VM Snapshots “What they are and how to use them”

What is a Snapshot?
A snapshot preserves the state and data of a virtual machine at a specific point in time.

- State refers to the virtual machine’s power state (for example, powered-on, powered-off, suspended).
- Data includes all the files that make-up the virtual machine, including disks, memory, and other devices, such as virtual network interface cards.

What a Snapshot is NOT
Snapshots are not backups. As the snapshot file is only a change log of the original virtual disk, do not rely upon it as a direct backup process.

Best Practices
To get the most out of Snapshots, several key objectives should be followed to prevent other issues and maximize Snapshot usage.

1) **Snapshots are not backups.** Use a 3rd party backup tool or subscribe to the TSM Backup Service offered by VaaS.
   - Take the snapshot, make the changes to the virtual machine, and delete/commit the snapshot as soon as the proper working state of the virtual machine is verified.

2) **VMware recommends using only 2-3 snapshots in a chain.**
   - An excessive number of snapshots in a chain or snapshots large in size may cause decreased virtual machine and host performance.
   - Creating large snapshot files can fill up available storage space causing ALL VM’s on that device to become inoperative until corrective action can take place. In other words, a Snapshot on any single host has the potential to impact all other hosted VM’s on that storage device.
   - Snapshot files can become corrupt.
   - The size of a Snapshot disk has a direct impact on the length of time it takes to delete the snapshot associated to the VM.

3) **Do NOT Snapshot the VM’s Memory.**
   - The length of time the ESX host takes to write the memory onto the disk is relative to the amount of memory the virtual machine is configured to use. This can add several minutes to the time it takes to complete the operation, which can “STUN” the machines performance.
   - Unless absolutely required to return the VM to the exact memory state, uncheck the Memory option. It is rare that the memory state is required.
4) **Use no single snapshot for more than 24-72 hours.**
Although 2-3 days is recommended, VaaS allows 5 days for a snapshot to remain before it is automatically removed.

- This prevents snapshots from growing so large as to cause issues when deleting/committing them to the original virtual machine disks.
- Take the snapshot, make the changes to the virtual machine, and delete/commit the snapshot as soon as the proper working state of the virtual machine is verified.
- Be especially diligent with snapshot use on high-transaction virtual machines such as email and database servers. These snapshots can very quickly grow in size, filling datastore space. Commit snapshots on these virtual machines as soon as the proper working state of the process being testing is verified.

5) **VM's with multiple disks**

- If a virtual machine is running off of a snapshot, it is making changes to a child or spare disk. The more write operations made to this disk, the larger it grows.
- The space requirements of the child disk are in addition to the parent disk on which it depends.
- Child disks have been known to grow large enough to fill an entire datastore.
- VaaS utilizes a “No Snapshot” policy on optional disks that are 100 GB or larger due to the likelihood of filling up the Datastore and halting all operations on VM’s that share the same Datastore.
- Additional disks that are 100GB or greater will be set as “Independent.” This prevents snapshots spilling over from the parent disk to the child.

**Summary**
A snapshot captures the entire state of the virtual machine at the time it is taken. Snapshots are useful when it’s necessary to revert repeatedly to the same state without having to create multiple virtual machines.

**A snapshot includes the following information:**
- Virtual machine settings
- State of all the virtual machine’s virtual disks
- Contents of the virtual machine’s memory (only if absolutely required).

If a particular VM has special requirements, please work with the VaaS team to help facilitate the best course of action. These are best practices and are meant to provide the highest level of availability and performance to the VaaS community and the end-user experience.