# XenServer 6.5 Release Notes

This document provides important information about the XenServer 6.5 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 Virtual Machine User's Guide.

## New Features and Improvements in XenServer 6.5

XenServer continues to be a fundamental platform for Citrix's long term goal of enabling work and play from anywhere, from any device. With the introduction of XenServer 6.5, Citrix delivers support for the newest 64-bit hardware and latest Guest operating systems, delivering increased vGPU scalability, in-memory read caching and performance improvements in the areas of storage and networking.

### Architectural Improvements

XenServer 6.5 introduces many architectural improvements which aim to improve overall performance and removes a number of scalability limitations in XenServer 6.2.
For details of the new configuration limits, refer to CTX141510 - XenServer 6.5 Configuration Limits.

#### 64-bit Control Domain Linux Kernel
The new 64-bit Control Domain (Dom0) enables XenServer to accommodate many more PCI devices per host (NICs, GPUs, and so on), and allows the use of devices that are 64-bit only (including many Solid State Drive solutions). The new 64-bit kernel removes the previous restrictive low/high-memory division which limited the maximum amount of memory that Dom0 could use. This could result in sub-optimal memory performance within Dom0, when more than 752MB RAM was allocated. In addition, Dom0 has been upgraded from CentOS 5.7 to CentOS 5.10.

Dom0 memory is automatically configured depending on the amount of free host memory and can be scaled and optimized to cope with memory demands of the very latest vGPU, disk and network drivers. This enables support for more Virtual Machines (VMs) and internal caches to speed up disk access.

#### New Xen Project Hypervisor v4.4
XenServer 6.5 includes the latest Xen Project hypervisor available; v4.4 delivers many improvements. It vastly increases the number of virtual event channels available for Dom0, from 1023 to 131071, which translates into a correspondingly larger number of attached virtual devices. XenServer v6.2

used a special interim solution that provided 4096 event channels, which was enough for around 500 VMs per host but with only a few virtual devices in each Virtual Machine.  With the support for extra event channels in version 4.4, XenServer 6.5 allows each of these VMs a far richer set of virtual devices. Xen 4.4 also handles grant-copy locking requests more efficiently, dramatically improving aggregate network and disk throughput.

## In-memory Read Caching

In scenarios where golden images are deployed and VMs share much of their data, the few specific blocks VMs write are stored in differencing-disks unique to each VM. Read caching improves a VM's disk performance as, after the initial read from external disk, data is cached within the XenServer host's memory.

This enables all VMs to benefit from in-memory access to the contents of the golden image, reducing the amount of I/O going to and from physical storage.  It greatly improves performance in situations where many VMs are cloned off a single base VM on a read-caching supported SR (currently EXT and NFS).

For example, in XenDesktop Machine Creation Service (MCS) environments, it drastically reduces the number of blocks read from disk. This performance improvement can be seen whenever data needs to be read from disk more than once. This is most pronounced in the degradation of service that can occur during heavy I/O situations. For example, when a significant number of end users boot up within a very narrow time frame (boot storm), or when a significant number of VMs are scheduled to run malware scans at the same time (anti-virus storms).
For further information refer to CTX141500 - XenServer 6.5 Administrator's Guide.

## Live Migration of VMs between XenServer Platforms

Although previous versions of XenServer were 32-bit, XenServer 6.5 fully supports the Live Migration of VMs created in these earlier versions.

## Storage Improvements

### Lower Deployment Costs with Space Reclamation on the Array

Space reclamation allows you to free up unused blocks (for example, deleted VDIs in an SR) on a LUN that has been thinly provisioned by the storage array. It enables notifications of deletions within LVM to be communicated directly to the array. Once released, the reclaimed space is then free to be reused by the array.
Refer to the XenServer Hardware Compatibility List and your storage vendor specific documentation to determine if your array supports this functionality, and whether it needs a specific configuration for operation.

### Live LUN Expansion

In order to fulfill dynamic capacity requirements, you may wish to add capacity to the storage array to increase the size of the LUN provisioned to the XenServer host. The Live LUN Expansion feature allows to you to increase the size of the LUN *without* any VM downtime.
For further information refer to CTX141500 - XenServer 6.5 Administrator's Guide.

