



An Oracle White Paper
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Higher Security, Greater Access with Oracle Desktop Virtualization

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Introduction

Virtualization technology has never been more important, as organizations seek to better utilize their IT infrastructure and deploy compelling solutions that help them meet business needs and serve key users. Key applications must be available on demand – independent of platform – and technology must respond seamlessly to new challenges and improved ways of doing business. In addition to technology that virtualizes servers and storage, *desktop virtualization* can dramatically simplify the ways that interactive desktop environments are managed and delivered to users and employees. More importantly, desktop virtualization can help enable key business activities through secure mobile access to key applications and information.

Along with managing the needs of the datacenter, many IT departments are tasked with deploying and administering hundreds – and sometimes thousands – of individual desktop systems. Not only are many of these individual systems unique, but users typically have individual requirements in terms of the access and the applications they require to effectively perform their jobs. Some users even require more than one operating system environment. The needs of mobile and remote employees complicate this matrix further, requiring support for a variety of client devices and access methods. Beyond simple consolidation of desktop workloads, requirements in diverse organizations are driving desktop virtualization trends.

- Healthcare workers need secure access to patient information, independent of location and client device.
- Call center operators need to maximize utilization of their physical infrastructure across all shifts, without having to dedicate physical workstations to individual workers.
- Governmental organizations need comprehensive security, as well as access to key applications and systems.

Not only can desktop virtualization bring about vast savings from consolidation of hardware and management, but it can also act as an effective tool that helps enable flexible, agile, and secure desktop computing access that directly supports the needs of key workers and the business goals of the organization. Oracle's desktop virtualization technology can help increase the flexibility and capabilities of desktop infrastructure and alleviate the challenges related to serving large numbers of users with a variety of requirements. Through these

solutions, a number of compelling benefits can be derived, including better security, greater agility, increased stability, simplified management, and lower costs.

Oracle offers the industry's most complete virtualization portfolio that can virtualize and manage the full hardware and software stack – from the desktop to the datacenter. This paper provides an overview of Oracle's strategy for desktop virtualization, and outlines the capabilities and benefits of Oracle's desktop virtualization solutions. In addition to reviewing some innovative desktop virtualization deployments, an overview of Oracle desktop virtualization products is provided.

Desktop Infrastructure Challenges

Today, desktop systems are vital to maximizing productivity. Not only is it increasingly critical to get the best utilization possible from all available computing resources, but desktop systems and applications also have a strong bearing on the productivity and effectiveness of key employees – the organization's most valuable asset. At the same time, effectively managing a sprawling and evolving desktop community that includes different types of users with diverse needs can be extremely difficult and complex.

- Keeping hardware and software up-to-date is nearly impossible with a large number of unique desktop environments.
- Troubleshooting problems can be labor intensive and expensive when technicians must visit individual desktop systems.
- Securing desktop systems is a constant problem, both in terms of viruses and other risks introduced by desktop systems, as well sensitive data that may inappropriately migrate to desktop systems and be lost or stolen.
- Providing access to key applications, data, and networks is a challenge for an increasingly mobile workforce.

These and other challenges are driving many organizations to reconsider traditional physical desktop infrastructure. Desktop virtualization technology offers a flexible way to address these issues, while changing the ways that desktop infrastructure is deployed. As a part of its desktop-to-datacenter virtualization strategy (Figure 1), Oracle offers a number of front-end and back-end desktop virtualization solutions that help organizations transcend the limitations of conventional desktop computing.

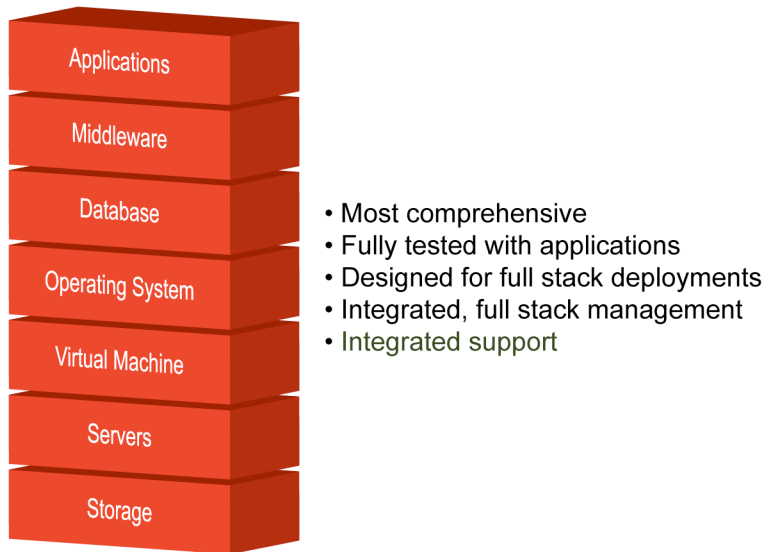


Figure 1. Oracle provides desktop-to-datacenter virtualization solutions with fully integrated support.

