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Preface

The Oracle VM VirtualBox Release Notes provide a summary of new features and changes in this release of Oracle VM VirtualBox.

Audience

This document is intended for both new and existing users of Oracle VM VirtualBox. It is assumed that readers are familiar with Web technologies and have a general understanding of Windows and UNIX platforms.

Related Documents

The documentation for this product is available at:


Conventions

The following text conventions are used in this document:

- **boldface**: Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.

- **italic**: Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.

- **monospace**: Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at https://www.oracle.com/corporate/accessibility/.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit https://www.oracle.com/corporate/accessibility/learning-support.html#support-tab.
Chapter 1 New Features for Release 6.1

This section describes the new features in release 6.1 of Oracle VM VirtualBox.

For a more detailed list of changes, see Chapter 3, Change Log.

1.1. Importing of Instances From Oracle Cloud Infrastructure

Oracle VM VirtualBox now supports importing of cloud instances from an Oracle Cloud Infrastructure service. When you import a cloud instance, Oracle VM VirtualBox creates and registers a new VM automatically on the local host. See Importing an Instance from Oracle Cloud Infrastructure.

The VBoxManage import command has also been enhanced for this feature. See Import from Oracle Cloud Infrastructure.

1.2. Improved Export to Oracle Cloud Infrastructure

The following improvements have been made for exporting a VM to Oracle Cloud Infrastructure:

- **Using Custom Images:** You can export a VM to your Oracle Cloud Infrastructure account and save it as a custom image.
  
  The New Cloud VM feature enables you to create multiple cloud instances from a custom image, without having to reupload the image every time.

- **Paravirtualization Support:** You can now export a VM to Oracle Cloud Infrastructure in paravirtualized hardware mode. VMs using paravirtualized devices provide much faster performance, compared to running in emulated mode.

  See Creating New Cloud Instances from a Custom Image for more details.

1.3. VBoxManage Commands for Cloud Integration

The following VBoxManage commands have been introduced for closer integration with cloud services.

- **VBoxManage cloudprofile:** Enables you to create, edit, and manage cloud profiles. Oracle VM VirtualBox uses a cloud profile to integrate with a cloud service such as Oracle Cloud Infrastructure.

- **VBoxManage cloud list:** Enables you to list resources in your cloud service account, such as instances and images.

- **VBoxManage cloud instance:** Enables you to create and manage instances in your cloud service account.

- **VBoxManage cloud image:** Enables you to create and manage custom images in your cloud service account.

1.4. Improved Support for Nested Virtualization

This release adds support for nested virtualization on Intel CPUs. Previously, this feature was only available on host systems that use an AMD CPU.

Intel processors starting with 5th Generation Core i (Broadwell) are supported.
1.5. Retirement of Support for Software Virtualization

This release of Oracle VM VirtualBox does not support software virtualization. The recompiler that was supplied in previous releases is no longer available.

The host must have a CPU that supports hardware virtualization.

1.6. Soft Keyboard for Guest Character Input

A soft keyboard enables keyboard character input in a guest VM. Select Input, Keyboard, Soft Keyboard on the guest menu bar.

Several international keyboard layouts are supplied by default. Users can modify these to create their own custom keyboard layout. See Soft Keyboard.

1.7. Changes to 3D Graphics Support

3D graphics support is no longer available for VMs that use the legacy VBoxVGA graphics controller. This graphics controller can still be used with VMs that only require 2D graphics.

For improved 3D graphics performance, you can use either of the following graphics controllers:

- **VBoxSVGA**: For new Windows guests.
- **VMSVGA**: For other guest platforms, such as Linux.

1.8. User Interface Changes

The following list shows the main improvements to the user interface in this release:

- Usability improvements for VirtualBox Manager, as follows:
  - A pin icon enables the Global Tools panel to be pinned in place, to avoid movement during scrolling through large number of VMs.
  - Some VM settings now can be edited directly from the Details panel, by clicking on a link.
  - The Storage settings page now offers a setting for the controller bus type. This page also supports drag and drop for moving attachments between controllers.
  - In the Virtual Media Manager you can now create new disk images and also search for a specific disk image.
  - Improvements to the VISO Creator dialog.
  - Improvements to the Session Information dialog.