### Support for Tapdisk3

The latest Dom0 disk backend design delivers major improvements in the performance of concurrent disk access and a much larger total aggregate disk throughput for the VBDs.
Citrix has measured aggregate disk throughput improvements of in excess of 100% on modern disks

and machines accessing large block sizes with large number of threads. While the previous tapdisk2, used in XenServer 6.2, established a datapath to the guest in a circuitous way through a Dom0 kernel component, tapdisk3 establishes a datapath connected directly to the guest, minimizing latency and using less CPU.

### Updated Device Mapper Multipath

Device mapper multipath was updated to version 0.4.9-72 to incorporate various upstream enhancements and improvements. Most significant is the usability enhancement for ALUA; for EMC™ VNX™ and NetApp™ FAS™, XenServer will automatically configure for ALUA if an ALUA-capable LUN is attached.

### Removal of Integrated StorageLink

The Integrated StorageLink (iSL) Storage Repository (SR) type was deprecated in Citrix XenServer 6.2.0, and is now retired with this release of XenServer 6.5.  Storage Administrators can manually migrate their VMs (from an iSL SR to NFS, iSCSI or Fibre-Channel-based SR), and should refer to the procedure detailed in CTX141433.

### Removal of MPP RDAC Support

The MPP RDAC multipathing stack has been removed in this release, as it is no longer supported by major storage vendors. Arrays for which MPP RDAC was previously being manually enabled, should work with XenServer's default multipath stack, Device Mapper Multipath. Please also refer to the documentation of your storage array and the XenServer HCL.

## Networking Improvements

XenServer 6.5 brings many improvements relating to network throughput. For example, the capacity for a large number of VMs to send or receive data at high throughput has been significantly improved. Measurements taken in representative configurations showed up to a 700% increase in aggregate network throughput with a set of VMs.

### Updated Open vSwitch

An Open vSwitch (OVS) network flow is a match between a network packet header and an action such as forward or drop. A typical server VM could have hundreds or more connections to clients, and OVS needs to have a flow for each of these connections. As the number of VMs on the host builds up, the OVS flow table in the Dom0 kernel fills and induces round-trips to the OVS userspace process, which can degrade the network throughput to and from guests. In OVS v1.4, present in XenServer 6.2, the flow had to have an *exact* match for the header. XenServer 6.5 includes the latest version, OVS 2.1.3, which supports megaflows.
Megaflow support reduces the number of required entries in the flow table for most common situations and improves the ability of Dom0 to handle many server VMs connected to a large number of clients.

### GRO enabled by default

Generic Receive Offload (GRO) is now enabled by default for all compatible PIFs available to Dom0. As a result, for GRO-capable NICs, incoming network packets are transparently merged by the NIC. Consequently, Dom0 is interrupted less often to process the incoming data, saving CPU cycles and scaling far better with 10Gbps and 40Gbps networks.
In test environments, Citrix has observed incoming single-stream network throughput improvements of up to 400% on modern machines.

### Netback Thread per VIF

XenServer 6.2 had a fairness problem when processing network data for many VIFs; all the data could end up being redirected to a single Dom0 vCPU. Therefore, in the worst case, the network data throughput would not scale with the number of Dom0 vCPUs. Instead, increasing the number of active VIFs in the host would saturate that single Dom0 vCPU, sharply decreasing the network throughput in individual VIFs.

XenServer 6.5 improves this design and gives each VIF its own Dom0 netback thread that can run on any Dom0 vCPU. Therefore, VIF load is now always spread evenly across all Dom0 vCPUs.

### Distribute Virtual Switch Controller – new version included and deprecation rescinded

The Distributed Virtual Switch Controller (DVSC) is fully supported within XenServer 6.5 and the deprecation notice issued at 6.2 is rescinded.

XenServer 6.5 contains a new DVSC version from Nicira (DVSC-Controller-37734.1), and contains platform related security fixes (for example, OpenSSL and Bash Shellshock) whereas the DVSC version in XenServer v6.2 was DVSC-Controller-17223.

## vGPU Improvements

XenServer continues to lead the market in the virtual delivery of 3D professional graphics for applications and workstations. Its offerings include GPU Pass-through as well as NVIDIA GRID vGPU - the first virtualization solution to support hardware-based GPU sharing.

