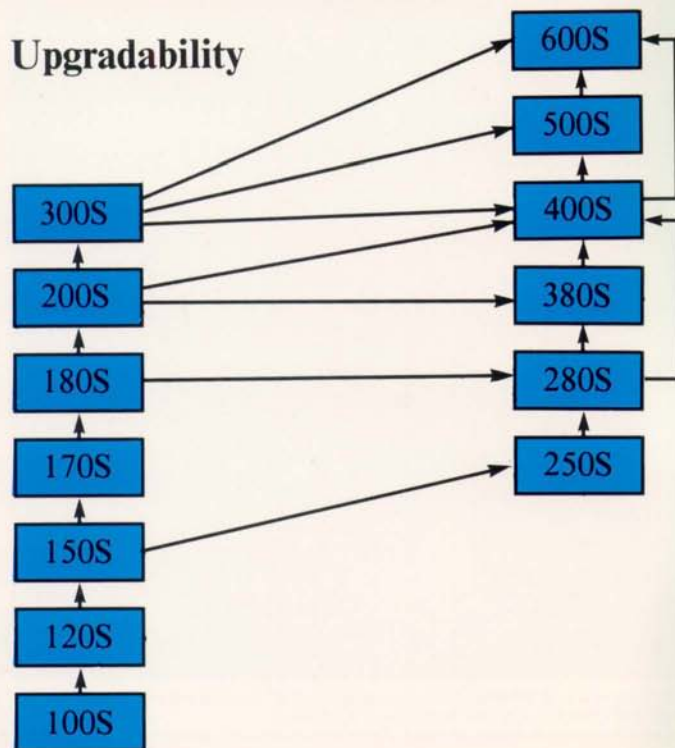
**The Base for Growth
into the '90s**

Models

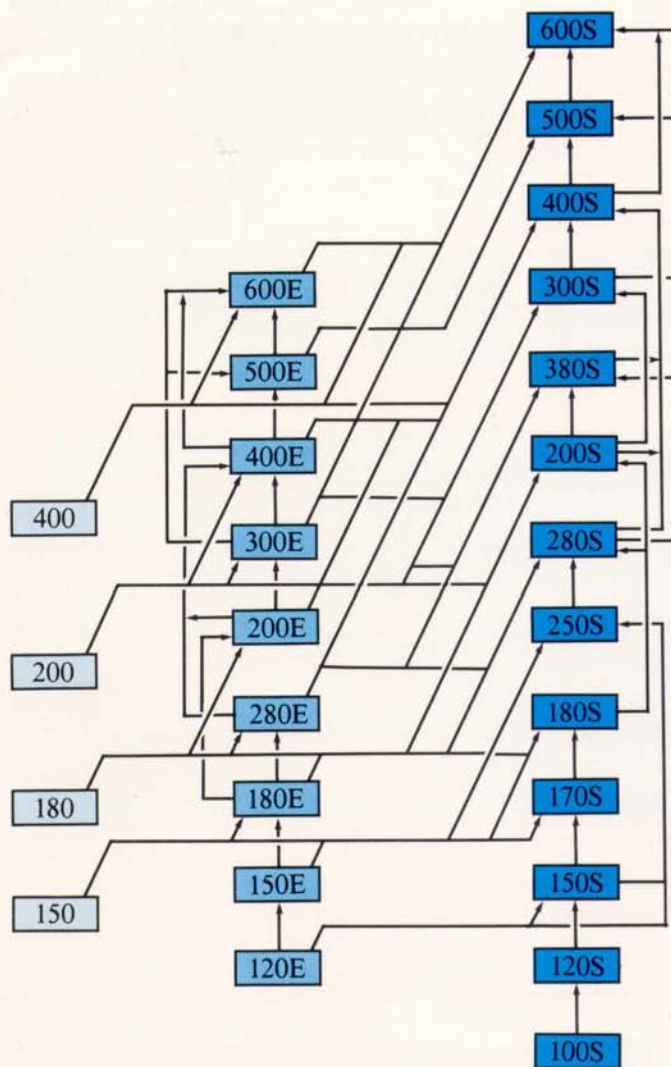
| | |
|--------------------------------------|-----------------------------|
| 100S 120S 150S 170S 180S | Uniprocessor models |
| 200S | Dyadic processor model |
| 300S | Triadic processor model |
| 250S 280S | 2-way multiprocessor models |
| 380S | 3-way multiprocessor model |
| 400S | 4-way multiprocessor model |
| 500S | 5-way multiprocessor model |
| 600S | 6-way multiprocessor model |

