

Created by jbrodeur

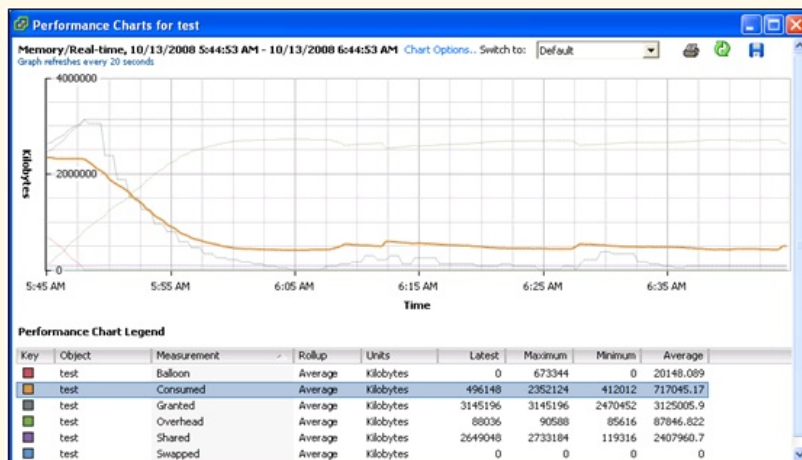
VERSION 1
PUBLISHED

Memory Performance Chart Metrics in the vSphere Client

Created on: Jul 23, 2009 3:05 PM by jbrodeur - Last Modified: Jul 23, 2009 4:42 PM by jbrodeur

The vSphere Client exposes several memory performance statistics for users to identify VM memory usage.

Some of the important memory performance metrics follow. Each metric name appears under the **Measurement** column of the Performance Chart Legend, as shown in the following screenshot:



- **Active:** The amount of guest physical memory that is being used by the VM. Active memory may be different from what is seen inside the guest operating system. This is because the guest operating system generally has a more precise view about what memory is "active" than the hypervisor because it knows when applications allocate or deallocate memory. In addition, the sampling technique used by ESX often takes time to converge, so the memory usage measured in the guest operating system may be more accurate when the workload memory usage is fluctuating.
- **Shared:** The amount of guest physical memory shared through transparent page sharing. This includes the memory shared with other VMs and the memory shared within the VM.
- **Consumed:** The amount of host physical memory allocated to the VM, accounting for saving from memory sharing with other VMs. When multiple VMs share a host memory region, each VM is accounted to consume the shared memory proportionally based on the total references to that host memory. For example, if a VM has 100MB host memory equally shared with the other three VMs, the Consumed memory only accounts for 25MB. If the 100MB memory is only shared within the VM, the Consumed memory accounts for 100MB.

Note that for a host that is not memory overcommitted, the Consumed memory represents a "high water mark" of the memory usage by the VM. It is possible that in the past, the VM was actively using a large amount of host physical memory but currently it is not. Because host memory is not overcommitted, the Consumed memory will not be shrunk through ballooning or swapping. Hence, the Consumed memory could be much higher than the Active memory when host memory is not overcommitted.

- **Granted:** The amount of guest physical memory currently backed by the host physical memory. Due to memory sharing, the Granted memory is greater than or equal to the Consumed memory. For instance, assuming a guest allocates 100MB memory while the whole memory are zeroes, once all the zeroed pages are shared, the VM's Granted memory is 100MB but the VM's Consumed memory is only 4k.
- **Overhead:** The extra host physical memory used by the ESX to run a VM. The Overhead memory has two components: 1) System wide overhead from VMkernel; 2) Additional overhead for each VM, including the space reserved for the VM frame buffer and various virtualization data structures. Since the Overhead memory always resides in host memory, ESX must reserve memory for it. Thus a VM's memory reservation has two individual components: user-specified memory reservation and overhead memory reservation. For example, if the user specifies a 1GB reservation and the Overhead memory for the VM is 100MB, the VM's memory reservation when powered on would be 1.1GB.
- **Balloon:** The amount of guest physical memory that is currently reclaimed through the balloon driver.
- **Swapped:** The amount of guest physical memory swapped out to the VM's swap device by ESX.
- **Swapped in rate:** The rate at which the host physical memory is being swapped in from the host swap device.
- **Swapped out rate:** The rate at which the host physical memory is being swapped out to the host swap device.

Search VMware Communities

Performance & VMmark

Search

Advanced Search

Actions

View as PDF

Incoming Links

Re: memory performance stats translation please?

More by jbrodeur

[View jbrodeur's profile](#)

Only VMware ... Delivers Nexus 1000V

Ensure consistent, policy-based network capabilities to virtual machines across your data center.

[Learn More](#)

Average User Rating



Comments (0)

There are no comments on this document

▲ [Up to Documents in Performance & VMmark](#)

Community Resources

[Developer Center](#)
[Documentation](#)
[Technical Papers](#)
[Compatibility Guides](#)

VMworld

[VMworld.com](#)
[VMworld Session & Labs](#)

Get Support

[Downloads & Patches](#)
[Product Support Centers](#)
[Manage Licenses](#)
[Search the KnowledgeBase](#)

Other Links

[Contact Us](#)
[About VMware](#)
[Jobs at VMware](#)
[Customer Case Studies](#)
[Events](#)