XenServer 6.5 includes performance, scalability, usability, and functional improvements to vGPU. XenServer will scale as your hardware grows with support for more physical GPUs per host – it now supports up to 96 vGPU accelerated VMs per host (with 3xK1-cards) compared to 64 vGPU accelerated VMs in XenServer 6.2 SP1, further reducing the TCO for deployments.

XenServer now enables the latest GRID vGPU types inbox, that is K120Q, K160Q, K180Q, K220Q, and K280Q.  XenServer 6.5 no longer requires additional hotfixes to support vGPU, it is included on the main.iso. However, it is still a requirement for customers to obtain the latest vGPU drivers from NVIDIA.
For more information, refer to CTX141831 - Configuring XenServer 6.5 Graphics.

## Revised Configuration Limits

An increased support limit for the number of VBDs per host, XenServer 6.5 supports up to 2048: (XenServer 6.2 supported up to 512).

An increased support limit for the number of LUNs per host, XenServer 6.5 supports up to 256: (XenServer 6.2 supported up to 150 or 75 if used by an SR).

For details of all new Configuration Limits, refer to CTX141510 - XenServer 6.5 Configuration Limits

## Hardware Support

Customers can use the latest hardware; XenServer 6.5 enables support for the latest generation of CPUs, including Intel Haswell EP, Intel Ivy Bridge EX, and AMD Warsaw. Refer to the XenServer Hardware Compatibility List for the latest information on supported hardware.

## Re-introduction and Improvements to Workload Balancing

XenServer 6.5 sees the return of the WorkLoad Balancing (WLB) virtual appliance. WLB gives system administrators deep insight into system performance, allowing infrastructure optimization. WLB allows you to generate granular performance monitoring reports, alert administrators to system hot spots, automatically place workloads based on historic data, and dynamically moves workloads based on current CPU, storage and network load.

The enhanced Pool Audit Trail feature allows you to specify the granularity of the audit log report. Customers can also search and filter the audit trail logs by specific users, objects, and by time.

Online Upgrade allows customers to apply upgrades directly from the live SLB Server by the yum update mechanism, or instead download the upgraded RPM packages from Citrix.com

For more information on how to use WLB, press **F1** to access the XenCenter Online Help, or refer to CTX141852 - Workload Balancing Quick Start Guide and CTX141853 - Workload Balancing Administrator's Guide.

## Newly Supported Guests and Introduction of LTS Guest Policy

Support is added for the following new guests:

- Ubuntu 14.04
- SLES 11 SP3 and SLES 12
- CentOS 5.10, 5.11, 6.5, and 7.0
- RedHat 5.10, 5.11, 6.5, and 7.0
- Oracle Linux 5.10, 5.11, 6.5, and 7.0
- Oracle UEK 6.x

In previous XenServer releases all Linux distributions operated in PV mode, and Windows releases in HVM mode. In XenServer 6.5, the following newly supported Linux distributions will operate in HVM mode:

- RHEL 7.0
- CentOS 7.0
- Oracle Linux 7.0
- Ubuntu 14.04

Operating in HVM mode allows these VMs to take advantage of the x86 virtual container technologies in newer processors for improved performance. Network and storage access from these guests will still operate in PV mode, using drivers built into the kernels.

### LTS Support

XenServer 6.5 sees the introduction of the Long Term Support (LTS) policy for new Linux Guests. Customers will be able to use in-Guest update mechanisms to upgrade to newer versions of the Guest OS.

For detailed information on Guest support, refer to CTX141502 - XenServer 6.5 Virtual Machine User's Guide.

## Intel TXT Measured Boot Improvements

The Intel TXT Measured Boot supplemental pack has been updated to the latest version of **tboot.** This version also includes Asset Tagging support, whereby a server can be securely tagged with any information deemed useful by the administrator (such as the geographic location, hardware capabilities or regulation compliance). This allows both the identification of a host to boot a VM with particular requirements and cryptographical proof that the host was given these tags by the operator. For more information on this updated supplemental pack, refer to CTX141507 - Measured Boot Supplemental Pack for XenServer 6.5.