Field Upgradable from Model 100S through 600S

Upgradability

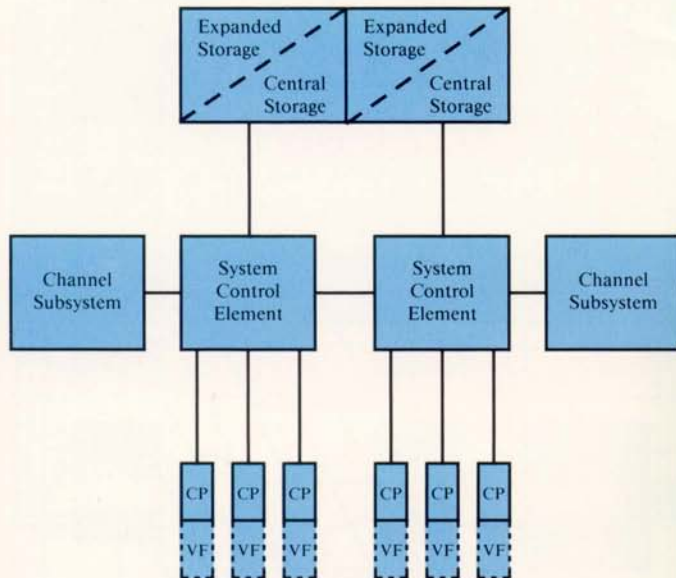


Up to 21-Fold Growth



Extensive Granularity

Processor Storage



100S, 120S, 150S, 170S, 180S



200S



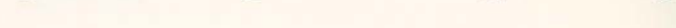
300S



250S, 280S



380S



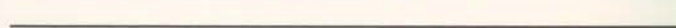
400S



500S



600S



- Thermal Conduction Module (TCM) – enhanced cooling
- Multilayer Ceramic Substrate (38 layers)
- Denser TCM Board
- Cycle time 18.5 ns – 15 ns
- New logic chip-imbedded arrays

Chip → TCM → Board → Frame
 2360/612 → 100/132 → 6/9 TCMs → 2 Boards
 Circuits → Chip Sites
 Emitter Coupled Logic (ECL)

| | TCM Logic | Processor Storage | | High-Speed Buffer | Processor Microcode WCS*/ROS |
|-------------------|-----------|-------------------|------------------|-------------------|------------------------------|
| | | Central Storage | Expanded Storage | | |
| Type | Bipolar | NMOS | NMOS | Bipolar | Bipolar |
| Capacity | - | 1Mb | 1Mb | 4Kb/8Kb* | 32Kb/64Kb |
| Circuits per chip | 2360*/612 | - | - | - | - |

100S, 120S, 150S and 170S may have 64Kb chips in Central Storage

100S, 120S, 150S, 170S and 250S may have 288Kb chips in Expanded Storage

* Writeable Control Store, 2360 circuits/chip and 8Kb High Speed Buffer Chip are available in 180S, 200S, 280S, 300S, 380S, 400S, 500S and 600S

IBM Technology Leadership:

- TCM Continues to have the Densest Logic Module Packaging in the Industry in commercial mainframes
- First One-Megabit Chip in Production Systems
- ES/3090 Models use 2nd Generation One-Megabit Chip

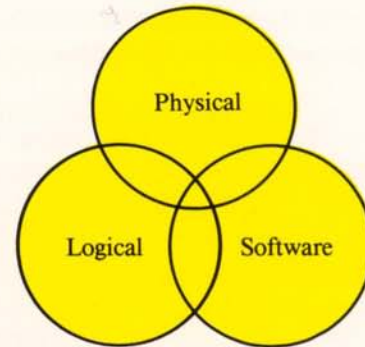
IBM Enterprise Systems Architecture/370 (ESA/370)

- A new architecture for:
 - Processing increasing amounts of data
 - Avoiding constraints to further growth
 - Maximizing system efficiency through use of Expanded Storage
- ESA/370 is the architectural base into the '90s
 - An evolutionary step beyond S/370 Extended Architecture
 - Unique to the IBM ES/3090 and IBM ES/4381 Model Groups 90E, 91E and 92E
 - Supported by MVS/ESA and VM/XA SP software for guest usage

MVS/ESA (MVS/SP V3 and MVS/DFP V3)

