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Oracle VM VirtualBox Overview

An Oracle White Paper

June, 2021, Version 2.0

Purpose statement

This document provides an overview of features and enhancements included in Oracle VM VirtualBox. It is intended solely to help you assess the business benefits of upgrading to Oracle VM VirtualBox and to plan your IT projects.

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Due to the nature of the product architecture, it may not be possible to safely include all features described in this document without risking significant destabilization of the code.

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What is in Oracle VM VirtualBox Enterprise

Oracle VM VirtualBox is cross-platform virtualization software. It allows users to extend their existing computer to run multiple operating systems including Microsoft Windows, Mac OS X, Linux, and Oracle Solaris, at the same time. Designed for IT professionals and developers, Oracle VM VirtualBox is ideal for testing, developing, demonstrating, and deploying solutions across multiple platforms from one machine.

The following table summarizes each of the components:

 BASE PACKAGE	 EXTENSION PACK
Consists of all open source components and is licensed under the GNU General Public License (GPL) Version 2	Binaries are released under the Oracle VM VirtualBox Personal Use and Evaluation License (PUEL).
Totally free for personal and business use	**A license must be purchased for business/commercial use of the extension pack.** **The paid for license is perpetual.**
Can be distributed and modified by customers	Customers cannot distribute it.
Contains all the basic hypervisor features	The extension pack contains features such as: • Virtual USB 3.0 and 2.0 device support • VirtualBox Remote Desktop Protocol (VRDP) • Host webcam passthrough • Intel Pre boot eXecution (PXE) boot ROM • Disk-image encryption • NVMe Storage emulation • Oracle Cloud Infrastructure integration

Oracle VM VirtualBox has been designed to take advantage of the innovations introduced in the x86 modern hardware platform, and it is lightweight and easy to install and use. Yet, under the simple exterior lies an extremely fast and powerful virtualization engine. With a well-earned reputation for speed and agility, Oracle VM VirtualBox contains innovative features to deliver tangible benefits: excellent performance; a powerful virtualization system; and a wide range of supported guest operating systems.

Oracle VM VirtualBox is a bridge to open source and cloud development. The latest release allows users to create and deploy virtual machines nearly everywhere, upload to the cloud, download from the cloud, and review and make changes offline.

With thousands of downloads each day, Oracle VM VirtualBox is the world's most popular free and open source, cross-platform virtualization software, based on vibrant community participation combined with world-class development and support supplied by Oracle.

Oracle VM VirtualBox simplifies cloud deployment by allowing developers to create multiplatform environments and to develop applications for container and virtualization technologies within Oracle VM VirtualBox on a single machine. Operating system and application updates can be done within Oracle VM VirtualBox virtual machines (VMs), and VMs can subsequently be deployed to server virtualization environments such as Oracle Linux KVM or Oracle Private Cloud Appliance.

Oracle VM VirtualBox Enterprise is an ideal choice for a next-generation development solution. The latest release introduces paravirtualization support for Linux and Windows virtual machines and support for xHCI/USB 3.0 devices and new platforms, and it provides enhanced CPU capabilities and support for bidirectional drag and drop between a host and its guest virtual machines. It also introduces disk-image encryption and many other enhancements.

Oracle VM VirtualBox Enterprise provides world-class support for both the base package and the extension pack and licenses for commercial use of the extension pack.

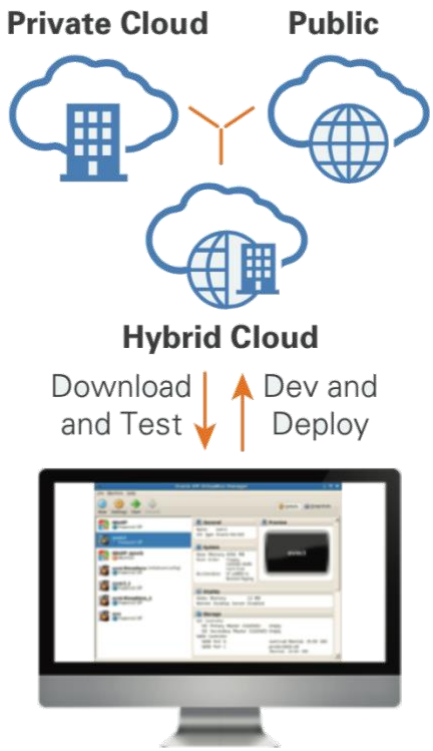
For further details related to Oracle VM VirtualBox Enterprise please visit:

https://www.oracle.com/virtualbox

Oracle VM VirtualBox Enterprise use cases

Development platform for the cloud

Software developers rely on Oracle VM VirtualBox Enterprise for the development and debugging of their applications in multiple operating systems and environments on one device. Developers can clone an environment on their personal desktop/laptop without impact to production services.



One unique solution for all platforms

Oracle VM VirtualBox Enterprise is the only desktop virtualization solution available for x86 operating systems, like Microsoft Windows, Linux, Apple MAC OS X and Solaris x86 that provides the same solution on all platforms.

Oracle VM VirtualBox Enterprise is the desktop virtualization solution that allows software QA teams to control source code, share it within the company and execute software testing on multiple platforms on one unique device.

With Oracle VM VirtualBox Enterprise, VMs can be exported to Oracle Cloud Infrastructure and all the steps required can be managed through the Graphical User Interface.

By leveraging Oracle Vagrant Boxes, Oracle VM VirtualBox enables the deployment of development environments to be automated.

