What's New in Hyper-V 2016/1709/1803/2019

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Agenda

- SAC vs. LTSC
- Hyper-V and System Center VMM vs. Honolulu
- What's new in Hyper-V: Windows Server 2016
- What's new in Hyper-V: Windows Server, 1709
- What's coming in Hyper-V: Windows Server, 1803
- What should be in Hyper-V: Windows Server 2019
- and surprise ☺☺☺

Windows Server: SAC vs. LTSC

- SAC = Semi-Annual Channel (new release each 6 months; supported for 18 months)
- LTSC = Long-Time Servicing Channel (new release in 2-3 years; supported for 5+5 years)

- SAC = Windows Server, 1709; Windows Server, 1803 === Core/Nano only
- LTSC = Windows Server 2016; Windows Server 2019

- SAC => Containers
- LTSC => Infrastructure Roles => Hyper-V

Hyper-V and SCVMM vs. Honolulu

- Latest Windows Server is 1709 SAC and 2016 LTSC
- Latest System Center VMM is 1801 SAC and 2016 LTSC

- Project Honolulu will be fully supported in WS 1803
- Honolulu getting more and more features
  - HCI management
  - Cluster Load Balancing
- Will Honolulu replace SCVMM in the future?

What's new in Hyper-V 2016 (1/5)

- VM: 240 VP; 16 TB Memory
- Host: 512 LP; 24 TB Memory
- VMCX Configuration File and VM Configuration Version

- Shielded VMs and Encryption Supported VMs
- vTPM and Key Storage Drive
- Guest VSM
- Linux Secure Boot

What's new in Hyper-V 2016 (2/5)

- Support for Containers
- RemoteFX improvements
- Discrete Device Assignment of GPU and NVMe
- Headless mode support
- Nested virtualization
- Device Naming of NIC
- Hot / add remove of NICs
- HvSocket (Guest-Host)
- TimeSync improvements
- Runtime Memory Resize

What's new in Hyper-V 2016 (3/5)

- Distributed Storage QoS
- REFS Block
- REFS Fast Fixed Disk Creation
- Storage Resiliency - All Paths Down
- Online Resize for Shared VHDX
- Hot add / remove of replicated VHD

What's new in Hyper-V 2016 (4/5)

- Distributed Storage QoS
- REFS Block
- REFS Fast Fixed Disk Creation
- Storage Resiliency - All Paths Down
- Online Resize for Shared VHDX
- Hot add / remove of replicated VHD

- Resilient Change Tracking (RCT)
- Backup improvements; Backup of Shared VHDX

What's new in Hyper-V 2016 (5/5)

- Multi-host management (WMI)
- Hypervisor Power Management (connected standby works)
- Virtual machine grouping
- IC Upgrade via Windows Update
- Production Checkpoints

- Rolling Cluster Upgrade
- Cluster Compute Resiliency
- Cluster Node Quarantine
- VM Isolation

What's new in Hyper-V 1709

- Project Honolulu in Preview
- Container Images further optimized (smaller) and Linux Containers supported with Hyper-V Isolation
- Persistent Storage for containers on CSVs and S2D
- VM Load Balancing with OS and app. awareness
- Support for SCM and vPMEM
- Virtual Network Encryption for SDN
- HGS as a Shielded VM
- Linux as a Shielded VM
- Storage Replica with Test Failover
- SMB1 not installed by default
- Data Deduplication supported on ReFS

What's new in Hyper-V 1803 and 2019

- Project Honolulu
- Integration with Azure; Azure AD Integration
- Shielded VMs for Linux
- Linux Containers
- HCI
- Data Deduplication supported on ReFS
- Dynamic VMMQ
- Windows Subsystem for Linux
- Smaller containers
- Windows Defender ATP

… and surprise

Do you know what's VM-PHU?

VM-PHU

- https://patents.google.com/patent/US20140157264
- Virtual Machine-Preserving Host Updates
- Techniques are described for updating a host operating system on a server while maintaining virtual machines running on the server. An updated host operating system is copied to the server. The currently active host operating system freezes the virtual machines but leaves them resident in RAM. The allocations and state for each virtual machine is copied to RAM or local storage. The active host operating system is shut down. Instead of issuing a command to reboot the server after it finishes shutting down, the active host operating system transfers execution to a loader. The loader reads the kernel of the updated host operating system into RAM along with an allocation map for the virtual machines and instructions to resume the virtual machines. The loader transfers execution to the updated host operating system entry point, and the updated host operating system loads the states of the virtual machines and resumes them.

VM-PHU in action

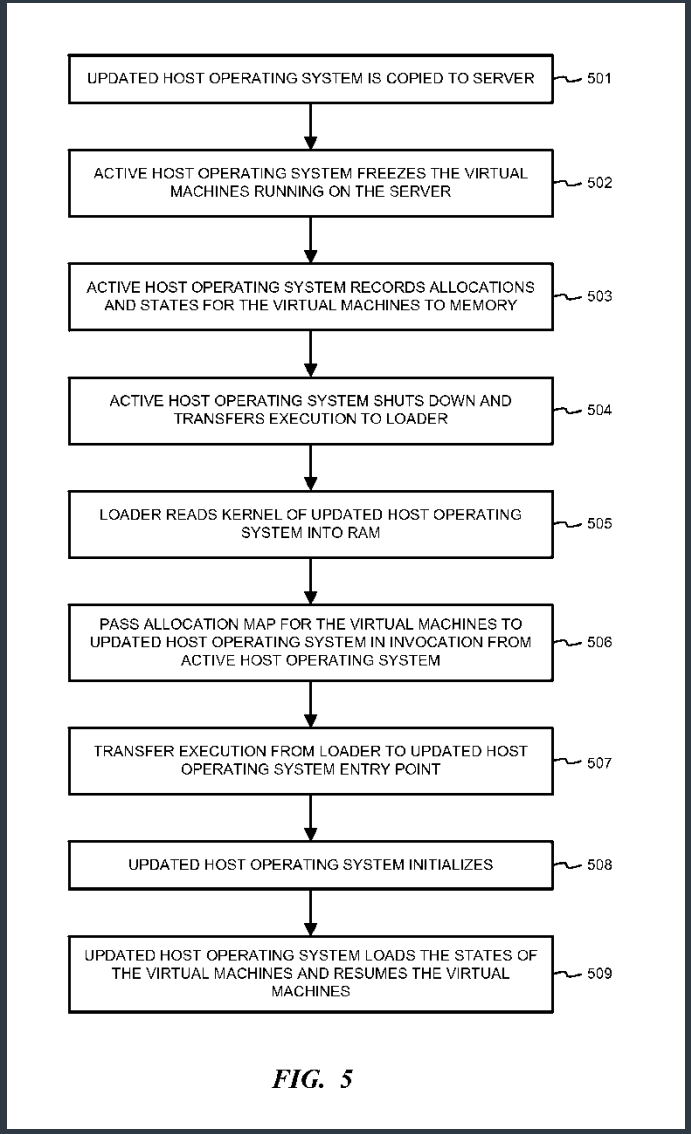

FIG. 5