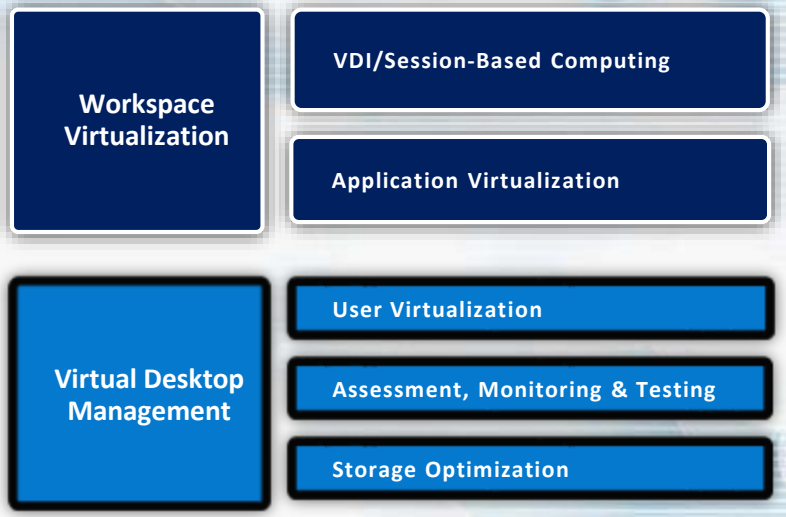
451 Research® Market Monitor™

Desktop Virtualization Ecosystem

This Market Monitor overview report on the Desktop Virtualization Ecosystem (DVE) provides updated vendor estimates through Q1 2017. Virtualization and cloud services have empowered the end user with dynamic and flexible computing alternatives, opening up a new world of possibilities in the 'user centric' evolution of IT. This report examines the two primary subsectors in the Desktop Virtualization Ecosystem: Workspace Virtualization (including Virtual Desktop Infrastructure (VDI); Session-Based Computing and Application Virtualization); and Virtual Desktop Management (including Storage Optimization, User Virtualization, and Assessment, Monitoring and Testing).

This report leverages 451 Research's deep knowledge of and relationships within the aforementioned markets, resulting in a proprietary forecast based on a bottom-up analysis of 48 vendors' current revenue and growth expectations through 2021. Included in the report is our revised DVE taxonomy, market-sector revenue estimates, growth forecasts and a view of the competitive landscape for each of the sectors outlined to the right.



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Methodology – Market Monitor's Bottom-Up Approach

48
Vendors included in analysis are estimated and forecasted individually

Our Desktop Virtualization database contains individual models on 48 vendors in the market. Each model contains intelligence specific to that company (i.e., customers, pricing, deal sizes and trends) with a forecast that incorporates the unique traits, strengths and weaknesses of the vendor.

100%
Of market estimate and forecast based on individual vendor estimates – no black-box 'other' category

A bottom-up analysis entails creating individual estimates and forecasts for each market participant – in lieu of relying on historical or related data, applying broad assumptions or extrapolating market totals based on input from a handful of large vendors (a top-down approach).

8 out of 10
Vendors we have briefed directly to support our findings

This analysis leverages our deep knowledge of and relationships within the Desktop Virtualization marketplace, resulting in proprietary forecast of industry revenue based on a bottom-up analysis of each vendor's current revenue and growth expectations.

Market Monitor Data Sources

15,000	Vendor briefings as a company annually
55+	Sector analysts support estimates
12	Financial analysts contribute to MM
950+	Financial/banking clients provide insight
CXO	Executive-level access across IT landscape

451 Market Monitor's coverage of the desktop virtualization space segments vendors and products according to the delivery/consumption models employed

Desktop Virtualization Ecosystem

- Desktop Virtualization Ecosystem includes the foundation and support software for a virtual desktop environment.
- DVE products are leveraged by providers offering DaaS/hosted desktop services, and for the development and management of private virtual desktop environments.