## XenCenter Improvements

There have been numerous improvements to XenCenter:

- improved navigation through different views
- unified UI for all alerts and notifications combining the previous Logs, System Alerts and Check for Updates interfaces
- the .NET installer is now contained within the XenCenter installer, no longer requiring separate installation
- hotfix installation has been optimized, customers can install multiple hotfixes with minimal passes through the improved XenCenter Install Update wizard

XenCenter usability has also been improved with a cleaner and simpler interface. Based on feedback from customers and focus groups, a number of areas were highlighted for improvements, such as creating and configuring VMs, taking VM snapshots and monitoring or troubleshooting VMs.

The first obvious change is the navigation buttons at the left of the application window. The top buttons, *Infrastructure, Objects, Organization Views, Saved Searches*, and *Notifications,* replace the old drop-down menu at the top of the tree-view. This updated design enables one-click access to different views of managed resources and a consistent way of browsing these resources by location, type, attribute, or a pre-saved custom filter. Similarly, working with complex searches on the system resources has been simplified by redesigning the controls of the Search tab, increasing the visibility of its different functions and improving the workflow for creation and modification of complex *search* queries.

Administrators can now go to a centralized location to view all notifications generated by the system and address them, while still being able to differentiate between the different types of notifications. The new *Updates* pane (which replaces the previous Check for Updates dialog) enables filtering the updates by location or date, as well as one-click initialization of the download and installation.

Press **F1** to access the comprehensive context sensitive XenCenter Online Help.

## SDK Enhancements

There have been a variety of improvements to the SDK with XenServer 6.5:

- The old style PowerShell SDK, which was shipped as a PowerShell v1.0 Snap-In in XenServer versions prior to 6.5 and was deprecated as of XenServer 6.2, has now been removed.
- Previously released as a PowerShell v2.0 Snap-In, the XenServer PowerShell SDK is now shipped as a more versatile PowerShell v2.0 Module.

- XenServer's per host HTTP interface has now been exposed in the PowerShell SDK, enabling users to perform operations such as VM importing and exporting, patch upload, retrieval of performance statistics and VNC consoles etc.
- **C SDK**: Support has been provided for building on Windows machines with cygwin.
- **C# SDK**:
  o Exceptions are now serializable.
  o XML documentation has been added to the class methods and public properties.
- The XenAPI reference is now shipped within the XenServer-SDK.zip file in both pdf and html format.

## Interoperability with Citrix Products

This release of XenServer has been extensively tested and is interoperable with the following recent releases of Citrix products:

- XenDesktop v7.5 and v7.6
- Citrix Cloud Platform v4.5

Please refer to the full compatibility matrix at [www.citrix.com](www.citrix.com) for other product combinations as this is frequently updated.

# Licensing Changes

All editions of XenServer use the same familiar licensing mechanism, as used by many other Citrix products. After purchasing, you will be provided with a .LIC license key. This license key should be installed on either a:

- Windows server running the Citrix License Server software
- Linux-based Citrix License Server virtual appliance.

XenServer 6.5 requires the Citrix License Server v11.12.1 available from [http://www.citrix.com/downloads/licensing/license-server.html](http://www.citrix.com/downloads/licensing/license-server.html)

XenServer 6.5 is available in two commercial editions:

- Standard
- Enterprise

The **Standard** edition is our entry level commercial offering, with a range of features that will suit the needs of those customers who want a robust and high performing virtualization platform, but do not require the premium features offered by the Enterprise edition; while still wishing to benefit from the assurance of comprehensive Citrix support and maintenance.

The **Enterprise** edition is our premium offering, optimized for both server, desktop and cloud workloads. In addition to the Standard edition, it offers access to in-memory read caching, Dynamic Workload Balancing, GPU Virtualization (vGPU) with NVIDIA GRID, VMware vSphere to XenServer Conversion utilities, Intel Secure Measured Boot (TXT) and Export Resource Data.

Customers who have purchased XenApp or XenDesktop continue to have an entitlement to XenServer, which includes all the features contained within the **Standard** edition and many of those in the **Enterprise** edition, to include:

- Dynamic Workload Balancing
- GPU Virtualization (vGPU) with NVIDIA GRID
- VMware vSphere to XenServer Conversion utilities
- Intel Secure Measured Boot (TXT)
- In-memory read caching (**XenApp** and **XenDesktop Platinum** edition only)

For more detailed information about Licensing XenServer 6.5, refer to CTX14151 - XenServer 6.5 Licensing FAQ.