- Runs on all IBM ES/3090 Models and IBM ES/4381 Model Groups 90E, 91E and 92E
- MVS/SP V3 is easy to install and use
- Offers powerful addressing capability through creation of multiple 2GB data spaces
- Maximum benefits derived through use of Expanded Storage
- Provides the base for improved performance and response time by reducing I/Os
- Improves data integrity by allowing separation of programs and data
- Improves I/S professional productivity
- Enables application growth
- Provides significant operational value
- Allows for automatic management of data within the storage hierarchy
- Simplifies DASD migration

IBM ES/3090 S Multi-Image Management



- Physical partitioning with ES/3090 multiprocessor models
- More granularity on multiprocessors through asymmetry
- Logical partitioning through ES/3090 Processor Resource/Systems Manager (PR/SM) feature
 - Complements physical and software partitioning
 - Provides up to 7 logical partitions*
 - Provides up to 14 logical partitions on MP Models operating in Physically Partitioned Mode**
 - Comprehensive SCP support
 - High performance through event driven scheduling
 - Uses existing skills
 - Flexible systems resource utilization
 - Processor/Vector Facilities can be dynamically shared or dedicated, with granularity as small as a portion of a single processor
 - Processor storage is dedicated and can be partitioned in 1MB increments at activation
 - Channels can be dynamically dedicated or reconfigured, with a granularity of one channel
- One PR/SM feature per side required on ES/3090 S Models
- Software partitioning through VM/XA SP
 - Enhanced through PR/SM feature
 - Up to 6 preferred guests
- Used for diverse production workloads, consolidation, migration, test, development, maintenance and backup/recovery
- Provides cost reduction, resource balancing, workload isolation, physical backup, and lower cost entry multiprocessing

* Up to 4 logical partitions on 100S, 120S, 150S, 170S and 250S

** Up to 8 logical partitions on 250S

IBM ES/3090 S Expanded Storage

- Optional extension of ES/3090 Central Storage
- Expanded Storage provides an effective base for data in memory
- Up to 2560MB of ES/3090 S Model Processor Storage (combination of Central Storage and Expanded Storage)
- More granularity on multiprocessors through asymmetry
- Immediate benefit to subsystem and user program with no program changes required
- 4K pages synchronously moved to or from Central Storage
 - Page movement orders of magnitude faster than channel attached devices
- Single and double-bit error correction and detection of triple and some multiple bit errors for increased system availability
- Significant performance improvements ... some customer experiences:
 - External paging load reduced 50%
 - Response time improved 67%
 - Transactions volumes increased 30%
 - Job elapsed times reduced
- Benefits when used with MVS/ESA
 - Reduced I/Os
 - Provides a base for improved performance, including response time
 - High performance spaces (Hiperspaces)
 - High performance SORT (DFSORT Hipersorting)
- Improved MVS/ESA performance in terms of response time, transaction volumes, and number of users through use of Expanded Storage and subsystems such as DB2, IMS, TSO and CICS.
- Significant performance improvements through use of expanded storage for minidisk caching and logon directories (VM/XA SP)
- Improved VM/SP HPO and VM/XA performance by paging into Expanded Storage
- Partitioned use of Expanded Storage by VM/XA SP

IBM ES/3090 S Vector Facility (1)

- Optional extension to each Central Processor
- Incremental investment: up to six on Model 600S
- 171 vector instructions
- Up to 15-fold performance growth in vector throughput
- High-speed divide and doubled section size (Model 180S, 200S, 280S, 300S, 380S, 400S, 500S and 600S)
- Growing number of enabled applications are available in the areas of seismic, structures, fluids, computational chemistry, and others*

VM support

- VM/SP HPO Release 5
- VM/XA SP
 - Exploitation of expanded storage for applications with large working sets
- AIX/370

MVS support

- MVS/SP Versions 2 and 3
- Data in virtual for selected data sets
- RMF for vector statistics

Application Support

- SCENAD - full screen menus, ISPF support
- VS FORTRAN Version 2.3
 - Automatic vectorizing capabilities
 - Interactive Vectorization Aid
 - Multitasking facility for multiple processor execution of a single job
- Assembler H Version 2
- VS FORTRAN V2.1
 - Parallel FORTRAN (PRPQ)
- Engineering and Scientific Subroutine Library (ESSL)
- FORTRAN translation tool
- IBM FORTRAN Language Conversion Program
- APL2 direct support of Vector Facility
- Mathematical Programming System Extended/370 (MPSX/370) Vector Facility support with up to two times performance improvement over scalar

