Linux VM Demand Paging Performance

Application: DaSSF network simulator
→ distributed simulator
→ following results: single PC benchmarks
→ BGP routing on 4512-node network topology

Kernel: Linux 2.4.25
→ bootable memory configuration

Hardware: Intel Xeon 2.4 GHz
→ 4 GB memory
→ 8 GB swap space
→ 8 KB L1 cache, 512 KB L2 cache
Impact of physical memory and VM on application performance

→ two BGP runs: vary simulation time

→ BGP A (long) and BGP B (short)
Thrashing behavior

→ as a function of (maximum) memory usage

Application completion time:
Application CPU time:
Time dynamics: page fault rate and disk I/O rate

![Graph of page fault rate and disk I/O rate over time](image-url)
Time dynamics: app CPU time and dilation factor

![CPU time vs wall clock time](image1)

![Dilation factor vs wall clock time](image2)
Time dynamics: idle process CPU time

why is idle process CPU time so large?
Impact of memory: app CPU time and dilation factor
Impact of memory: page fault rate and disk I/O rate
Impact of application memory referencing behavior:
Impact of application memory referencing behavior:
Overall picture:

![Overall picture graph]

![Detailed graph with data points]