

The theme of our previous issue, installation management techniques, is continued in this issue in the first three papers described below.

Distributing the cost of a computing center to user departments presents a problem to many organizations, due to indecision about accounting policies, imprecise measurement of resource usage, and frequent changes in hardware and software. **Computer installation accounting** presents a general accounting mechanism that is flexible enough to handle many policy options. The function and design, and later implementation of such an accounting package, are described.

Benchmarking remains a common method of evaluating system changes, but in many cases a change to an existing computer system must be evaluated under a workload that is not controlled. **Evaluating system changes under uncontrolled workloads: a case study** presents a regression-analysis method which examines, for a particular computer system, to what extent system performance was affected by changes to the computer system and to what extent by variations in the workload.

Determining that new programs, subsystems, and operating systems perform their functions both correctly and with adequate speed is an ongoing concern for installation managers. **Testing in a complex systems environment** describes tools and methods for conducting meaningful tests on a system with batch and communications facilities.

Performance analysis of virtual memory time-sharing systems emphasizes practical methods for summarizing and interpreting performance data gathered on systems running in a production environment. VM/370 performance is studied in relation to multiprogramming level and user workload. Data collection techniques are presented, saturation conditions are examined, and methods of locating bottlenecks in the processor, main storage, and in the paging and I/O subsystems are given.

Implementations of virtual storage have not proved to be transparent to programs running on such systems. This journal has published several articles dealing with the restructuring of programs for virtual storage. Meanwhile, a widespread interest in structured programming has developed. **Structured programming for virtual storage systems** examines the relationship between these two sets of techniques and discusses the practical considerations involved in producing understandable programs that place acceptable demands on computer storage resources.

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Preface