## Localization Support

The localized version of XenCenter (Simplified Chinese and Japanese) is also available in this release.

## Results of the Pre-release Tech Preview Program

A very big thank you to everyone who participated in the highly successful XenServer pre-release Tech Preview program. The community raised a total of 182 issues, of which 144 were resolved during the Tech Preview. Your inputs continue to improve the ongoing stability of the product; Citrix continues to review how the pre-release process can be further improved.

Some of the high-level issues raised (and fixed) during this period were:

- Various items were raised with keyboard/mouse not working correctly in the console.
- Subtle details around 32-bit to 64bit bit migration issues.
- Moving multiple VDIs to a different SR in XenCenter failed.
- Disk and network statistics not being reported correctly in XenCenter.
- Enabling AMD IOMMU generated a VM start problem.

### Installation & Upgrades

Before beginning installation, customers should review the Installation procedure and system requirements detailed in CTX141501 - XenServer 6.5 Installation Guide

### XenServer Virtual Appliances

The following XenServer Virtual Appliances are also available from the XenServer Download page:

- XenServer Conversion Manager Appliance
- XenServer Workload Balancing Appliance
- Distributed Virtual Switch Controller Appliance
- Demonstration Linux Virtual Appliance

## Issues Resolved in Previous Hotfixes also included in XenServer 6.5

XenServer 6.5 includes all relevant hotfixes released for both XenServer 6.2 and XenServer 6.2 Service Pack 1, up to and including XS62ESP1015.

## Advisories and Known Issues

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

## General

- When there is limited GPU capacity in the pool, some VMs may fail to start. To work around this issue, as the physical GPUs approach full capacity, start VMs one at a time.

- 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 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 guest. Customers should reboot the affected hosts to resolve this issue.

- 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 6.5.0 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.

- The root password of the host installer 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

- Customers running XenServer 6.5 should not use the Space Reclamation feature on LUNs that are larger than 2 TiB as it might result in data corruption. In XenCenter, this functionality is labelled 'Reclaim freed space' on the host's Storage tab.

- 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.

- When using Storage XenMotion, reverting a VM to a snapshot and then attempting to migrate the VDIs attached to the VM can fail. To work around this issue, customers should specify the destination SR for each VDI attached to the VM and for each VDI attached to the snapshot of the VM.

- On HVM guests, VBD performance metrics will not be recorded until the PV drivers in the guest operating systems are fully functional.

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

- Shared storage should not be specified as either the primary-disk or the guest-disk during automated host installation when an answerfile is used. Storage specified during installation for both the primary-disk and the guest-disk will be wiped.

- iSCSI paths that are not available when a XenServer host is booted, do not get established automatically later. To resolve this issue, performing 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.

## 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 leads to memory allocation failures and performance issues in dom0.

- 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 CTX141501 - XenServer 6.5 Installation Guide

- During a Storage XenMotion operation, networks that exist on the source pool are created on the destination pool even if 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

- 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%.

- When configuring Workload Balancing (WLB) settings, the Metric Weighting page displays Disk Read and Disk Write text even though these metrics cannot be used by WLB.

- The New VM wizard incorrectly displays vGPU options for some Linux guest operating systems. Customers should note that vGPU options are only valid for Windows VMs.

## Guests

- After performing a migration or suspend operation, RHEL 7, CentOS 7, Oracle Linux 7, and Ubuntu 14.04 guests operating systems may freeze during resume. For more information, see Red Hat Bugzilla 1141249 and Ubuntu Launchpad 1368724.

- 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.

- 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 is not respected when VMs are migrated.

## 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

Citrix Community

Citrix Support

Citrix Blogs

Citrix Education

Citrix Consulting

# About Citrix

Citrix (NASDAQ:CTXS) is a leader in mobile workspaces, providing virtualization, mobility management, networking and cloud services to enable new ways to work better. Citrix solutions power business mobility through secure, personal workspaces that provide people with instant access to apps, desktops, data and communications on any device, over any network and cloud. This year Citrix is celebrating 25 years of innovation, making IT simpler and people more productive. With annual revenue in 2013 of $2.9 billion, Citrix solutions are in use at more than 330,000 organizations and by over 100 million users globally. Learn more at www.citrix.com.

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