Desktop as a Service/Hosted Desktop

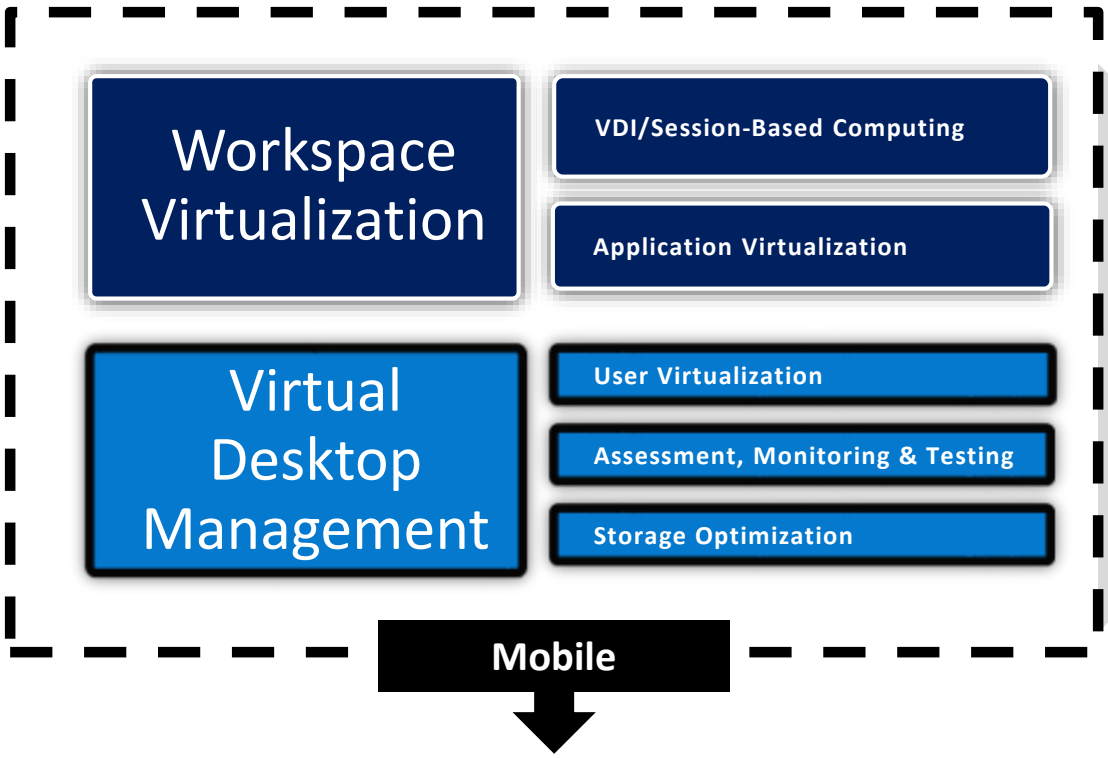
- DaaS is the consumption of desktop virtualization software via an outsourcing model delivered by a third-party service provider.
- DaaS-generated revenue will be realized by vendors that provide the software, (virtual desktop infrastructure (VDI), user/application virtualization and desktop management software), and those that manage the back-end responsibilities of access, data storage, security, etc..

DVE vs. DaaS/Hosted Desktops

Key Differentiators Between DVE and DaaS/Hosted Desktops

	DaaS/Hosted Desktops	Desktop Virtualization Ecosystem
Payment	On-demand or subscription-based pricing	Traditional license and maintenance revenue
Delivery Model	Externally delivered services – hosted by a third-party outside firewall	Software is installed and consumed on-premises and is not hosted by a third party

Desktop Virtualization Ecosystem Market Taxonomy



Channel Strategy:

- On-Premises
- Hosted (DaaS)
- Hybrid

- Mobile will impact all layers of the stack with the largest impact/opportunity for VDM vendors.
- Vendors must offer/enable enterprise IT applications through remote and mobile smart devices with custom user configurations and self-service capabilities.
- VDE focus will shift from the mode/source of delivery to the endpoint on which it is delivered.