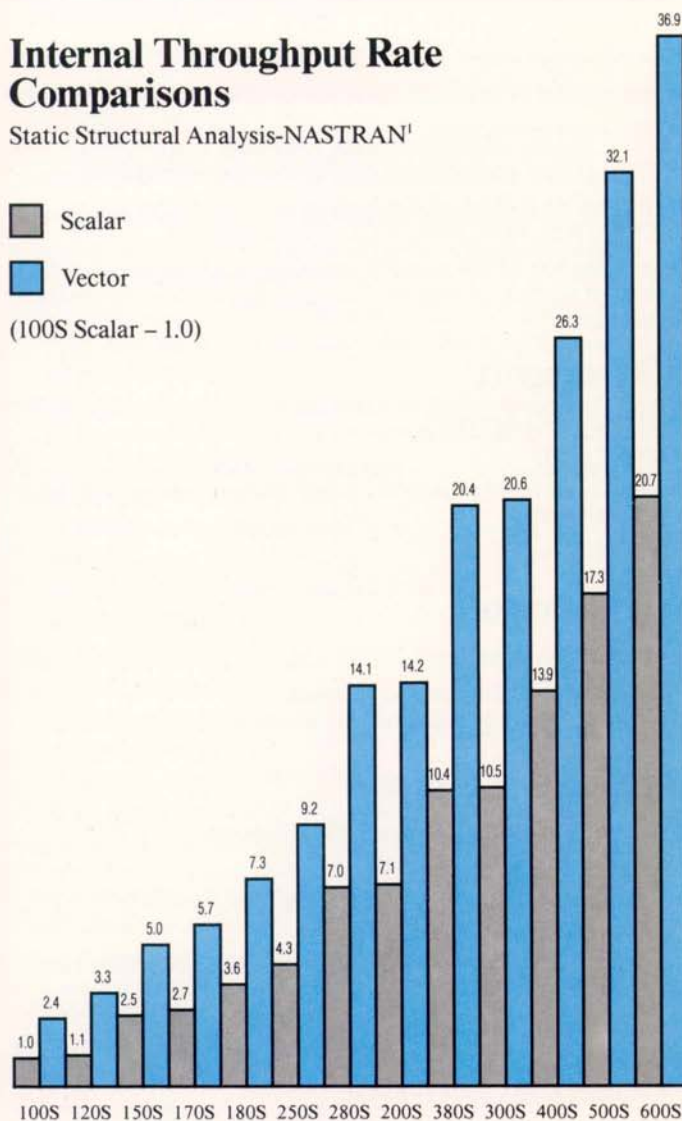
* See Catalog of Engineering and Scientific Application Programs, G320-6739

Internal Throughput Rate Comparisons

Static Structural Analysis-NASTRAN¹

Scalar
 Vector

(100S Scalar - 1.0)



**37-fold
Throughput Increase**

¹ NASTRAN is a registered trademark of the National Aeronautics and Space Administration
BCCLL12 (NASTRAN Static Structure Analysis)

| Model | Processor Storage | | | | | | Channel | | | Vector Facility | | |
|-------|-------------------|-----|-----|------------------|------|-----|---------|------|-------|-----------------|------|-------|
| | Central Storage | | | Expanded Storage | | | Min. | Max. | Incr. | Min. | Max. | Incr. |
| 100S | 32 | 64 | 32 | 0 | 256 | 64 | 16 | 32 | 8 | 0 | 1 | 1 |
| 120S | 32 | 64 | 32 | 0 | 256 | 64 | 16 | 32 | 8 | 0 | 1 | 1 |
| 150S | 32 | 64 | 32 | 0 | 256 | 64 | 16 | 32 | 8 | 0 | 1 | 1 |
| 170S | 32 | 64 | 32 | 0 | 256 | 64 | 16 | 32 | 8 | 0 | 1 | 1 |
| 180S | 32 | 128 | (5) | 0 | 256 | 64 | 16 | 32 | 8 | 0 | 1 | 1 |
| 250S | 64 | 128 | 64 | 0 | 512 | 64 | 32 | 64 | 8 | 0 | 2 | 1 |
| 280S | 64 | 256 | (6) | 0 | 512 | 64 | 32 | 64 | 8 | 0 | 2 | 1 |
| 200S | 64 | 256 | (6) | 0 | 1024 | (1) | 32 | 64 | (2) | 0 | 2 | 1 |
| 300S | 64 | 256 | (6) | 0 | 1024 | (1) | 32 | 64 | (2) | 0 | 3 | 1 |
| 380S | 128 | 512 | (7) | 0 | 1024 | (1) | 32 | 64 | (2) | 0 | 2 | 1 |
| 400S | 128 | 512 | (7) | 0 | 2048 | (3) | 64 | 128 | (4) | 0 | 4 | 1 |
| 500S | 128 | 512 | (7) | 0 | 2048 | (3) | 64 | 128 | (4) | 0 | 5 | 1 |
| 600S | 128 | 512 | (7) | 0 | 2048 | (3) | 64 | 128 | (4) | 0 | 6 | 1 |

