UNIVAC 90/60 and 90/70

NEW PRODUCT ANNOUNCEMENT

VS/9 VIRTUAL MEMORY OPERATING SYSTEM: VMOS, the virtual memory operating system originally introduced with the RCA 3 and RCA 7 virtual memory computer systems, got another crack at its IBM virtual storage competition in January 1975, when UNIVAC announced an enhanced version, designated VS/9, as the major operating system support for its 90/60 and 90/70 computer systems. The new VS/9 will replace OS/7 as the top-of-the-line operating system for UNIVAC's Series 90 product line, although Univac promised continued support for current OS/7 users. OS/4, a smaller operating system originally released for the 9400 and 9480 computers and the temporary mainstay of early UNIVAC 9700 computer users until the delivery of initial releases of OS/7, will continue to be enhanced and supported for UNIVAC 9480 systems.

VS/9 will serve as an upgrade, not only for Models 90/60 and 90/70 OS/7 accounts, but also for Series 70 DOS systems and Series 70 Model 45 and Model 6 installations executing under versions of the TDOS operating system up to Release 21. UNIVAC claims that VS/9 provides nearly all the functions of IBM's OS/VS2 Release 2 at a substantially lower cost in hardware overhead. VS/9 executes in a minimum of 262K bytes of main memory, although UNIVAC estimates that most VS/9 systems will operate with from 393K to 524K bytes of memory. Resident supervisor sizes are estimated at 18 4096-byte pages (72K bytes) for batch operation and 22 to 24 4096-byte pages (88 to 92K bytes) for batch and interactive execution.

New hardware to support VS/9 includes: 1) a Direct Address Translation (DAT) feature; 2) a modular version of the former 90/70 OSSF, the UNIVAC 8405-99 Fixed-Head Disk announced as a swapping device for 90/70; and 3) new versions of the Communications Controller—Multi-Channel (CCM), previously available with Series 70 computers. In addition, Model 90/60 and 90/70 central processors will have the capability to add one more selector channel that can be dedicated to an 8405 Fixed-Head Disk Subsystem operating as a swapping system. Currently installed 90/60 and 90/70 installations will be given the DAT feature at no additional charge, while all new 90/60 and 90/70 systems will includes the DAT box as a standard feature at a slight increase in cost (see prices on the following page). The 8405 Fixed-Head Disk Subsystem will be available for both 90/60 and 90/70 systems, and can include up to eight disk drives for a maximum of 24.8 million bytes of fast-access storage. UNIVAC 8430 Disk Drives can be intermixed with 8405 Fixed-Head Disks on the 5039 Controller.

UNIVAC acquired the VMOS operating system with the takeover of the RCA customer base in January 1972. VMOS is an outgrowth of the original Time-Sharing Operating System (TSOS) released for the TCA Spectra 70/46 in 1967 and for the Spectra 70/61 two years later. With the announcement of the RCA Series computers in 1970, the name was changed from TSOS to Virtual Memory Operating System to add a new fillip to RCA's marketing campaign—since RCA's product line included virtual memory capabilities that were not yet available for the IBM System/370 computers. Since the demise of the RCA computer operation, UNIVAC states that along with maintaining the operating system for some 44 current VMOS users, it has enhanced the system's reliability, added new recovery techniques, tuned the scheduling algorithm, and improved its memory management facilities.

VS/9 now offers functional capabilities for concurrent processing of local and remote batch programs, transaction processing, data communications, and interactive processing. Virtual memory management features of VS/9 allow programs to be located in main memory in non-contiguous pages of 4,096 bytes each that are swapped in and out of main memory on a demand basis. VS/9 supports a total virtual memory space of 8 million bytes, and its multiprogramming facilities can manage a theoretical limit of over 120 concurrent tasks.

Program scheduling is performed automatically by priority level either on a first-in, first-out or first-in, first-fit basis. A basic central processor time-slice is given to each active task in the input queue, with a longer time-slice allotted to the highest-priority job. Input/output-bound tasks are given attention before compute-bound tasks. Priority levels can be dynamically adjusted during execution to bias the system toward batch or interactive processing. VS/9 makes extensive use of re-entrant input and output spooling routines, although user programs now can request dedicated card readers or printers.

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File access methods supported include SAM, ISAM, PAM (Primary Access Method for random access), EAM (Evanescent Access Method for temporary files), and BTAM (Basic Tape Access Method). VS/9 automatically allocates files to mass storage devices and maintains a System File Catalog of file use and current and previous generations of files.

VS/9 reliability and recovery capabilities include a Hardware Error Recovery System (HERS) that analyzes mainframe errors and attempts to recover from transient errors, on-line test and diagnostic programs for exercising CPU internal logic and peripheral devices, and a utility to accumulate statistics on peripheral device malfunctions.

Interactive processing capabilities provided by VS/9 include Extended BASIC, FAST FORTRAN for fast compilation and immediate execution of FORTRAN programs, a Virtual Memory Editor for file creation and deletion and modification, a COBOL Program Development System (CODE), a Desk Calculator mode of operation, Sort/Merge, and the Interactive Debugging Aids. Communications capabilities are provided by COS (Communications Oriented Software), which handles message communications traffic, code translation, queuing on intermediate storage, message logging, and passing of messages to and from Communications User Programs. Data base management and inquiry capabilities will be provided by UNIVAC's DMS/90, scheduled for the first release of VS/9, and IMS/90, scheduled for availability with VS/9 in mid-1975. Languages available for batch users include ANS-68 COBOL (ANS-74 COBOL is planned for later release), FORTRAN IV, RPG, and the VS/9 Assembly Language.

VS/9, like all UNIVAC systems software, will be supplied to Series 90 users free of charge. UNIVAC claims that there is a high degree of compatibility between the higher-level languages supported by VS/9 and those available for OS/7, RCA DOS, and RCA TDOS, but that assembly-language programs will require conversion.

CENTRAL PROCESSORS		Purchase Price	Monthly Maint.	Rental (1-year lease)
3024-97	90/60 Processor (includes DAT Feature, Multiplexer Channel, 2 Interval Timers, Storage Protection, a Selector Channel, Floating Point Control, and 131,072-byte Memory)	336,048	728	7,001
3024-99	90/70 Processor (includes DAT Feature, Multiplexer Channel, 2 Interval Timers, Storage Protection, a Selector Channel, Floating Point Control, and 131-072-byte Memory)	531,072	1,146	11,064
8405 FIXED HEAD DISK SUBSYSTEM				
5039	Control Unit; controls up to eight Model 8405 Fixed-Head Disks and eight Model 8430 Disk Storage Drives, or 16 Model 8430 Disk Storage Drives	57,600	300	1,200
8405	Fixed-Head Disk; 3.1 million bytes, 8.34-millisecond rotational delay, 625KB transfer rate	46,080	240	960
F2076	8405 Adapter	2,160	5	45
1664	8405 Dual Access; provides dual access and simultaneous read and write operations; requires two Model 5039 Control Units and two selector channels	2,160	5	45
COMMUNICATIONS CONTROLLERS				
9141-00	Communication Controller—Multi-Channel (16 lines)	35,650	127	706
9141-01	Communication Controller—Multi-Channel (32 lines)	45,835	163	906
9141-02	Communication Controller—Multi-Channel (48 lines)	56,020	199	1,112
0973-00	Standard Interface Adapter	12,960	56	270