XenServer 6.5 Service Pack 1: Release Notes

This document provides important information about the XenServer 6.5 Service Pack 1 release.

For frequently asked questions, refer to CTX141509 – XenServer 6.5 Technical FAQ.

Documentation may be updated or changed after the initial release. Citrix suggests regularly visiting the XenServer 6.5.0 page on Citrix Support to learn about updates. Release notes for Windows and Linux Virtual Machines (VMs) are available in the *XenServer 6.5 SP1 Virtual Machine User's Guide*.

Note: This Service Pack can only be applied against a base XenServer 6.5 installation.

New Features and Improvements in XenServer 6.5 Service Pack 1

XenServer 6.5 Service Pack 1 introduces new features and simultaneously rolls-up all previously issued hotfixes for XenServer 6.5.

XenServer 6.5, released in January 2015, marked a significant evolutionary step for the product. It saw the introduction of a 64-bit Control Domain (dom0), an upgrade to the latest Xen hypervisor, and comprehensive performance and scalability improvements. From a commercial standpoint we also introduced a new licensing model (with Enterprise and Standard editions) to replace the single edition that XenServer 6.2 launched. For details on the XenServer 6.5 release, please refer to - http://support.citrix.com/article/CTX142355.

A common theme of XenServer 6.5 Service Pack 1 is improved usability, with significant enhancements made to XenCenter and to the installation of hotfix and supplemental packs. We also introduce a long term support policy for new guest operating systems, enabling customers to upgrade to the latest guest version, while remaining fully supported by XenServer.

We continue our thought leadership in the virtualized graphics domain by adding support for Intel's latest offering, a solution that requires no additional hardware; simultaneously we introduce GPU pass-through support for Linux users.

We have also taken this opportunity to increase the supported limit, for the maximum number of VMs that can be run on a single server, to one thousand.

Enhanced Guest Support

- Windows 10 Preview Template - enables customers to trial the latest Technical Preview of Microsoft's operating system. (**Not** for production use, see Note*)
- RHEL 6.6 & 7.1
- CentOS 6.6 & 7.1
- Oracle Linux 6.6 & 7.1
- Scientific Linux 5.11, 6.6, 7.0 & 7.1
- SLED 11 SP3
- CoreOS 633.1.0

* Note: In order to attain the maximum performance from Windows 10, customers should download the specific XenServer Tools for Windows 10 from the XenServer Product Download page. These were not included within Service Pack 1 due to the ongoing development of Windows 10 by Microsoft.

Service Pack Support Policy

In keeping with the policy introduced with XenServer 6.2 SP1, Citrix will continue to provide security updates to the base XenServer 6.5 product for a period of six months, from the release date of the XenServer 6.5 Service Pack. After this six month period elapses, any new hotfixes will **only** be released to support XenServer 6.5 with SP1 applied.

Long-term Guest Support (LTS)

Previously, customer requests for support for new guests, released *after* a particular XenServer release, has required additional engineering effort. Starting with this release, we introduce a long-term Linux guest support policy. This will enable *all* customers to consume minor version updates by either, installation from new guest media, or as an upgrade from an existing supported guest.

To ensure long-term guest support, customers should install XenServer 6.5 Service Pack 1 and stay current on all subsequent hotfixes.

Intel GVT-d Pass-through for Windows

With this release, XenServer introduces support for Intel GVT-d for Microsoft Windows guests. Intel's offering complements the existing NVIDIA and AMD solutions, providing the ability to pass-through a GPU to Windows guests and:

- requires **no** additional GPU hardware due to the embedded functionality of Intel's Xeon E3 1200 v3 (Haswell) GPU equipped processors
- utilizes a standard Intel GPU driver, which is installed within the VM
- delivers GPU acceleration to a XenApp VM, something only previously only available on bare metal servers with this GPU type
- offers efficient Size Weight and Power (SWAP) characteristics for high density scenarios

NVIDIA GPU Pass-Through to Linux VMs

Service Pack 1 introduces GPU pass-through for Linux HVM guests and provides support for:

- OpenGL to enable accelerated graphics
- Compute Unified Device Architecture (CUDA) for High Performance Computing (HPC) applications

For more information, refer to the *XenServer 6.5 SP 1 Graphics Guide*.

Customers may also be interested in XenDesktop Linux Virtual Desktop Access (VDA), a Tech Preview, announced in April 2015, and available from the Citrix Product Download page: https://www.citrix.com/downloads/xendesktop/betas-and-tech-previews/linux-virtual-desktop-tech-preview.