Desktop Virtualization Ecosystem: Sector Definitions

Workspace Virtualization	The workspace virtualization sector includes Session-Based Computing/Virtual Desktop Infrastructure (SBC/VDI) and Application Virtualization. Vendors that populate these layers of the stack provide the 'foundation' for desktop virtualization in that they deliver applications and data to end users.
Session-Based Computing/Virtual Desktop Infrastructure	Session-Based Computing (SBC) is still the most common form of hosted desktop virtualization. SBC is an important element of next-generation end-user computing, where the focus is on application delivery and user experience via mobile devices. In such a scenario, the end users are not concerned about the mode of delivery, be it VDI or session-based delivery. Within the VDI sector, we examine vendors that fall under the server-, client- and OS-hosted desktop virtualization banner. In the server-hosted desktop virtualization model, workspaces – including an OS, applications and user preferences – live in the machine room or datacenter and are served to end users over the LAN or WAN. Client-hosted desktop virtualization executes on a user's desktop or laptop PC. This makes it possible to support two or more desktop environments. One may be a corporate image; the other may be a personal image. OS-hosted virtualization allows the creation of virtual machines on top of a host operating system. This is used by developers to sandbox and test new code, and by anyone wishing to emulate another operating system – Windows on Mac OS, for example. These virtual desktops may actually run within a desktop system, a laptop system, or a local or datacenter blade-PC environment.
Application Virtualization	Application virtualization allows applications to run on computers and handheld devices without having to be physically installed. In eliminating that installation step, the application virtualization technologies radically change how applications are delivered and used. Application virtualization vendors seek to improve portability, manageability and compatibility of applications by encapsulating them away from the underlying operating system on which they are executed. Application streaming is similar to application virtualization, except the base application is not hosted on any parent desktop or server and is instead accessed and streamed on demand. Most application virtualization vendors provide the capability to either virtualize the applications or stream certain common applications that are hosted within the vendor's online application library or application store.

Desktop Virtualization Ecosystem: Sector Definitions (Cont.)

Virtual Desktop Management	The management sector includes the comprehensive layer that helps provision, automate and manage virtual desktops and SBC endpoints. Market Monitor looks at Virtual Desktop Management as a sector that encompasses critical aspects of user experience management – these include user virtualization; assessment, monitoring and testing; and storage optimization.
Storage Optimization	The storage optimization sector comprises vendors that manage the storage, allocation and retrieval of the data and resources utilized and generated in end-user computing. The 13 vendors we track in the storage optimization segment are limited to those that provide stand-alone software offerings.
Assessment, Monitoring & Testing	Now that it is widely accepted in the industry that one desktop virtualization model will not prevail in any large part over another, assessment and monitoring tools have become a more common component of workspace systems management strategies. The hype surrounding VDI, for instance, coupled with vendors' promises that it could replace terminal services, has died down. Although many once thought VDI could work like server virtualization, early 'burn victims' discovered that it is much more complicated and has more moving parts – and IT administrators are now proceeding with greater caution.
User Virtualization	User-virtualization vendors offer a set of tools that had initially evolved to address the limitations of Microsoft's roaming-user profiles, especially in virtual-desktop environments. However, the sector now goes beyond addressing those limitations and has become the focal point of the user-centric world of IT and desktop virtualization. User-virtualization vendors have attempted to address some of the complex challenges of desktop virtualization by delivering to users their customized endpoints through a virtual platform, while helping administrators manage and secure their desktop infrastructure. As previously noted, we had been advocating that the ultimate 'nirvana' product for desktop virtualization would be a holistic offering that includes both application and user virtualization. However, while application virtualization is an important feature and should not be ignored, user virtualization has emerged as the most important piece of the puzzle.

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