PERFORMANCE OF A SYSTEM WITH MULTIPROGRAMMING VIRTUAL MACHINES

by

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B. S., Kansas State University, 1975

A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Computer Science

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1976

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Acknowledgements

The research reported in this document was sponsored by the Kansas State University Computing Center. I would like to thank the Computing Center, and particularly Dr. Tom L. Gallagher and Mr. Michael H. Miller, for this support.

I would also like to express my appreciation to Dr. Virgil E. Wallentine who served as my major professor and provided valuable input into both the research and this document. I would also like to thank the other members of my supervisory committee--Dr. Tom L. Gallagher and Dr. Richard F. Sincovec--for their assistance.

INTRODUCTION

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This paper deals with performance of a third generation computing system running a multi-level operating system. Specifically, the operating system in use is a conventional multiprogramming non-virtual third generation operating system (OS/MFT[1]) run in a virtual machine under the control of a virtual machine monitor (VM/370[2]). This virtual machine runs concurrently with other virtual machines which perform other services.

The particular area to be addressed is real storage management. As is recognized both in the current literature[3-7] and in commercially available virtual memory implementations[8,9], along with a global demand paging system such as is used by VM/370, there must be a facility to limit the level of multiprogramming to avoid the phenomenon known as thrashing. This control generally exists either in the form of a working set scheduler or in the form of more explicit controls such as process deactivation.

In this particular environment additional complications arise. The level of the operating system which has the greatest control over the multiprogramming level knows nothing about the management of real storage. Also, the level which performs management of real storage has no