VM/SYSTEM PRODUCT HIGH PERFORMANCE OPTION ANNOUNCED
o 5664-173

Contents

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Europe Middle East Africa - Last Revised on November 2, 1981

Brief Description of Announcement, Charges, and Availability

Customer Letter Section

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VM/SYSTEM PRODUCT HIGH PERFORMANCE OPTION ANNOUNCED

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IBM announces the VM/SP High Performance Option program product, an extension to VM/System Product. In conjunction with hardware improvements and microcode assists, VM/SP High Performance Option offers a wide range of performance, operational, and RAS enhancements in the large system environment. Release 1, available February, l982, can provide significant performance enhancements in the CMS-intensive environment on the IBM 3081 Processor Complex. Release 2, available July, l982, provides major enhancements for the MVS/System Product virtual machine environment, as well as support for new and for previously unsupported models of the IBM 3081 Processor Complex. Release 3, available by April, l983, provides support for new high-speed paging devices and additional real storage.

Highlights of the VM/SP High Performance Option include:

RELEASE 1

o Support for the Segment Protection Extension to VMA on the IBM 3081 Processor Complex - providing performance enhancements for the CMS-intensive environment.

RELEASE 2

o Support for the IBM 3081 Processor Complex Models D24, D32, K16, K24, and K32 in System/370 mode.

o Support for the Preferred Machine Assist on the IBM 3033 and 3081 Processor Complexes - providing a major new mode of operation for the MVS/SP V=R guest machine. This new mode yields a significant reduction in CP simulation overhead and allows the preferred MVS/SP guest to utilize greater than l6 MB of real storage.

o Support for the 3033 Extension Feature Enhancement to VMA - allowing an MVS/SP guest to utilize the 3033 Extension Feature (#6850).

o Additional support for the IBM 3033 Processor Models U24 and A24 - offering greater system configurability.

o Enhanced Availability in the MVS/SP V=R environment.

o Operational enhancements to Single Processor Mode.

RELEASE 3

o Support by the Control Program of up-to-32 MB of real storage - meeting storage requirements of paging/storage constrained 3033 and 3081 installations.

o Support for the new IBM 3880 Storage Control Model 11 -

offering new high-speed paging device support for VM/SP.

SUMMARY OF THE VM/SYSTEM PRODUCT HIGH PERFORMANCE OPTION:

RELEASE 1:

o Support for the Segment Protection Extension to VMA on the IBM 3081 Processor Complex.

This enhancement utilizes the Segment Protection Extension to VMA on the IBM 3081 Processor Complex to reduce overhead incurred in managing segments shared among users.

Shared segments are defined as read-only sections of data and executable code. In previous VM/SP systems and on processors without this VMA extension, segment protection is provided by a software scan to check if a segment was modified by the last user of the segment. By utilizing the new microcode assist on the 3081, the VM Control Program scan for a changed page has been eliminated. In addition, duplication of shared pages, page tables, and swap tables that would otherwise have been required for a dyadic processor has been eliminated, making more real storage available for user applications in the CMS environment.

This reduction in overhead is expected to improve performance in CMS environments when protected shared segments are in use. Information regarding the effect on performance will be available prior to the availability of Release 1 of VM/SP High Performance Option.

Note: VM/SP High Performance Option Release 1 runs only on Model D16 of the IBM 3081 Processor Complex. All other models of the 3081 are supported by Release 2 of the High Performance Option.

RELEASE 2:

o 3081 Processor Complex Support.

The VM/System Product High Performance Option supports all models of the 3081 Processor Complex (D16, D24, D32, K16, K24, and K32) operating in System/370 mode.

Support for the 3081 Models D24, D32, K16, K24 and K32 is accomplished by providing 4K Storage Protection Key support for VM/SP High Performance Option and guest operating systems. On these processors, only 4K storage protection can be invoked. The appropriate level of the guest SCP which supports the 4K storage protection key is required (eg., MVS/SP Version 1 Release 1 Enhancement, MVS/SP Version 1 Release 3, or VM/SP Release 2 as a guest under VM/SP High Performance Option).

VM/SP (with or without VM/SP High Performance Option) continues to provide 2K Storage Protection Key support for the 3081 Model D16 (as well as other 2K key processors), allowing operation of guest systems that use 2K storage protection (for example, DOS/VSE, VS1, MVS 3.8, etc.).
Note: It is IBM's direction to support VSE/AF and VS1/BPE as guests under VM/SP High Performance Option on machines with 4K storage protection keys.

- Preferred Machine Assist Support.
  In conjunction with hardware and microcode, the Preferred Machine Assist support offers a new mode of operation on the 3033 and 3081 complexes. In this mode of operation the preferred MVS/SP guest (MVS/SP System Product Release 1 Enhancement and subsequent releases) is in direct control of the processor, dedicated channels, and I/O devices if VM/SP services are not required.
  The preferred MVS/SP guest operates in supervisor state. It can start and retry I/O operations, process I/O interrupts and initiate error recovery operations directly. The direct control of hardware resources eliminates the VM/SP overhead associated with instruction simulation and indirect I/O operations.
  The Preferred Machine Assist further permits the MVS/SP V=R preferred guest (MVS/System Product Version 1 Release 3 and subsequent releases) to use storage in excess of 16 MB on the 3033 and 3081 Processor Complexes. This allows additional performance potential for storage constrained MVS/SP preferred guests.
  Since Preferred Machine Assist allows an MVS/SP V=R virtual machine to operate in supervisor state and utilize the 3033 Extension Feature, previous restrictions to using Single Processor Mode (SPM) or Non-Disruptive Transition (NDT) functions while running MVS/SP Version 1 Release 3 are eliminated.
- Support for the 3033 Extension Feature Enhancement to VMA.
  VM/SP High Performance Option allows those 3033 users having

  the 3033 Extension Feature (#6850) to increase performance of an MVS/SP guest machine (MVS/System Product Version 1 Release 3 and subsequent releases). This also removes existing restrictions to use of Single Processor Mode (SPM) or Non-Disruptive Transition (NDT) for customers installing

MVS/SP Version 1 Release 3 on a 3033 with the 3033 Extension Feature. 3033 Extension Feature Enhancement to VMA is required for this capability.