- (1) 64 up to 256. Then 256 to 512. Then 512. Then 16 to 64.
 (2) 8 up to 48. Then 16.
 (3) On each side 64 up to 256. Then 256 to 512. Then 512 to 1024.
 (4) On each side 8 up to 48. Then 16 to 64.
 (5) 32 up to 64. Then 64.
 (6) 64 up to 128. Then 128.
 (7) 128 up to 256. Then 256.

Models 250S, 280S, 380S, 400S, 500S and 600S can be configured asymmetrically for channels and expanded storage. If expanded storage is installed, at least 64MB must be present on each side.

IBM ES/3090 S Processor Support Units

| Model | Processor Controller 3092 | Power and Coolant Distrib. 3097-1,-2 | Power Unit 3089-3* | Display Station 3206-100 | Modem 3864-2** |
|-------|---------------------------|--------------------------------------|--------------------|--------------------------|----------------|
| 100S | Model 4 | 1 | 1 | 2-3 | 1 |
| 120S | Model 4 | 1 | 1 | 2-3 | 1 |
| 150S | Model 5 | 1 | 1 | 2-5 | 1 |
| 170S | Model 5 | 1 | 1 | 2-5 | 1 |
| 180S | Model 5 | 1 | 1 | 2-5 | 1 |
| 250S | Model 5 | 2 | 2 | 3-6 | 2 |
| 280S | Model 5 | 2 | 2 | 3-6 | 2 |
| 200S | Model 5 | 1 | 2 | 2-5 | 1 |
| 300S | Model 5 | 1 | 2 | 2-5 | 1 |
| 380S | Model 5 | 2 | 3 | 3-6 | 2 |
| 400S | Model 5 | 2 | 4 | 3-6 | 2 |
| 500S | Model 5 | 2 | 4 | 3-6 | 2 |
| 600S | Model 5 | 2 | 4 | 3-6 | 2 |

- * Or equivalent 400 Hz power source
 ** Or 4800 bps switched network modem (or equivalent) with autocall/autoanswer feature

Note: For additional details, see *IBM 3090 Processor Complex Support Units*, G511-0134 and *ES/3090 Processor Complex: Installation Manual-Physical Planning* (GC22-7080)