1.9. Shared Clipboard File Transfers

Experimental support for file transfers using the shared clipboard has been added, for Windows guests running on a Windows or Linux host. This feature is disabled by default and can be enabled using the `VBoxManage modifyvm --clipboard-file-transfers` command option.

1.10. vboximg-mount Command Improvements

The `vboximg-mount` command now provides experimental support for direct read-only access to NTFS, FAT, ext2, ext3, and ext4 filesystems.
In previous releases, \texttt{vboximg-mount} was only available on Mac OS hosts. The command is also now available on Linux hosts.

1.11. virtio-scsi Storage Controller Support

Experimental support has been added for emulating a virtio-scsi storage controller.

Note that for Windows guests you must install additional drivers to use this feature. See \texttt{Hard Disk Controllers}.
Chapter 2 Accessibility Features of Oracle VM VirtualBox

This chapter describes the Oracle VM VirtualBox accessibility features:

Documentation is provided in HTML and PDF formats. The HTML format is accessible, but the PDF format is not accessible.

2.1. Keyboard Shortcuts

You can use keyboard shortcuts to perform tasks that are specific to Oracle VM VirtualBox. Configure the keyboard shortcuts by using the Preferences, Input dialog.

2.2. Display Modes and Settings

The Oracle VM VirtualBox product offers the following display modes and settings for VMs:

- **Global display settings for all VMs**: Use the Preferences, Display dialog.
- **Display modes and settings for individual VMs**: Use the View menu of the VM.

2.3. Documentation HTML Access Keys

To use the documentation without using a mouse, you can use HTML access keys. Enter the HTML access key for your browser, plus the access key letter. For example, using Mozilla Firefox, press Alt+Shift+n to go to the next page. See your web browser documentation to find the key combination to use for HTML access keys. The following table lists the tasks you can perform using access keys.

<table>
<thead>
<tr>
<th>Task</th>
<th>Access Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Go to the next page</td>
<td>n</td>
</tr>
<tr>
<td>Go to the previous page</td>
<td>p</td>
</tr>
<tr>
<td>Go to the document home page</td>
<td>h</td>
</tr>
<tr>
<td>Go up a level in the document</td>
<td>u</td>
</tr>
<tr>
<td>Activate the Contents tab</td>
<td>c</td>
</tr>
<tr>
<td>Activate the Search tab</td>
<td>s</td>
</tr>
</tbody>
</table>

In addition to the HTML access keys, the following keyboard shortcuts are available:

<table>
<thead>
<tr>
<th>Task</th>
<th>Shortcut Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toggle hide and show the sidebar</td>
<td>Ctrl+Left Arrow</td>
</tr>
<tr>
<td>Toggle hide and show page header</td>
<td>Ctrl+Up Arrow</td>
</tr>
</tbody>
</table>

2.4. Documentation Accessibility Bugs

The following are the known accessibility issues with the Oracle VM VirtualBox Release 6.1 documentation.

- HTML page heading levels might not start at h1 (Bug ID 26717728)
• Book title can extend off the screen with 200% zoom (Bug ID 26717874)
• Some JavaScript text items are not translated (Bug ID 26717963)
• docs.oracle.com Help drawer HTML heading tags have structure violation (Bug ID 26560104)
Chapter 3 Change Log

This section summarizes the changes between Oracle VM VirtualBox versions. Note that this change log is not exhaustive and not all changes are listed.

Oracle VM VirtualBox version numbers consist of three numbers separated by dots where the first and second number represent the major version and the third number the minor version. Minor version numbers of official releases are always even. An odd minor version number represents an internal development or test build. In addition, each build contains a revision number.