Oracle's Desktop Virtualization Solutions – Beyond Consolidation

Oracle's desktop virtualization solutions are a part of the company's full product portfolio that includes software, operating systems, and servers that are optimized to work together. This comprehensive approach helps simplify deployment and increases the likelihood of success for even complex IT projects. Providing varying capabilities, Oracle's desktop virtualization technologies can be used together or separately to affect better resource utilization and increase management efficiency. Desktop virtualization technologies from Oracle provide compelling benefits, helping organizations to:

- Increase flexibility
- Take better advantage of client device independence
- Create true mobility for workers
- Streamline management tasks
- Optimize security

Depending on the requirements of the organization and the needs of the user, desktop virtualization may be hosted at the server – where it is typically managed by datacenter IT – or run on a workstation or PC by a single user in order to run multiple operating systems.

Server-Hosted Desktop Virtualization

Server-hosted desktop virtualization solutions from Oracle work by running the entire desktop environment or individual applications on centralized servers, where they can be effectively virtualized and system utilization can be maximized. Oracle's server-hosted desktop virtualization solutions can be used together (Figure 2) or individually as needs dictate.

- *Oracle Virtual Desktop Infrastructure.* Administrative and capital expenses related to desktop infrastructure can be difficult to control. With Oracle Virtual Desktop Infrastructure, the overhead associated with managing individual desktop operating systems can be reduced by standardizing on virtual desktop images that can be accessed across the organization from nearly any client device. Oracle Desktop Infrastructure offers a VDI-style desktop environment, providing brokering, management, hosting, and access, all in one. Oracle Virtual Desktop Infrastructure can help increase efficiency by allowing desktop workloads to safely and effectively share a single physical server. The software allows users to access the same desktop environment from many different client devices and locations, enabling disaster recovery, remote office and work from home, green computing through extending the life of PCs, or through the use of low power thin client devices such as Oracle's Sun Ray Clients or other thin clients.
- *Oracle Secure Global Desktop.* Achieving high levels of security is nearly impossible in a decentralized desktop client model. Oracle Secure Global Desktop provides secure access to centralized, server-hosted Windows, UNIX, mainframe, and midrange applications from a wide variety of popular client devices, including Microsoft Windows PCs, Apple Mac OS X systems, workstations running the Solaris operating system, Linux PCs, thin clients, and more. Additionally, Oracle Secure Global Desktop provides access to full-screen desktop environments, allowing administrators the freedom to use a single solution to provide access to both server-based applications and server-hosted desktop environments such as Microsoft Remote Desktop Services.
- *Oracle Sun Ray Clients.* Hardware and security issues within laptop and desktop systems can cause disruption for both the user and the administrator, resulting in lost productivity and even lost data. Oracle Sun Ray Clients are simple, low-cost devices that are ideal for displaying server-hosted virtual desktops. With no moving parts and only a fraction of the power consumption of standalone PCs, Sun Ray Clients offer product lifecycles that can be extended greatly over those of a typical PC. With no local operating system to manage, Sun Ray Clients provide a cost-effective, highly functional thin client alternative to desktop and laptop computers, and eliminate many of the problems associated with traditional desktop deployments. Large user communities comprising thousands of Sun Ray Client devices can be managed from a single interface with enough individual control to provide a choice of desktop operating systems per Sun Ray Client or per user – while still leveraging the benefits of virtual machine templates and multiuser operating systems to reduce management overhead. It is never necessary to visit a Sun Ray Client to perform an upgrade, enabling centralization of desktop IT management.

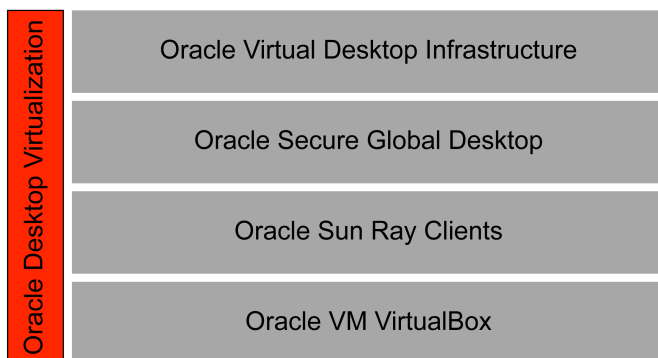


Figure 2. Oracle Virtualization can combine Oracle Virtual Desktop Infrastructure, Oracle Secure Global Desktop, Sun Ray Clients, and Oracle VM VirtualBox – or components can be used individually.