The following table summarizes GPU and vGPU support at XenServer 6.5 Service Pack 1:

	GPU for Windows	GPU For HVM Linux	vGPU for Windows
AMD	✔	✖	✖
Intel	✔	✖	✖
NVIDIA	✔	✔	✔

XenCenter Improvements

XenServer 6.5 Service Pack 1 delivers enhanced usability for XenCenter, designed to make the administration of XenServer environments simpler, quicker, and more intuitive.

Improved Read Cache

XenServer 6.5 SP1 delivers increased visibility into the operation of read caching. XenCenter now exposes the status of which VMs are using or not using read caching, and enables these search results to be grouped in several ways, including by read cache status or SR.

Container Management – Docker™ Integration

XenServer 6.5 Service Pack 1 includes two new features to enhance deployments of Docker™ Containers on XenServer:

- Support for CoreOS 633.1.0 Linux VMs including Cloud Config Drives for customized configuration
- Container Management for CoreOS 633.1.0, Ubuntu 14.04 and RHEL/CentOS/OL 7.0

Simply install the Container Management Supplemental Pack (available from the XenServer Product Download page) to enable XenServer to query VMs, interact with Cloud Config Drives, discover application containers, and display these within XenCenter's Infrastructure view.

In addition, the Container Management Supplemental Pack provides:

- **Monitoring and Visibility**: allows you to see which VMs are in use for Docker hosting, and which containers on the VM are running.
- **Diagnostics**: easy access is provided to basic container information such as forwarded network ports, and originating Docker image name. This can help accelerate investigations into problems where either the infrastructure and applications layers may be impacted.
- **Performance**: gives insight into which containers are running on that VM, what processes and applications are running in the container, and how much CPU resource each consumes.
- **Lifecycle Management**: use XenCenter to start, stop and pause application containers enabling rapid termination of problematic applications.

Refer to the *XenServer 6.5 SP 1 Virtual Machine User's Guide* for more details on how to use this feature.

Improved Supplemental Pack Installation

Previously, the only method for applying supplemental packs was through the xe command line. With the introduction of XenServer 6.5 Service Pack1, supplemental packs can now be installed through XenCenter using the *Install Update* method.

More Resilient Hotfix & Service Pack Installation

Service Pack 1 delivers a more reliable and resilient hotfix installation method. The installation process is more efficient and requires less disk space. During installation of service packs, hotfixes and supplemental packs, customers will now be able to continue to perform other tasks from within XenCenter.

Remote Desktop Protocol (RDP) Configuration

RDP can now be enabled directly from XenCenter, and no longer requires prior VM configuration.

Other Features and Performance Enhancements

- Support for Intel's Haswell EX processor, enabling customers to use the latest generation of Intel's server class processor
  For a list of the most recently supported hardware refer to Hardware Compatibility List: http://hcl.vmd.citrix.com
- Improved performance for the existing NVIDIA GRID vGPU solution
- Accommodation for revised Russian Federation time zones
- Updates to the Graphics Certification Kit (GCK), Auto-Certification Kit (ACK), GPU Certification Kit, and the Xen Certification Kit)
- The updated GCK adds support for NVIDIA GPU pass-through for HVM Linux and Intel GTV-d pass-through for Windows

Installation & Upgrades

Before beginning installation, customers should review the installation procedure and system requirements detailed in *XenServer 6.5 SP 1 Installation Guide*.

Issues Resolved in XenServer 6.5 Service Pack 1

XenServer 6.5 Service Pack 1 includes the following XenServer 6.5 hotfixes:

- Hotfix XS65E001 - http://support.citrix.com/article/CTX142060
- Hotfix XS65E002 - http://support.citrix.com/article/CTX142059
- Hotfix XS65E003 - http://support.citrix.com/article/CTX142061
- Hotfix XS65E005 - http://support.citrix.com/article/CTX142141
- Hotfix XS65E006 - http://support.citrix.com/article/CTX142147
- Hotfix XS65E007 - http://support.citrix.com/article/CTX142273
- Hotfix XS65E008 - http://support.citrix.com/article/CTX142266

In addition, it contains fixes for the following issues:

- When using Storage XenMotion, reverting a VM to a snapshot and then attempting to migrate the VDIs attached to the VM can fail.

- The Linux guest agent fails to install in a CentOS 7.1 VM. This is due to a change in format of the file used to identify the VM.

Advisories and Known Issues

This section details advisories and minor issues with this release and any workarounds that can be applied.

General

- When a VM, (running on a XenServer pool member other than the Pool Master), is shut-down and then restarted, historical performance data stored prior to the shut-down may be discarded.

- When using vGPU with a high resolution, the VNC console may fail to display the User Account Control (UAC) dialog box on Windows 7 and Windows 2008r2 VMs. You can work around this issue by moving the mouse inside the console.

- In a pool of XenServer hosts, when a XAPI client launches a long-running XAPI task on a pool member other than the Pool Master, and if the task takes more than 12 hours to complete, the operation can time out and eventually fail to complete. To resolve this issue, add `STUNNEL_IDLE_TIMEOUT=172800` to the `/etc/xensource-inventory` file on all hosts.

- If customers have experienced a full Control Domain (dom0) disk, VMs may fail to boot even after freeing up the dom0 disk space. This can manifest as a bootloader error, an illegal transition error, or as disks failing to appear in the booted VM. To resolve this issue, customers should reboot the affected hosts.

- The XenCenter Rolling Pool Upgrade wizard should not be used with Boot from SAN environments. For more information on upgrading boot from SAN environments, see Appendix B of the *XenServer 6.5 SP1 Installation Guide*.

- When installing XenServer from a network repository (including when using the XenCenter Rolling Pool Upgrade wizard), you must configure the DHCP server to provide the domain-name option, otherwise DNS will not work correctly, which can lead to a failed installation.

Internationalization
- Non-ASCII characters, such as characters with accents, cannot be used in the host console.

- XenServer root passwords must not contain non-ASCII characters.

Hardware Compatibility
Note: Customers should refer to the XenServer Hardware Compatibility List (HCL) for the most recent additions and advice for all hardware compatibility questions.

- UEFI boot is currently not supported in XenServer. Customers should ensure that their XenServer hosts are configured to boot in Legacy BIOS mode. Consult your hardware vendor for detailed instructions.

Storage
- When using `tap-ctl stats` to directly examine a tapdisk process state, the status of `read_caching` could read `true` even when read caching is not enabled.

- If a Virtual Machine's snapshot tree is exported and then reimported using the WS-Management protocol, reverting the VM to one of its previous snapshots will result in the previously attached VDIs remaining on disk.

- It is not possible to attach storage provided by Microsoft iSCSI Software Target versions 3.2 or 3.3. However, attempts to attach storage provided by iSCSI Target Server included in Windows Server 2012 and Windows Server 2012 R2 will succeed.

- On HVM Linux VMs, VBD performance metrics will not be recorded until XenServer Tools in the guest operating systems are fully functional.

- Running the command **xentop** from a host's CLI does not display VBD performance metrics.

- When installing XenServer using an answer file, shared storage should not be specified as either the primary-disk or the guest-disk. Storage specified during installation for both the primary-disk and the guest-disk will be deleted.

- iSCSI paths that are not available when a XenServer host is booted, do not get established automatically later. To resolve this issue, perform another host reboot or detach and re-attach the SR.

- When adding HBA SRs to a pool of XenServer hosts, before running the New SR wizard, customers should ensure that each LUN is mapped to all hosts in the pool.

- After upgrading a XenServer host, multipath configuration details will not be retained automatically. However, the configuration details will be preserved. Customers who would like to retain any non-default device-specific configuration should copy them from

`/etc/multipath.conf.bak` into the file `/etc/multipath.conf.` For more information, refer to Appendix B in *XenServer 6.5 SP 1 Installation Guide.*

Networking

- Jumbo frames cannot be enabled on QLogic 10 Gigabit Ethernet adapters (10GbE) as the QLogic driver uses contiguous network buffers. Contiguous network buffers cause fragmentation of dom0 memory and lead to memory allocation failures and performance issues in dom0.

- During a Storage XenMotion operation, networks that exist on the source pool are created on the destination pool even when they are not required or used. This is a cosmetic issue only, as these networks will have no attached PIFs or VIFs.

- Attempts to create a Cross-Server Private Network that spans two subnets, where, at least one of the subnets is not the default gateway on a host, can fail. Citrix recommends that you use the same IP subnet on all hosts to create a Cross-Server Private Network.