3.1. Version 6.1.2 (2020-01-14)

This is a maintenance release. The following items were fixed and/or added:

- Virtualization core: fixed performance issue observed with Windows XP guests on AMD hosts (6.0.0 regression; bug #19152)
- Virtualization core: consistent IBRS/IBPB CPUID feature reporting, avoids crash of NetBSD 9.0 RC1 installer (bug #19146)
- GUI: fixed updating of runtime info
- GUI: in Display settings, do not show "2D video acceleration" checkbox if it is meaningless for the selected graphics adapter
- Audio: fixed audio input handling when VRDE is enabled
- Audio: fixed crash in the HDA emulation when using multi-speaker configurations
- Storage: fixed use of encrypted disks with snapshots involved (6.1.0 regression; bug #19160)
- Storage: improve performance of virtio-scsi
- Storage: read-only support for compressed clusters in QCOW2 images
- Windows installer: include unintentionally dropped vbox-img.exe utility again
- Windows host: when installing or removing an extension pack, retry the sometimes failing directory renaming (usually caused by anti-virus software accessing the directory)
- Linux host: Support Linux 5.5 (guest additions not yet)
- Windows guest: accelerate 2D video decoding (scaling and color space conversion) if the VM is configured to use VBoxSVGA with 3D enabled
- Windows guest: fix guest additions installer to upgrade the mouse filter driver reliably
- Windows guest: when uninstalling older Guest Additions with old 3D support enabled try restoring original Direct3D files
- Linux guest: improve resize and multi-monitor handling for VMs using VMSVGA (known remaining issue: do not disable a monitor "in the middle", causes confusion)

3.2. Version 6.1.0 (2019-12-10)

This is a major update. The following major new features were added:
• Implemented support for importing a virtual machine from Oracle Cloud Infrastructure

• Extended support for exporting a virtual machine to Oracle Cloud Infrastructure, allowing the creation of multiple virtual machines without re-uploading. Also added option to export a VM to the cloud using the more efficient variant "paravirtualized", and to specify free-form tags for cloud images

• Virtualization core: Support for nested hardware-virtualization on Intel CPUs (starting with 5th generation Core i, codename Broadwell), so far tested only with guest running VirtualBox

• Graphics: New style 3D support (with VBoxSVGA and VMSVGA) remains, old style 3D support (with VBoxVGA) has been completely removed

• Shared Clipboard: Implemented experimental support for file transfers (Windows hosts/guests only at the moment). Needs to be enabled via VBoxManage (disabled by default).

In addition, the following items were fixed and/or added:

• Virtualization core: Drop recompiler, i.e. running VMs now needs a CPU supporting hardware virtualization

• Runtime: Works now on hosts with many CPUs (limit now 1024)

• Appliance and Cloud Import: Add field for defining firmware type (not part of OVF spec and thus manual in the Appliance case, for OCI it is automatically taken from the instance information)

• GUI: Improved the VISO creation and file manager dialogs

• GUI: Virtual machine list of VirtualBox Manager was improved. Machine groups are now more obvious visually and VM search functionality has been improved. Global Tools element can now be pinned in place, to avoid scrolling it with rest of machine list

• GUI: Virtual machine details pane is now extended with embedded editors for selected VM attributes, allowing user to edit them on-the-fly by clicking corresponding hyperlinks without opening VM settings dialog

• GUI: Details pane provides more complete information

• GUI: Internal medium enumeration routines were optimized to reduce the load and optimize the performance in cases when user have lots of media registered. Also, we again allowed to add existing media (and create new) via Virtual Media Manager

• GUI: More consistent medium selection (both showing known images and allowing to select using the file picker)

• GUI: VM storage settings page was adjusted a bit in usability regard. User is now allowed to change controller bus type and can move attachments between the controllers by using drag and drop

• GUI: Storage and Network settings pages bug-fixes and usability optimization

• GUI: Added a new soft (virtual) keyboard enabling arbitrary keyboard input to guests, including multimedia keys

• GUI: Fixed crash in cloud related wizards when accessibility functionality was enabled

