VM/Pass-Through Facility
Version 2 Release 1.0 and Release 1.1
Program Number 5684-100

VM/Pass-Through Facility (PVM) is a Virtual Machine (VM) communications program that allows access to multiple systems. With PVM, users can access, log on, and use other systems in a defined network as though their terminals were directly connected to those systems.

PVM provides a range of 3270 terminal connectivity options:

- CP managed 3270 devices, including Enterprise Systems Connection Architecture* (ESCON*) (access PVM by the DIAL command or attach printer)
- Virtual Telecommunications Access Method (VTAM*) managed 3270 (access PVM by logon to a VM/Pass-Through Facility Gateway (PVMG) application
- Remote binary synchronous communication (BSC) 3270.

In addition, PVM supports system connectivity options:

- Channel-to-channel (CTC)
- ESCON CTC
- 3088
- BSC
- Shared Systems Network Architecture (SNA) links
- Inter-user Communication Vehicle (IUCV) (PVM to PVMG communication)
Remote 3270 BSC emulation
Remote Operator Console Facility.

Enhancements to PVM 2.1.1 include:

- Installation and service is now available using VMSES/E
- The Cooperative Viewing Facility (C VIEW) Version 2, Release 1, Modification Level 3 (5664-296) program product is being shipped with the PVM base as a separate component
- Provided an MPVM Auto-Signon Facility called MPVMSGN
- Security Exits are now built in to the PVM module supplied by IBM on the base tape and built through VMSES/E
- German, Kanji, uppercase English, and American English are now built in to the PVM, EFGVIEW, and DVMUSI Modules, and the PVMG Loadlib supplied by IBM on the PVM 2.1.1 base tape and built through VMSES/E
- Added new PVMG commands and configuration file records
- Removal of SVM from the PVM product tapes because it is now available as part of CMS.

Enhancements to PVM include:

- The VM/Pass-Through Facility Multiple Session Application (MPVM) component which provides:
  - Concurrent multisession support where CMS users can access several sessions and switch from one session to another without having to log off or log on.
  - Escaped command support where users can issue commands to their host user ID while using another PVM session.
  - End-user programmability where users can write programs at their workstation to automate everyday tasks.
  - Support of REXX language commands and macros that automate user tasks within single or multiple sessions. The installation may develop its own macros to further enhance productivity.
  - Improved MPVM shared segment instructions.
- The PVMG SNA server component which provides:
  - A gateway that lets PVM users connect to SNA applications through VTAM and users in the SNA network to access the PVM network
  - Simulation of Primary Logical unit (LU) type 2 and non-SNA 3270 Secondary LU type 2
  - New PVMG commands and configuration file records.
- The PVM component includes:
  - Support for ESCON through the IBM 3088 1F Control Unit to another PVM server using PVM’s 3088 line driver
  - Support for graphic and printer devices attached to an ESCON 3174 control unit (models 12L and 22L)
  - Improved corrective service instructions
  - Added a corrective service exec (CORRSERV)
  - Sample access security exits
  - New and changed commands
  - New and changed configuration file records
  - Removal of SVM from the PVM product tapes because it is now available as part of CMS.
(1) The term VM refers collectively to these systems: Virtual Machine/Enterprise Systems Architecture* or VM/ESA* Release 1 ESA and 370 Feature, VM/ESA Release 1.1, VM/ESA Release 2.0, VM/ESA Release 2.1, Virtual Machine/System Product (VM/SP), VM/SP High Performance Option (VM/SP HPO), Virtual Machine/Extended Architecture* (VM/XA*) System Product Release 2. VM will be further qualified where the need exists.


### 1.0 Specified Operating Environment

#### Machine Requirements

VM/Pass-Through Facility Version 2 has no processor dependent code. It relies on the underlying operating system to provide processor dependent functions. The product will run on the following:

- Virtual Machine/Enterprise System Architecture. (VM/ESA) Release 1 (5684-112) or later

<table>
<thead>
<tr>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVM 2.1.1 will only install on VM/ESA Release 1.0 370 Feature or VM/ESA Release 1.1 or later (VMSES/E supported)</td>
</tr>
</tbody>
</table>

- Virtual Machine/System Product (VM/SP) Release 5 (5664-167) or later (with or without VM/SP High Performance Option (HPO) (5664-173)
- VM/Extended Architecture (VM/XA) System Product Release 2 (5664-308) or later.

For PVM 2.1.1, the approximate direct access storage device (DASD) space, or equivalent space on other supported DASD, requirements are:

<table>
<thead>
<tr>
<th>Pass-Through Files</th>
<th>3330</th>
<th>3340</th>
<th>3350</th>
<th>3375</th>
<th>3380</th>
<th>3390</th>
<th>3310/3370 (FBA)</th>
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<td>Cylinders</td>
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<tr>
<td>Required</td>
<td>302</td>
<td>719</td>
<td>144</td>
<td>180</td>
<td>115</td>
<td>96</td>
<td>138000</td>
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<tr>
<td>Optional</td>
<td>178</td>
<td>419</td>
<td>84</td>
<td>105</td>
<td>67</td>
<td>56</td>
<td>80400</td>
</tr>
</tbody>
</table>

These approximations assume a CMS block size of 4KB for 3380 and 2KB for all other types.

For PVM 2.1.0, the approximate direct access storage device (DASD) space, or equivalent space on other supported DASD, requirements are:
<table>
<thead>
<tr>
<th>Pass-Through Files</th>
<th>3330</th>
<th>3340</th>
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<td>13</td>
<td>18000</td>
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<tr>
<td>Optional</td>
<td>195</td>
<td>463</td>
<td>93</td>
<td>116</td>
<td>74</td>
<td>62</td>
<td>88800</td>
</tr>
</tbody>
</table>

These approximations assume a CMS block size of 4KB for 3380 and 2KB for all other types.