IBM ES/3090 S Physical Characteristics

| Units | 100S | | 120S | | 150S | | 170S | | 180S | | 250S | | 280S | | 200S | | 300S | | 380S | | 400S | | 500S | | 600S | | |
|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|--|
| | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | |
| Power Consumption kVA | 20.1 | 28.8 | 20.1 | 28.8 | 20.1 | 28.8 | 20.1 | 28.8 | 21.2 | 29.6 | 41.6 | 59.0 | 42.4 | 59.2 | 30.4 | 43.1 | 37.5 | 51.8 | 51.3 | 75.1 | 60.8 | 86.2 | 67.9 | 94.9 | 75.0 | 103.6 | |
| 400 Hz 60 Hz | 5.9 | 5.9 | 5.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 11.2 | 11.2 | 11.2 | 11.2 | 6.9 | 6.9 | 6.9 | 6.9 | 11.2 | 11.2 | 11.2 | 11.2 | 11.2 | 11.2 | 11.2 | 11.2 | |
| Heat Output kBTU/hr | 40.3 | 55.7 | 40.3 | 55.7 | 40.3 | 55.7 | 40.3 | 55.7 | 43.3 | 58.7 | 80.6 | 111.4 | 86.6 | 117.4 | 65.2 | 87.3 | 84.0 | 111.9 | 111.6 | 150.4 | 130.4 | 174.6 | 159.0 | 192.2 | 168.0 | 223.8 | |
| To water | 31.4 | 40.3 | 31.4 | 40.3 | 35.2 | 44.1 | 35.2 | 44.1 | 35.5 | 44.4 | 61.9 | 79.7 | 62.5 | 80.3 | 39.6 | 55.5 | 42.7 | 59.3 | 65.9 | 97.4 | 70.7 | 102.5 | 73.8 | 106.3 | 76.9 | 110.1 | |
| To air | 71.7 | 96.0 | 71.7 | 96.0 | 75.5 | 99.8 | 75.5 | 99.8 | 78.8 | 103.1 | 142.5 | 191.1 | 149.1 | 197.7 | 104.8 | 142.8 | 126.7 | 171.2 | 177.5 | 247.8 | 201.1 | 277.1 | 232.8 | 298.5 | 244.9 | 333.9 | |
| Total | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Floor space Sq. Metres | 7.4 | 8.5 | 7.4 | 8.5 | 7.4 | 8.5 | 7.4 | 8.5 | 7.4 | 8.5 | 13.7 | 15.9 | 13.7 | 15.9 | 7.4 | 9.1 | 8.5 | 9.1 | 13.7 | 17.1 | 13.7 | 17.1 | 14.8 | 17.1 | 15.9 | 17.1 | |
| Sq. Feet | 80 | 92 | 80 | 92 | 80 | 92 | 80 | 92 | 80 | 92 | 148 | 172 | 146 | 172 | 80 | 98 | 92 | 98 | 148 | 184 | 148 | 184 | 160 | 184 | 178 | 184 | |
| Including Service Clearance | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sq. Metres | 39.7 | 44.9 | 39.7 | 44.9 | 39.7 | 44.9 | 39.7 | 44.9 | 42.7 | 48.4 | 65.2 | 73.1 | 65.2 | 73.1 | 39.7 | 45.6 | 44.9 | 45.6 | 65.2 | 77.0 | 65.2 | 73.1 | 69.2 | 77.0 | 73.1 | 77.0 | |
| Sq. Feet | 427 | 484 | 427 | 484 | 427 | 484 | 427 | 484 | 427 | 484 | 702 | 787 | 702 | 787 | 427 | 491 | 484 | 484 | 702 | 829 | 702 | 787 | 745 | 829 | 787 | 829 | |
| Weight* kg. | 4788 | 6118 | 4788 | 6118 | 5279 | 6609 | 5279 | 6609 | 5279 | 6609 | 9600 | 12259 | 9600 | 12350 | 5432 | 7213 | 6215 | 7386 | 9863 | 12522 | 10036 | 13559 | 10800 | 13731 | 111563 | 13904 | |
| lb. | 10535 | 13460 | 10535 | 13460 | 11615 | 14540 | 11615 | 14540 | 11615 | 14540 | 21120 | 26970 | 21320 | 27170 | 11995 | 15870 | 13675 | 16230 | 21700 | 27550 | 22080 | 29830 | 23760 | 30210 | 25440 | 30590 | |

Figures for power consumption, heat output, space requirements, and weight include IBM 3097 Power and Coolant Distribution Units, 3092 Processor Controller, and 3090 Processor Unit as minimum and maximum configuration. Includes Channels, Central Storage, Expanded Storage, and Vector Facility.

* Approximate weight figures.

The IBM ES/3090 Processor Complex Installation Manual - Physical Planning, GC22-7080, should be used for detail planning.

IBM ES/3090 S MVS Control Program Support

MVS

| Function | MVS/System Product | |
|---|--------------------|-------------------|
| | MVS/XA | MVS/ESA |
| Support for ESA/370 | | • |
| Data Spaces TSO/E REXX & CLISTS Catalog entries Virtual Lookaside Facility | | • • • • |
| Expanded Storage* VIO Expanded Storage Support* | • • | •• • |
| Hiperspace* VSAM Buffers in Hiperspace* Hipersorting* | | • • • |
| Data in Virtual | • | •• |
| Data Windowing Services* | | • |
| Central Storage Utilization Constraint Relief Below 16MB* CICS Data Tables Support for 512MB | • | •• • • • |
| Multi-address Space Access | • | •• |
| Global Resource Serialization | • | •• |
| Up to six-way Single Image Support | • | •• |
| Vector Facility - Compile/Execute | • | • |
| FORTRAN Multitasking Facility | • | • |

* Additional Value from Expanded Storage

• Function Supported

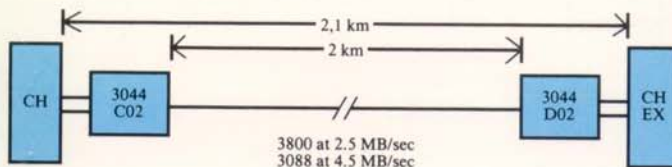
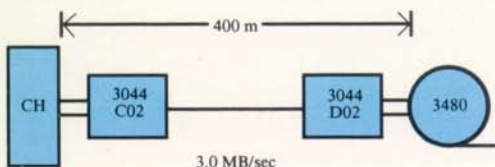
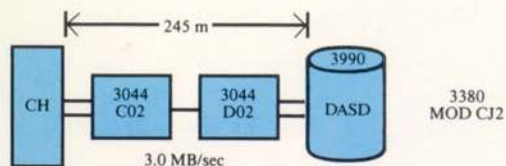
•• Function Enhanced