- Additional Support for the 3033 Models U24 and A24.
  The 4K Storage Protection Key support in VM/SP High Performance Option allows all 24 MB of storage on a 3033 Models U24 or A24 to be configured online. This support allows the VM/SP installation to dynamically reconfigure storage to meet workload and maintenance requirements. Previously VM/SP would not IPL if any of the storage physically beyond the first 16 MB were configured online. This restriction held even if the storage above the physical 16 MB line were assigned to logical addresses under 16 MB via a configuration panel (for example, to temporarily replace damaged storage).
  VM/SP High Performance Option removes this restriction and also allows a Model 2 Attached Processor Complex (a 3033 A24 and a 3042 Model 2) to be split into two uni-processors with VM/SP on either or both sides and utilize all of storage.
  As with the 3081, this support is provided only for guest operating systems using 4K storage protection. Guest operating systems using 2K storage protection continue to be supported on the 3033 models U24 and A24 by configuring the storage above 16 MB offline.
- Enhanced Availability in the MVS/SP V=R Environment.
  This addition to VM/SP increases the availability of MVS/System Product (MVS/SP) by preserving the V=R virtual machine environment in the event of a Control Program (CP) failure. If CP terminates with an abend, an attempt is made to save the MVS/SP V=R virtual machine status, to automatically re-IPL VM/SP, and to resume execution of the MVS/SP V=R guest.
  When the VMS/SP V=R virtual machine is operating in Preferred Machine Assist mode, additional recovery capability is available. In most cases when CP enters a disabled wait state, an attempt is made to pass control to the preferred guest. The preferred guest can then continue in native state until the operator re-IPL's VM/SP.
  Information about operational considerations will be available in Operating Systems in a Virtual Machine with the availability of VM/SP High Performance Option Release 2.
- Operational Enhancements to Single Processor Mode.

These operational enhancements facilitate transition to and from Single Processor Mode. They allow an installation to vary the use of the second processor in an AP, MP, or dyadic complex between the Control Program (CP) and the MVS/SP V=R virtual machine without a re-IPL of MVS/SP.

RELEASE 3:

o Support for up to 32 MB by CP.

VM/SP High Performance Option allows use of up to 32 MB of real storage by the Control Program (CP). This will give CP additional storage to augment the dynamic paging area for guest machines and will provide relief for installations which are currently constrained by storage capacity. The Extended Addressing Enhancement to VMA RPQ is required on the 3033 processor complex for this capability.

o Support for the 3880 Model 11.

VM/SP High Performance Option will provide support for the new IBM 3880 Storage Control Model 11.

SPECIFIED OPERATING ENVIRONMENT:

Machine Requirements: The VM/System Product High Performance Option is designed to run on the IBM System/370 Models 155II, 158, 158-3, 158AP, 158MP, 165II, 168, 168-3, 168AP, and 168MP; on the IBM 4341, 3031, 3031AP, 3032, 3033U, 3033N, 3033S, 3033AP, 3033AP-2 and 3033MP Processors; and the IBM 3081 Processor Complex in S/370 mode.

Real Storage Requirements: For a VM/SP system that is running VM/SP High Performance Option, a minimum of 1 MB real storage is required.

Programming Requirements: VM/System Product Release 1.1 is a prerequisite for VM/SP High Performance Option Release 1 and 2. VM/SP Release 2 is a prequisite for VM/SP High Performance Option Release 3. (Note: VM/SP High Performance Option does not support the Small CP option for VM/System Product).

COMPATIBILITY:

Application programs that currently execute under the VM/System Product and are not dependent on internal CP or CMS structure and/or control blocks, should continue to run on the VM/System Product with VM/SP High Performance Option.

EDUCATION:

The VM/SP educational offerings will be updated to reflect the new facilities offered by VM/SP High Performance Option.

PLANNED AVAILABILITY:

RELEASE 1: February 1982

RELEASE 2: July, 1982
RELEASE 3: April, 1983

TESTING PERIOD: 30 days.

PROGRAM SERVICES:

Central Service, including the IBM Support Center, will be available until discontinued by IBM upon twelve (12) months' written notice.

Local Licensed Program Support will be available until discontinued by IBM upon twelve (12) months' written notice. This support will be provided under the terms and conditions of the Agreement for Local Licensed Program Support for IBM Licensed Programs at the Monthly Licensed Program Support Charge, Monthly Additional Licensed Program Support Charge, or will be provided at the applicable programming service rate. Local Licensed Program Support will be provided by IBM Customer Engineering.

WARRANTED: Yes, in accordance with the Agreement for IBM Licensed Programs.

INSTALLATION LICENSE APPLIES: No. A separate license is required for each machine on which the licensed program materials will be used.

CURRENCY STATEMENT: For the purpose of IBM providing program services, the following products will remain current at least until the noted dates:

VM/System Product Release 1	1Q84
VM/SP High Performance Option Release 1	6/83
VM/SP High Performance Option Release 2	1Q84

CHARGES:

Initial License Charges .....) Consult
Monthly Charges .....) your
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Support Charges .....) Representative