Workstation or PC Hosted Desktop Virtualization

Workstation or PC hosted desktop virtualization solutions from Oracle provide virtualization software on the desktop system. Users can run multiple operating system instances simultaneously on their PC or workstation – whether they need to run different versions of a given operating system or different operating systems entirely.

- *Oracle VM VirtualBox.* Organizations are constantly challenged to make the most of every IT asset. Virtualizing the resources of desktop and laptop systems can help eliminate the need to provide individual users with more than one system. By allowing users to simultaneously run an extensive range of host and guest operating systems, Oracle VM VirtualBox helps increase flexibility and desktop utilization. With high-performance support for a large number of virtual appliances available in the Open Virtualization Format (OVF) and 2D and 3D graphics acceleration, Oracle VM VirtualBox simplifies multiplatform application development and testing. Oracle VM VirtualBox also supports the ability to teleport a running virtual machine between hosts without interruption. Oracle VM VirtualBox provides cross-platform virtualization software that installs on an existing PC or workstation running the Microsoft Windows, Linux, Mac OS, or Solaris operating system.

Use Cases: Desktop Virtualization in Action

Oracle desktop virtualization solutions have been proven and used successfully in a wide variety of institutional settings and across a wide variety of disciplines, organizations, and businesses. The following use cases describe specific deployments where desktop virtualization technology is used to directly enable specific user behavior and benefit the business.

- *Healthcare.* Healthcare organizations such as doctor's offices and hospitals need to protect the security of patient data while providing timely on-demand access for doctors and other practitioners. Desktop virtualization through Oracle virtualization software and optional secure Oracle Sun Ray Clients can vastly improve the ways that patient data is handled and stored, providing information security since data is kept on a central server rather than being distributed to individual desktop

systems. In addition, access and mobility is improved for providers and healthcare workers since they can securely access their virtual desktops and applications by using a convenient smart card rather than having to locate and access a cumbersome physical computer cart.

- *Call centers.* Call centers need to maximize the utilization of their physical infrastructure and don't want to have to dedicate physical workstations to individual workers and their particular applications. Call centers also want to allow different shifts to use the same physical workstations. Sun Ray Clients accessed with smart cards give employees access to their virtual desktops no matter where they are seated for their shift. Applications from diverse sources (Windows, UNIX, Linux, mainframe, and midrange applications) can be aggregated, customized and consolidated, and made available to different kinds of workers on demand.
- *Federal / Government.* Governmental organizations require comprehensive security, as well as access to key applications and systems. In many installations, policy dictates that no data can be left on desktop devices. These organizations also need to eliminate avenues through which security breaches can be introduced from the outside. Sun Ray Clients provide a stateless client system with no local data storage. Oracle Virtual Desktop Infrastructure can be used to manage the entire desktop environment, with Oracle Secure Global Desktop and Oracle Sun Ray Clients used to provide secure access to diverse applications residing on remote systems

Choose Oracle for Optimized Desktop Virtualization Solutions

By easing desktop management, extending refresh cycles, simplifying the process of providing desktop sessions to a variety of client devices, and minimizing the number of desktops required within an organization, desktop virtualization solutions from Oracle can help organizations lower costs, improve efficiency, and improve security. Beyond consolidation, these solutions also directly enable secure and manageable mobility that has direct benefits for workers and for the organization. Because Oracle's desktop virtualization technologies are optimized to work with Oracle's hardware and software stack, they are often easier to deploy, manage, and run, helping organizations achieve greater success as they move toward virtualized desktop infrastructure.

Resources

To learn more about desktop virtualization from Oracle, please visit the resources listed in Table 1.

TABLE 1. REFERENCES

Product Information	http://oracle.com/virtualization
Follow Oracle Virtualization on Twitter	http://www.twitter.com/orcl_virtualize
Oracle Virtualization Blog	http://blogs.oracle.com/virtualization
Oracle Information InDepth Newsletter, Virtualization Edition	http://www.oracle.com/newsletters/samples/virtualization.html



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Desktop Virtualization Technologies
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