• GUI: Show VM CPU load as part of status bar CPU indicator

• GUI: Improved and extended the Session Information dialog

• GUI: Fixed/improved mouse pointer scaling
• GUI: Some issues related to mouse integration cursor scaling were addressed (bug #14366), more to go
• GUI: Fix and unify geometry save/restore in various dialogs
• GUI: Added the missing restriction options for disabling new functionality such as the VISO creator
• GUI: Popup messages mouse click fix
• Graphics: Remove 3D support for VBoxVGA (old one deprecated with 6.0)
• Graphics: Additional texture format support on Windows host
• Graphics: Improved fix for flickering on Windows host
• Input: Added support for horizontal scrolling in the PS/2 mouse device using the IntelliMouse Explorer protocol. Note that this support is automatically used by Linux guests but not by Windows guests
• vboximg-mount: Experimental support for direct read-only access to NTFS, FAT and ext2/3/4 filesystems inside a disk image without the need for support on the host
• vboximg-mount: Now also available on Linux host
• Storage: Experimental support for virtio-scsi, for both hard disks and optical drives (including boot support in BIOS)
• Storage: For optical drive emulation fix empty host drive crash
• USB: Improvements for EHCI controller implementation
• USB: Filter can now specify port path, uniquely identifying a port in a system
• NAT: Fix TFTP OACK response, send only if request has options
• NAT Network: Use non-blocking sockets on Linux for accepted incoming connections (port forwarding)
• PCnet-ISA: Added new network adapter type, currently CLI only
• Audio: Allow changing the host audio backend while the VM is in saved state
• ACPI: Report NVMe controller
• VGA: Improve hardware and BIOS compatibility
• VBoxSVGA/VMSVGA: Support YUV2 and related texture formats with hosts using OpenGL (macOS and Linux), which accelerates video playback when 3D is enabled by delegating the color space conversion to the host GPU
• VBoxSVGA/VMSVGA: Several drawing fixes for the 3D case
• VMSVGA 3D: Fixed OpenGL compressed textures
• VBoxManage: More cloud functionality coverage, e.g. starting a cloud instance
• VBoxManage: As part of the guest control feature support moving multiple source files/directories to a target directory
• Guest Control/VBoxManage: Added support for specifying multiple sources when renaming guest files
• VBoxManage: Show "unrestricted guest" and "nested HW virtualization" CPU features when listing the host information
• API: Reduce the amount of leftovers from Move VM function

• Shared Clipboard: Implemented experimental support for file transfers for Linux hosts on Windows guests (disabled by default)

• SMBIOS: Store system UUID in little endian format which is the default for new VMs, while existing VMs stick to the old VirtualBox behavior of storing them in big endian format for backwards compatibility to avoid breaking the activation status of Windows VMs

• VBoxSDL frontend: Fixed running on Windows hosts

• macOS host: Fix VM crashes (most visible on macOS Catalina)

• Linux host: Improve vboxweb systemd service dependency information

• Linux host: Drop PCI passthrough, the current code is too incomplete (cannot handle PCIe devices at all), i.e. not useful enough

• Linux host and guest: Support Linux 5.4 (bug #18945)

• Linux host and guest: Force disabling of kernel module signing during build (user can do it afterwards)

• Windows host: When possible, distinguish USB devices by port number; helps with accurate capturing of devices when multiple otherwise identical devices are connected

• Windows Guest Additions: Many fixes for drawing problems in the driver for VBoxSVGA

• Windows Guest Additions: Fixes for legacy VBoxVGA adapter, restore previously working cases

• Windows Guest Additions: Restore VHWA functionality for VBoxSVGA

• Windows guest: DXVA implementation for WDDM driver

• Documentation: Updated supported host operating systems, added few new manual pages (more to come later)

• EFI: Switch to newer firmware code base and add NVRAM support, should improve compatibility with OSes significantly

• EFI: Added support for booting from APFS

• EFI: Added support for non-standard SATA and NVMe boot device paths created by OS X

• EFI: Modified updated EFI code base to support older OS X guests again

3.3. Change Logs for Legacy Versions

To view the change log for a legacy version of VirtualBox see the documentation for the relevant Oracle VM VirtualBox release.

Change logs are also available at: