

Synergy a Hypervisor Managed Holistic caching system

Abstract:

Memory in virtualized systems is a precious resource. The average utilization rates for memory are reported to be the highest by a large margin (40% compared to less than 6% utilization of the other resource types) in production ESX servers. Memory over-commitment is a popular technique for enhancing memory utilization and to increase packing density of virtual machines. Over-commitment relies on temporal non-overlapping memory demands and effective statistical multiplexing of the resource.

Existing system:

In the existing system the host cache can be a potential system wide second chance cache if the inclusive nature of caching can be addressed. Singleton implements indirect mechanisms to remove disk blocks which are also present in the guest OS from the host OS page cache. For VMs that are created from the same template (CoW disks), Zhang et al. Developed a mechanism to store guest specific disk blocks inside the guest cache while the common content is stored in the host cache. However, neither of these works provides cache sizing flexibility nor were the host page caches considered as sharing candidates for system-wide deduplication.

Disadvantages:

1. Data sharing and flexibility has to be improved.
2. Security is not provided for the data blocks

Proposed system:

We propose Synergy; a hypervisor managed caching system to improve memory efficiency in over-commitment scenarios. Synergy builds on an exclusive caching framework to achieve, for the first time, system-wide memory deduplication. Synergy also enables the co-existence of the mutually agnostic ballooning and sharing techniques within hypervisor managed systems. Finally, Synergy implements a novel file-level eviction policy that prevents hypervisor caching benefits from being squandered away due to partial cache hits. Synergy's cache is flexible with

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configuration knobs for cache sizing and data storage options, and a utility-based cache partitioning scheme.

Advantages:

1. Memory efficiency has been improved compared to existing systems.
2. Data sharing and management techniques have been improved.

SYSTEM REQUIREMENTS

H/W System Configuration:-

- Processor - Pentium –III
- RAM - 256 MB (min)
- Hard Disk - 20 GB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA

S/W System Configuration:-

- Operating System : Windows95/98/2000/XP
- Application Server : Tomcat5.0/6.X
- Front End : HTML, Jsp
- Scripts : JavaScript.
- Server side Script : Java Server Pages.
- Database : MySQL 5.0
- Database Connectivity : JDBC