QA and testing

Oracle VM VirtualBox Enterprise allows System Administrators to test patches and system and software upgrades on an isolated sandbox (VM) on a single device, and between other use cases, leverage Oracle VM VirtualBox Enterprise to:

- Recreate customer conditions on a laptop/desktop
  - Need to replicate customer environment easily even on a laptop/desktop
  - Applications could require more than one HW device, due to different platforms/OS
- Test / Experiment sandboxes
  - Preserve customer environments while introducing changes
  - Clone VMs for parallel test runs
  - Revert cloned VMs to a known good state
- Make changes to platform deployments
  - Test different kernel, library, compiler, product installer versions
- Create demo appliances

- Export VMs for reuse or for parallel test runs
- Ability to supply unique platform demo appliances for applications
- New hire on-boarding in a safe place thanks to VMs running on top

Demo system for pre-sales support

Oracle VM VirtualBox Enterprise allows technical sales people to easily show Enterprise solutions in a live demo.

With prebuilt virtual machines, sales teams can create, share, present, and demonstrate multitier architectures. in a complex network topology where the host system interacts with VMs running on top.

Engineering teams can also prepare demo environments and share them with sales. It does not matter which platform is used, Oracle VM VirtualBox Enterprise is the same software for all x86 supported platforms.

Secure and encrypted virtual machines

In this cloud/social era, where sharing of information is the foundation of IT, VMs created on top of Oracle VM VirtualBox Enterprise could contain confidential information, including software code, or other data that needs the highest security level.

Oracle VM VirtualBox Enterprise can encrypt VMs. To copy/clone or move them to external devices, web storage, or cloud backup, built-in encryption can help maintain data security.

Training

Oracle VM VirtualBox Enterprise allows the creation of virtual machines for training purposes. In the case of events or training sessions, students can work on enterprise solutions, develop and learn by leveraging VMs running on top of VirtualBox. The same approach can be applied within a company for internal training. Once the training is completed, virtual machines can revert to their original state using Oracle VM VirtualBox Enterprise's snapshot capability.

Corporate compliance

Oracle VM VirtualBox Enterprise allows corporate IT to define and maintain a default host platform for different business units, roles, and requirements, with necessary controls and security updates, while each employee can define different virtual machines with different platforms, based on their day-by-day needs.

Oracle VM VirtualBox Extension Pack

The following list describes the features provided by Oracle VM VirtualBox Extension Pack:

Oracle Cloud Infrastructure integration

Oracle VM VirtualBox 6 provides tight integration with Oracle Cloud Infrastructure (OCI), enabling organizations and developers to more easily and flexibly create applications on premises and deploy to the cloud with a few clicks; further details on those capabilities are available on "Journey to Oracle Cloud Infrastructure with Oracle VM VirtualBox" paper.

USB 2.0/3.0 controller and Enhanced Host Controller Interface (EHCI)/xHCI device support

This option allows users to have USB 2.0/3.0 devices connected to Oracle VM VirtualBox virtual machines. Everything is based on a virtual USB controller that is able to do the following:

- Improve the performance of native USB 2.0 devices on virtual machines
  - By using USB 3.0 virtual USB
- Obtain similar bare-metal performance for USB 3.0 devices connected to the host

When Oracle VM VirtualBox acts as a virtual Remote Desktop Protocol (RDP) server, it is also possible to use USB devices remotely on RDP clients.

While USB 1.1 support is part of Oracle VM VirtualBox base-package, the Extension Pack allows the use of new-generation USB devices that require USB 2.0/3.0.

VirtualBox Remote Desktop Protocol (VRDP)

Oracle VM VirtualBox can display virtual machines remotely, meaning that a virtual machine can execute on one computer even though the virtual machine will be displayed on a second computer. The virtual machine can be controlled from the second computer, as if the virtual machine was running on that computer.

VRDP is a backwards-compatible extension to Microsoft's Remote Desktop Protocol (RDP) and is implemented between the host and its guests. As a result, users can use any standard RDP client to control the remote VM, and any supported guest OS can be used, not just Microsoft Windows.

With this feature, developers can remotely work in their development environment (that is, the same project and the same machine) from nearly anywhere. For example, they can continue to work on their projects from home while connected to a virtual machine that is live on their desktop PC at the office.

VRDP is a real virtual machine remote console—able to work on both IPv4 and IPv6—that allows IT administrators to access a virtual machine in cases such as:

- The virtual machine is starting
- The virtual machine operating system is not already installed
- The virtual machine has lost its network connectivity

NVMe (Non-volatile memory express) emulation

This option allows users to have NVMe devices connected to Oracle VM VirtualBox virtual machines. Guest operating systems need to support NVMe devices to make use of them.

Host webcam passthrough

Oracle VM VirtualBox allows a guest to use a host webcam. This complements the general USB passthrough support. If users need to use a webcam for a video conference call, but the software for doing that is not available on the host platform, it's possible to use a webcam on a virtual machine.

Intel PXE boot ROM

Oracle VM VirtualBox allows a guest to use a PXE environment on virtual machines. This means that a user can remotely install a virtual machine (using VRDP) and also supply the operating system packages via network access. Together, the Intel PXE boot ROM feature and the VRDP feature allow users to have installation packages preconfigured and remotely available.

Disk-Image encryption

This feature makes it is possible to encrypt the data stored in hard-disk images transparently to the virtual machine. This provides security similar to encryption software installed on the host system where, usually, a dedicated product license is needed.

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