- DHCP lease renewal fails if the DHCP client and DHCP server are both Linux VMs on the same host. This does not affect Windows VMs. If you wish to use dhcp3-server and dhcp3-client in Linux VMs, which may be sharing the same host, you must disable checksum offload by issuing the command `ethtool -K eth0 tx off` within the DHCP server VM.

XenCenter

- When High Availability (HA) is enabled on a XenServer pool and a VM has 'HA restart priority' set to 'Restart', XenCenter does not allow users to modify the VM's GPU property; this is the normal and expected behaviour. However, after HA is disabled, XenCenter continues to prevent users from modifying the GPU property of the VM. This only occurs for VMs that had the restart property set to 'Restart' **before** disabling the HA. A workaround is to re-enable HA, reset the VM's restart property, and to then disable HA.

- When a XenServer host is removed from a pool, it will be automatically added to XenCenter as a standalone host. Immediate attempts to reconnect to the host will display a message that the host is a member of the pool and is already connected, the host is then removed from XenCenter. This only occurs when attempts are made to connect to the host while the host is in a transient state from pool member to standalone server. Otherwise, XenCenter will connect to the host automatically when it becomes available.

- On the Console tab of a Windows VM, if you click on 'Switch to Remote Desktop' and later switch to Default Desktop, the 'Switch to Remote Desktop' button will be disabled. When this happens, you will not be able to switch to the Remote Desktop again. To work around this issue, move out of the Console tab for about 20 seconds, and then try again. The console button will now be enabled.

- When two or more VMs are running on a XenServer host, the IO Performance data displayed on the host's 'Performance' tab in XenCenter is inaccurate.

- XenCenter plugins compiled for previous versions of XenCenter may appear greyed out in the list of plugins. To work around this issue, the plugin author should recompile the plugins without specifying a `/culture` in the assembly linker (`al.exe`) step. For detailed

instructions, refer to the XenCenter plugin documentation at
https://github.com/xenserver/xencenter-samples/tree/master/docs.

- XenCenter displays graphs for GPU Pass-through even when performance data is unavailable.

- Modifying the font size or DPI on the computer on which XenCenter is running can result in the user interface displaying incorrectly. The default font size is 96 DPI; Windows 7 refers to this as 100%.

Guests

- If the Windows operating system (OS) stops unexpectedly and an error message appears on a blue screen (BSOD), the OS attempts to write out a dump file to the page file for diagnosis. When the XenServer Tools are installed, a PV driver is used for writing this dump file and interactions between this driver and the PV network backend can lead to corruption of the dump file, such that it is unavailable for root-cause diagnosis. The new XenServer Tools package contains an updated crash-dump driver that fixes this problem and dumps can now be reliably produced.

- Due to an upstream kernel issue, HVM Linux VMs using Dynamic Memory Control should not be used in conjunction with GPU pass-through, unless the VM is running kernel 3.13 or later.

- In rare cases, after XenServer Tools installation or upgrade has completed successfully, emulated network devices remain despite the system claiming to be optimised. This can lead to slower network speed, and higher Control Domain (dom0) CPU usage than using the Windows PV Drivers. To resolve this, uninstall the XenServer Tools package from Add / Remove Programs (or Programs and Settings), then re-run the XenServer Tools installation program.

- Due to a change in the way Windows 10 binds network stacks to drivers, the XenServer PV network driver will not install correctly on Windows 10 VMs. As a result, the driver installer service does not complete. Customers wishing to test the Windows 10 preview builds should not install the XenServer Tools shipped with XenServer 6.5 Service Pack 1. You should instead install specific Windows 10 Technical Preview XenServer Tools. For more information, see XenServer Tools for Windows 10 Tech Preview.

- Attempts to import a VM from a large .xva file may fail if the process takes more than 30 minutes to complete. To work around this issue, export and then import the VM as an .ovf file.
- XenServer Tools installation can freeze. This is caused by a race condition which causes the VM to reboot after installing the driver, but before the co-installer completes. This causes the emulated devices to register incorrectly.

  To work around this:

  1. Exit the XenServer Tools installation program.
  2. Uninstall the `citrixxendrivers (x86 or x64).msi` package,
  3. Reboot the VM, and then
  4. Reinstall the `citrixxendrivers (x86 or x64)` package manually.

Reboot the VM as required.

