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Environments: One Size Does not Fit All

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Abstract

Energy consumption is a primary concern for datacenters? management. Numerous datacenters are relying on virtualization, as it provides flexible resource management means such as virtual machine (VM) checkpoint/restart, migration and consolidation. However, one of the main hindrances to server consolidation is physical memory. In nowadays cloud, memory is generally statically allocated to VMs and wasted if not used. Techniques (such as ballooning) were introduced for dynamically reclaiming memory from VMs, such that only the needed memory is provisioned to each VM. However, the challenge is to precisely monitor the needed memory, i.e., the working set of each VM. In this paper, we thoroughly review the main techniques that were proposed for monitoring the working set of VMs. Additionally, we have implemented the main techniques in the Xen hypervisor and we have defined different

the right time. We also propose a consolidation extension which leverages Badis in order to pack the VMs based on the working set size and not the booked memory. The implementation

References

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Index Terms

Working Set Size Estimation Techniques in Virtualized Environments: One Size Does not Fit All

Computer systems organization

Hardware

Impact on the environment

Distributed architectures

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Cloud computing

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