VM

| Function | VM/SP | VM/XA | |
|---|---------------------------|--------------------|------------------|
| | High Performance Option 5 | Systems Facility 2 | System Product 2 |
| 31-bit Addressing | | ● | ● |
| Up to 6-Way Single System Image | | ● | ● |
| MVS/ESA Guest Support | | | ● |
| MVS/XA Guest Support | | ● | ● |
| MVS/370 Guest Support | ● | ● | ● |
| AIX/370 Guest Support | ● | | ● |
| VSE and VS1 Support | ● | ● | ● |
| Multiple Preferred Guests Support | | | ● |
| Start Interpretive Execution (SIE) | | ● | ● |
| VMA under SIE | | ● | ● |
| SIE Assist | | ● | ● |
| Dynamic Channel Subsystem | | ● | ● |
| 64MB Central Storage | ● | ● | ● |
| 512MB Central Storage | | ● | ● |
| Expanded Storage Paging Support Guest Support Minidisk Caching | ● | ● | ● |
| Vector Facility - Compile/Execute | ● | ● | ● |
| High-Capacity Bimodal CMS | | | ● |
| CMS-Numeric Intensive Computing | ● | ● | ● |
| Spool File Limit Relief | ● | | ● |
| Native SNA Support | ● | | ● |
| Programmable Operator Support | ● | | ● |
| Parallel FORTRAN (PRPQ) | | | ● |
| 3990-3 Support | ● | | ● |
| Logon and IPL Enhancements | | | ● |

3044 Fiber Optic Channel Extender Link

- Introduces fiber optic technology as a transmission medium for attaching I/O control units, switching units and channel-to-channel interfaces to block multiplexer channels
- Consists of two units interconnected by up to 2 km of fiber optic cable. (C02 attaches to channel and D02 to remote control units)
- Provides "near local" response time to "remote" users
- Support speeds up to 4.5 MB/sec
- Supports 50/125 or 62.5/125 micron fiber
- Supports DASD and tape



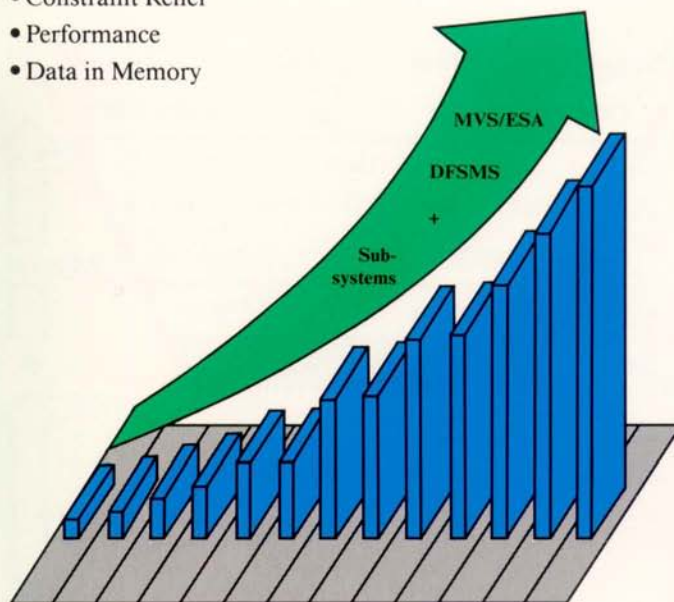
3088 Multisystem Channel Communication Unit

- Provides the capability of interconnecting up to eight processor channels and up to 252 logical CTCA Links
- Data streaming capability providing up to 4.5MB/sec transfer rate
- Interprocessor cable distances of up to 245 meters
- Up to two simultaneous data transfers
- Early channel disconnect allowing enhanced channel utilization
- Compatibility with existing S/370 CTCA facilities