PVM directly supports the following IBM display stations:

- 3277-2
- 3278-2, 3, 4, or 5
- 3279-2 or 3

In addition, the following display stations are supported by PVM when they are specified as the model given to the right. Extended data streams are supported for sessions with PVM hosts.

**Note:** Extended data streams are not supported by PVM when the session is with a non-PVM host (through the 3270 emulator line driver).

<table>
<thead>
<tr>
<th>Display</th>
<th>Supported as a</th>
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</thead>
<tbody>
<tr>
<td>3178 C1, C2, C3, C4 3191</td>
<td>3278-2</td>
</tr>
<tr>
<td>3180-1</td>
<td>3278-2, 3, 4, or 5</td>
</tr>
<tr>
<td>3290 220, 230, T30</td>
<td>3278-2, 3, 4, or 5</td>
</tr>
<tr>
<td>3179 G1, G2</td>
<td>3279-3</td>
</tr>
<tr>
<td>3193-1, 2</td>
<td>3278-2, 3, or 4</td>
</tr>
<tr>
<td>3194 H20, H50</td>
<td>3279-2</td>
</tr>
<tr>
<td>3179-1</td>
<td>3278-2 or 3279-2</td>
</tr>
<tr>
<td>3270-PC</td>
<td>3278-2 or 3279-2</td>
</tr>
<tr>
<td>3270-PC/G, GX, AT/G, AT/GX</td>
<td>3278-2 or 3279-2</td>
</tr>
<tr>
<td>5540, 5550, 5560 PC, PC/XT*, PC/AT</td>
<td>3278-2 or 3279-2</td>
</tr>
<tr>
<td>PC/AT/370*, PS/2(TM) RT Personal Computer</td>
<td>3278-2 or 3279-2</td>
</tr>
</tbody>
</table>

**Note:** The PC, PC/XT, PC/AT, PS/2, RT, and RISC System 6000* are supported if they have the appropriate 3278/9 emulator card installed.

(*)
The 3278 and 3279 Display Station models are also supported in 3277 compatibility mode. The minimum supported screen size is 24 lines of 80 characters each. These display stations can be attached to any IBM 327x Control Unit supported by VM as a display station control unit. PVM emulates an IBM 3271 (Model 2) or 3274 (Model 1C) Control Unit when accessing a system (other than another VM system with PVM installed or a 4300 processor) over any BSC line supported by that system. These accessed systems must support the remote IBM 3271/3274 Control Unit.

IBM 3270 Information Display System printers supported to receive output under PVM's 3271/3274 emulation, are:

- 3284-1 and 2
- 3286-1 and 2
- 3287-1, 1C, 2, and 2C
- 3288-2
- 3289-1 and 2
- 3262-3 and 13 (when defined as 3289).

The following printer devices are supported by PVM when specified as 328X, or a model equivalent to one of those listed above.

- 3268-2, 3268-2C
- 4214-1
- 4224-201, 202, D12, D20, 2E2, 2C2
- 4234-1 (compatible with a 3262)
- 5210-G1, G2
- 5227-11
- 5553.

Extended data streams are supported on displays and printers for sessions with PVM hosts. Extended data stream support allows the use of special features including extended color, extended highlighting, and programmed symbols.

**Note:** Extended data streams are not supported when the session is with a non-PVM host (by the 3270 emulator line driver). PVM does not support Intelligent Printer Data Streams (IPDS).

**Programming Requirements**

Each node in a PVM network must have a unique node ID. If more than one link to a non-PVM node is required, that node must be assigned a unique node ID for each link. You can have a group of links between two PVM nodes (neither can be a PVMG node), but you cannot have more than one group between the two PVM nodes.

To use the TRACE command with the SYSTEM ETRACE options, PVM must be running on VM/SP Release 6 or VM/ESA Release 1.0 370 Feature.

**APPC/VM considerations:**

- For PVM to define advanced program-to-program communication (APPC) links, PVM needs VM/SP Release 6 with HPO or VM/ESA Release 1 and the
following:
- Advanced Communication Function for Virtual Telecommunications
  Access Method (ACF/VTAM*) Version 3 Release 2 (or higher)
- APPC/VM VTAM Support (AVS).
° The AVS component provides the gateway support needed to communicate
  over an SNA-defined network. It accesses VTAM to obtain communication
  link services.
° Transparent Services Access Facility (TSAF) provides its own
  communication services, and it uses AVS and VTAM, if available.

Class B privilege must be assigned to PVM when:
° The configuration file contains a MSGNOH record
° The configuration file contains CLPORT records for remote printers
° Lines or 3270 devices are attached by ATTACH or NET ATTACH commands
  either in the PROFILE PVM file or from the PVM user ID
° Allowing warning messages to be issued to PVM users.

Class B privilege must be assigned to the PVMG if MSGNOH is used in the
PVMG configuration file.

327x emulator lines must have one of the following:
° The Station Select Feature installed if a 270X Communications
  Controller (CC) is used
° The tributary addresses generated if the 370X CC is used
° The tributary addresses specified if the Communications Adapter (CA)
  on the 4321/4331 is used.

Licensed Program Materials Availability

Restricted materials - Yes. This licensed program is available with all
licensed program materials designated as "RESTRICTED MATERIALS OF IBM."

Source Code for PVM is written in Basic Assembler Language and is
distributed as basic material. Code for new function is distributed as
object code only (OCO). Code for execs is written in REXX.

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() ACF/VTAM is a trademark of the International Business Machines Corporation.

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