What is the recommended swap size for Red Hat platforms?

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Environment

- Red Hat Enterprise Linux 7
- Red Hat Enterprise Linux 6
- Red Hat Enterprise Linux 5
- Red Hat Enterprise Open Stack Platform 3
- Red Hat Enterprise Open Stack Platform 4
- Red Hat Enterprise Linux OpenStack Platform 5

Issue

- If I add several hundred gigabytes of RAM to a system, do I really need several hundred gigabytes of swap space?
- What are the recommended swap size settings for Red Hat Enterprise Linux 5, Red Hat Enterprise Linux 6, Red Hat Enterprise Open Stack Platform 3 and Red Hat Enterprise Open Stack Platform 4?
- How much swap should I assign to a virtual guest, is the recommendation different from a normal system?

Resolution

- In years past, Red Hat recommended a linear increase to the amount of swap space on a system as the amount of RAM increased. Specifically, the recommendation was that swap space should equal twice the amount of RAM when the system has up to 2 GB of RAM installed, and the amount of RAM plus 2GB when the system has more than 2GB of RAM installed.

- This advice is no longer practical for modern computers and modern platforms as amounts of installed RAM have increased to multiple terabytes on some systems. The following guidelines are a better way to determine the amount of swap space a system should have:

Red Hat Enterprise Linux 5

Amount of installed RAM	Recomended swap space
4GB or less	2GB swap space
4GB - 16GB	4GB swap space
16GB - 64GB	8GB swap space
64GB - 256GB	16GB swap space

Note: A swap space of at least 100GB is recommended for systems with over 140 logical processors.

Red Hat Enterprise Linux 6, Red Hat Enterprise Linux 7, Red Hat Enterprise Open Stack Platform 3 and Red Hat Enterprise Open

Note: A swap space of at least 100GB is recommended for systems with over 140 logical processors.

Red Hat Enterprise Linux 6, Red Hat Enterprise Linux 7, Red Hat Enterprise Open Stack Platform 3 and Red Hat Enterprise Open Stack Platform 4

Amount of installed RAM	Recommended swap space	Recommended swap space if allowing for hibernation
2GB or less	Twice the installed RAM	3 times the amount of RAM
> 2GB - 8GB	The same amount of RAM	2 times the amount of RAM
> 8GB - 64GB	At least 4GB	1.5 times the amount of RAM
> 64GB or more	At least 4GB	Hibernation not recommended

Note: A swap space of at least 100GB is recommended for systems with over 140 logical processors or over 3TB of RAM.

- The following items also influence the decision on how much swap space should be allocated:
  - **Do specific application requirements exist?** Applications may have been written with a specific amount of swap space in mind. If this is the case, the system should be set up with the amount of swap that is recommended by the application vendor.
  - **Do other requirements exist?** Workstations and laptops may use hibernation functions that store the RAM contents in the swap area. In this case, the swap space would need to be equal to or greater than the amount of RAM installed in the system to enable hibernation.
  - **Assigning swap as 'last effort' memory** While the block devices hosting swap are generally many times slower than RAM, it is useful to have swap as another layer of memory that's available when needed. In the case of applications with high memory utilization, swap space can allow memory to be swapped out to disk to delay or prevent the termination of applications by the OOM killer.
- Virtual guests: for virtual guests, basically the same considerations as for physical systems apply. Also for these, using a bit of swap can influence the behaviour of a process requesting more and more memory, so the process gets slowed down first (leaving time for a sysadmin to manually fix the situation) before eventually also the swap is exhausted and the OOM killer terminates processes. If the memory written by the processes is not exceeding the available swap, the system will just experience a temporary slowdown.