3814 Switching Management System

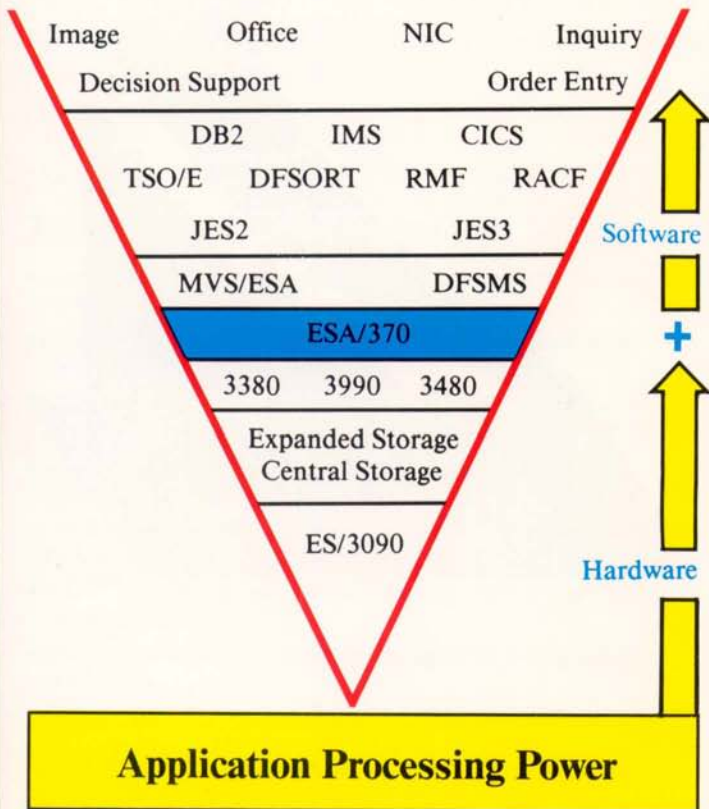
- Provides automated switching of control unit interfaces and processor channels
- Consists of 3814 switching units, operator consoles, and optional hardcopy printers
- Can create up to a 128-node switching matrix (8x16 or 16x8) and can control up to 128 control unit two-channel switches
- A single control point for I/O switching and control unit two-channel switches is provided
- Configurations can be stored for control unit switching (up to 464) and control unit two-channel switches (up to 327)
- Power sequencing for attached control units (up to 16 per 3814) is allowed
- Security protection is controlled by three or four levels of passwords

- Productivity
- Ease of Use
- RAS
- Function
- Constraint Relief
- Performance
- Data in Memory



Application Processing Power

IBM ES/3090 Total System Solution



MVS/ESA, DFSMS, and ES/3090 S Models

What customer environments benefit from MVS/ESA, DFSMS, and the ES/3090 S models?

Customers may receive benefits up to:



Based on laboratory measurements in comparison to MVS/XA and prior releases/versions of DFSORT, DB2, JES2 and JES3 on ES/3090 E processors without system-managed storage. MVS/ESA CICS/MVS Data Tables results are compared to MVS/ESA CICS/MVS measurements without Data Tables. These results may not be additive and actual customer results may vary.

IBM ES/3090 S Leadership (1)

Design

- Uni-, dyadic-, triadic processors, two-, three-, four-, five-, and six-way multiprocessors
- ESA/370 capable
- Supports data in memory
- Enhanced System Control Element (SCE)
- Scalar, vector and parallel processing
- Large processor storage
- Processor Resource/Systems Manager feature
- Additional fast-path capability
- Integrated Vector Facility
- Asymmetrical configurations of Central Processors, Expanded Storage, Channels and Vector Facilities

Architecture

- Supports three architectures
 - ESA/370, 370-XA, and S/370

Technology

- TCM - densest logic module packaging on commercial mainframes
- 2nd generation 1-megabit memory chip
- Fastest, densest 32K-bit SRAM - (3 ns) bipolar chip in production
- Faster, denser logic chip with imbedded arrays
- Writeable control storage (WCS)

IBM ES/3090 S Leadership (2)

Performance

- Instruction execution overlap
- High performance multiply
- Vector Facility – doubled section size and high-speed divide
- Expanded storage
- 64/128 KB high-speed buffer
- 64-bit data paths
- Powerful, flexible RISC I/O processor
- SIE support

Availability

- Dedicated microprocessor for each channel
- Circuit design dedicated to availability
- Double bit error correction in expanded storage
- Remote Support Facility

Growth

- Up to 21-fold performance growth within the ES/3090 S family
- Up to 2,560MB of processor storage
- Up to six Vector Facilities
- Up to 128 channels
- Largest available commercial single-system image

For further information, see your IBM marketing representative

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