- After migrating Container Managed VMs between pools, the Container Management functionality stops working for the VMs. This is because Container Management is implemented using a pool-specific key. To work around this issue, the VM-specific preparation-step for "Container Management" needs to be repeated on the new pool. This means for CoreOS that the Cloud Config Drive needs to be updated by changing the Config Drive configuration in the VM preferences. For RHEL/CentOS/OL 7 and Ubuntu 14.04, it means that `xscontainer-prepare-vm` needs to be re-run. Note that even if the preparation-step is repeated, the old XenServer pool may keep access to the VMs.

- Renaming a container does not trigger the Container Management view to update. Additionally, on Ubuntu 14.04, the pause or unpause of a container from outside XenCenter does not trigger the view to update. This may mean that XenServer may not show the current (renamed/paused/unpaused) container-status. The underlying cause is that the view only gets refreshed following Docker event notifications. As a workaround, the refresh can be triggered manually by performing an action (i.e. start, stop) on an unrelated container that is running on the same VM.

- After performing a migration or suspend operation, RHEL, CentOS, Oracle Linux, and Scientific Linux 7 and 7.1 VMs may freeze during resume. For more information, see Red Hat Bugzilla 1141249.

- Customers who are running Windows VMs in XenDesktop environment **MUST** ensure that the host clock has the same source as their Active Directory (AD) domain. Failure to synchronize the clocks can cause the VMs to display an incorrect time and cause the Windows PV drivers to crash.

- The console screen on HVM guests can go blank after a period (typically ten minutes) of inactivity. You can work around this issue by adding `consoleblank=0` to the kernel boot parameters of the guest. Consult your guest OS documentation for information about updating the kernel boot parameters.

- Customers who wish to upgrade existing Linux guests to versions which now operate in HVM mode (that is, RHEL 7, CentOS 7, and Ubuntu 14.04) should perform an in-guest upgrade. At this point, the upgraded Guest will run in PV mode - which is not supported and has known issues. Customers should run the following script to convert the newly upgraded guest to the supported HVM mode. To do this:

  On the XenServer host, open a local shell, log on as root, and enter the following command:

  `/opt/xensource/bin/pv2hvm <vm_name>`

  or

  `/opt/xensource/bin/pv2hvm <vm_uuid>`

  Customers should restart the VM to complete the process.

- Customers who wish to upgrade their existing Oracle Linux guest to Oracle Linux 7 (which now operates in HVM mode) should not run the PV to HVM (*pv2hvm*) script. For detailed instructions on upgrading your existing Oracle Linux VM to version 7.0, refer to CTX141839.

- RHEL 4.5 guests may crash when using the Rolling Pool Upgrade Wizard. Before upgrading a XenServer host, you must shut down RHEL 4.5 guests. Once the host is upgraded, you must update the guest kernels to use the one supplied on the XenServer Tools ISO.

- After using XenMotion (Live Migration) to move a Windows VM, the memory usage reported for the VM may be incorrect.

- If you wish to create an Ubuntu 10.04 VM (32-bit) with more than 512MB of memory, you must upgrade to the latest version of the kernel **before** increasing the RAM. For more information, see Ubuntu Launchpad 803811 and 790747.

- After removal of the XenServer Tools (PV Drivers), XenCenter may erroneously display old performance data. Customers are strongly advised to install the latest XenServer Tools. [CA-106466]

- Customers should not attempt to perform snapshot operations (create or delete) on a VM which is actively undergoing Storage XenMotion between hosts. Doing so may result in the Storage XenMotion failing with a checksum mismatch error message.

- CPU pinning information does not persist when VMs are migrated.

Documentation

- XenCenter Help incorrectly mentions the supported version of CoreOS VMs as 607.0.0. Customers should note that CoreOS 633.1.0 is supported in XenServer 6.5 Service Pack 1.

Documentation and Support

For the most up-to-date product documentation for every Citrix product, visit Citrix Support. Additional information is also available from Citrix eDocs.

Getting Support

Citrix provides technical support primarily through Citrix Solutions Advisers. Contact your supplier for first-line support, or go to Citrix Online Technical Support to find the nearest Citrix Solutions Advisor.

Citrix offers online technical support services on its support.citrix.com website. This site includes links to downloads, the Citrix Knowledge Center, Citrix Consulting Services, and other useful resources.

Other Resources

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Citrix Support

Citrix Blogs

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851 West Cypress Creek Road
Fort Lauderdale, FL 33099
954-267-3000
www.citrix.com