Software Product Description

PRODUCT NAME: **VAX Software Performance Monitor, Version 3.4** **SPD 27.56.09**

DESCRIPTION

VAX Software Performance Monitor (VAX SPM) is a software performance management facility for VAX and VAXcluster systems. VAX SPM can collect, archive, display, analyze, report and graph performance information useful in system tuning, trend analysis and workload forecasting. This information includes resource utilization and load balance data for single node, multi-CPU, and VAXcluster systems. VAX SPM software is designed for use by system managers and system programmers.

VAX SPM Collector Facility provides:

- A flexible facility for collecting and archiving performance data. Data may be collected using a variety of user-specified qualifiers and parameters. The user can start and stop data collection for all nodes in a VAXcluster or from remote nodes in a distributed system from a single terminal, and archive all the performance data into a single history file. Note that a VAX SPM or VAX SPM Collector License is required for each node where data is collected. If data is collected utilizing the VAX SPM Collector Facility, a Full Function VAX SPM License is required for analysis, reporting or display.

Full VAX SPM Facility provides:

The Collector facility and diagnostic tools that include:

- A knowledge based interactive ANALYZER which detects and analyzes performance bottlenecks from data collected by the VAX SPM collector. The Analyzer's knowledge is gathered from VMS performance analysts and is organized into decision trees.
- VIDEO DISPLAYS which dynamically show a variety of performance statistics using bar charts, Kiviat plots and numerical data. These can display data for a single node or summary information for all nodes or accessible disks (up to eight concurrently) in a VAXcluster system. The latter is particularly useful for balancing the workload across several nodes or disks. Single node data may be displayed for the currently running system or played back from a log file; VAXcluster system data must be from the currently running system or history files.
- A REPORT and GRAPH component containing a level of detail necessary to quantify system resource utilization (CPU, memory and I/O) and identify system performance bottlenecks. Proper analysis of these may reveal under utilized resources that can be traded against a bottleneck. Graphs and reports of data collected over long periods of time show long-term trends in resource utilization. These are helpful in planning future hardware acquisitions.
- A CHARGE component that generates a report of charges based upon system and resource utilization with user specified resource pricing.
- A SYSTEM PC component that delineates CPU usage.
- A DISK ANALYSIS component that describes disk volume utilization and identifies files contributing to disk fragmentation.
- A HOT FILES component that provides detailed file level statistics necessary for disk load balancing.
- An EVENT TRACE component that is suitable for collecting "custom" performance data and testing the performance of system software.

Features

System Tuning

VAX SPM collects, analyzes and reports performance data pertinent to analyzing and tuning a VAX system. This includes: system configuration data, system parameters, resource utilization statistics for CPU, I/O and memory (including swapping, paging and modified page writing), devices, scheduling, locking, file system, lock manager, SCS data and process statistics. The user can specify start and stop time, sample interval and the node(s) for which to collect data, in addition to specific data items. Reports present the data in both tabular and graphic format (plotted against time).

The Analyzer provides the ability to select a range of VAX SPM collected data for input to the Analyzer, and the ability to step through the analysis displaying the results of each test and conclusion. The Analyzer provides the ability to both display and change the performance thresholds that were used to reach its conclusions. The user can further alter the decisions of the Analyzer to explore different possibilities based upon experience with the system workload.

The Analyzer also provides the ability to request more information on how and from what VAX SPM data it reached its conclusion, and includes references to the VAX SPM reports. The Analyzer produces a report containing either a suggestion for improvement or simply a report that indicates no problem was found during the selected analysis period. This report also contains changes and decision modifications the user applied.

The VAX SPM video displays are designed to help the user investigate performance problems on single processors and VAXcluster systems. There are single node displays for system overview, memory, CPU, I/O and load balance. Once a video display begins, subcommands may be issued to control the display and its characteristics including: select displayed processes - top 12 by node, direct I/O, buffered I/O, page fault, or working set size; change scaling factor; and viewing time. For each node (up to eight concurrently), VAXcluster system displays show: hard and soft page faults, system and task CPU time, memory and CPU utilization, and I/O rate.

For each accessible disk (up to eight concurrently), the display shows the I/O rate and disk's response time. Multi-color displays are produced if an appropriate color terminal or monitor is used. The displays can be printed (monochrome) on an appropriate external graphics capable printer (e.g., LA75).

The System PC component shows where CPU time is spent on a single node. The program counter and processor status longword are sampled and recorded in a log file. Reports delineate CPU usage by system/process address space, access mode, IPL, system module, device driver and user process.

The Event Trace component is suitable for collecting performance data beyond the standard VAX SPM data. The user defines trace points within the VMS Executive and writes a data collector using subroutines supplied by the component. This component also provides buffer and record management routines and is particularly suited to testing the performance of system software (e.g., a user written system service or device driver).

Disk Analysis

This component provides detailed usage information for ODS-2 disk volumes: volume attributes, the amount of allocated and free space as well as an indication of how fragmented it is, and a list of files with extension headers.

Hot Files

This component provides a real time video display of detailed file statistics showing which files are being accessed the most. The video display also includes the percent of I/Os that were read for these files. This component is particularly suited to the location of the files which may be moved to alleviate a disk bottleneck.

Charge

The Charge component reads multiple VMS accounting files and a disk usage file to generate a single report of the system's resource utilization. It shows the amounts and monetary values of the resources consumed by each user on the system. The report shows quantity of resources consumed, unit prices charged for each resource and the total price charged for that resource. The report prices and comment information are specified by the user.

Planning for Continued System Growth

VAX SPM collects and reports information useful to a data operations manager in planning for additional hardware. Data can be archived in a history file which takes less disk space than the original log file(s). The data can be kept for a long period of time (e.g., months or years) and retrieved and printed in reports showing long term trends of resource utilizations and system behavior. Information similar to that used for system tuning is kept for long term trend analysis, although typically with a longer sample interval.

HARDWARE REQUIREMENTS

VAX, MicroVAX or VAXstation configuration as specified in the System Support Addendum (SSA 27.56.09-x).

SOFTWARE REQUIREMENTS

VMS Operating System

Refer to the System Support Addendum (SSA 27.56.09-x) for availability and required versions of prerequisite/optional software.

ORDERING INFORMATION

Full VAX SPM Facility

Software Licenses: QL-850A*-**
Software Media: QA-850A*-**
Software Documentation: QA-850AA-GZ
Software Product Services: QT-850A*-**

VAX SPM Collector

Software Licenses: QL-VUPA*-**
Software Media: QA-VUPA*-**
Software Documentation: QA-VUPAA-GZ
Software Product Services: QT-VUPA*-**

* Denotes variant fields. For additional information on available licenses, services and media, refer to the appropriate price book.

SOFTWARE LICENSING

This software is furnished under the licensing provisions of Digital Equipment Corporation's Standard Terms and Conditions. For more information about Digital's licensing terms and policies, contact your local Digital office.

LICENSE MANAGEMENT FACILITY SUPPORT

This layered product supports the VMS License Management Facility.

License units for this product are allocated on a CPU-capacity basis.

For more information on the License Management Facility, refer to the VMS Operating System Software Product Description (SPD 25.01.xx) or the License Management Facility manual of the VMS Operating System documentation set.

For more information about Digital's licensing terms and policies, contact your local Digital office.

SOFTWARE PRODUCT SERVICES

A variety of service options are available from Digital. For more information, contact your local Digital office.

SOFTWARE WARRANTY

Warranty for this software product is provided by Digital with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.
