

## I D C   V E N D O R   S P O T L I G H T

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# Using the Latest in Hypervisor Technology to More Effectively Manage Desktops

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Adapted from *Virtualized Client Computing Private Vendor Overview: Driving Innovation Around Endpoint Virtualization* by Michael Rose and Ryan Patterson, IDC #211492

Sponsored by Virtual Computer

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*This paper examines Virtual Computer, a desktop management vendor whose product leverages a bare-metal PC hypervisor in order to provide management capabilities that would not otherwise be available in a desktop management platform. The paper considers the value proposition of Virtual Computer's product, the company's business model, and the dynamics of the market in which Virtual Computer competes.*

### Introduction

With over 600,000 corporate PCs in use worldwide, money invested in the management of desktop environments represents a material percentage of overall IT spend for the vast majority of businesses. Desktop management also happens to be one of the areas where efficiency can be significantly increased through the proper implementation of management tools such as configuration management databases (CMDBs), electronic software distribution (ESD) tools, asset management tools, and hypervisors, among many other things.

Of the technologies currently available, hypervisors represent one of the most impactful technological innovations in the enterprise IT market within recent years. After a tremendous amount of growth in the use of hypervisors in datacenters, the technology is now being applied to the desktop environment in various ways and is the most recent addition to the set of tools that can be used to manage PC environments. In many cases, legacy hypervisor platforms are installed on physical PCs in order to provide users with the ability to run multiple isolated and unique desktops on one physical PC (e.g., to run a Windows OS and Mac OS side by side on the same PC). More recently, IT organizations have been installing a more secure and efficient hypervisor type (known as type-1 hypervisors) on a server that then hosts multiple isolated and unique desktop environments that end users access remotely from their desks through thin clients. This use case enables a server-based computing model that provides not only management simplification but also data security and simplified hardware management.

In addition to the two use cases of hypervisors with desktops that are outlined in the preceding paragraph, another innovation in hypervisor technology has emerged more recently and, in IDC's opinion, is likely to have the largest positive impact on the ability of IT to control and to manage PCs efficiently. This innovation involves the creation of a type-1 hypervisor that is capable of running on a PC. Although type-1 hypervisors have been used to host desktop environments on servers in a server-based computing architecture, as mentioned earlier, until recently, type-1 hypervisors had not been able to run on physical PCs. The advent of type-1 PC hypervisors enables IT organizations to leverage virtualization across their entire desktop environment as a more efficient platform through which to manage desktop computing software across the PC life cycle in order to extend the benefits

associated with server-based forms of virtual desktop computing that thus far have been realized only for the small segments of the user population that can be supported by the use cases described in the previous paragraph.

In whatever way hypervisors are deployed — type-2 hypervisors on local machines, type-1 hypervisors on servers, or type-1 hypervisors on local PCs — the use of hypervisor technology as an infrastructure for desktops enables a far more flexible architecture. The elimination of the bind between physical PC hardware and the software that it runs can significantly simplify the many tasks necessary for the management of PCs throughout the enterprise PC life cycle. By enabling a consolidated image management model, and managing distributed virtual machines instead of multiple isolated software layers, many of the tasks associated with traditional desktop management such as application and OS patching, backup, OS migrations, and help desk operations are performed faster and more efficiently.

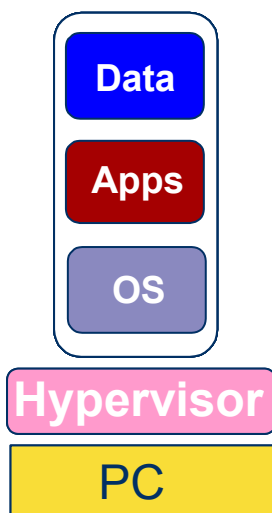
## Definitions

Much of this paper is concerned with the value proposition associated with the use of type-1 PC hypervisor technology and how Virtual Computer leverages this technology as part of its NxTop management platform. As such, the technologies and concepts that are relevant to this discussion are defined as follows:

- Type-1 PC hypervisor
  - A type-1 PC hypervisor (see Figure 1) is a software layer that runs directly on host hardware and handles requests for hardware resources from the OS, encapsulating desktop software environments as virtual machines. In so doing, hypervisors separate the bind that traditionally links desktop software and hardware, turning desktop software environments into autonomous capsules.

**FIGURE 1**

Type-1 PC Hypervisor



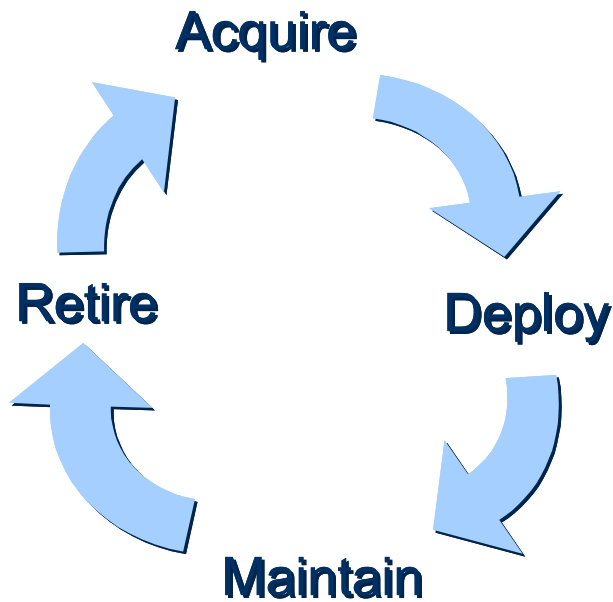
Source: IDC, 2009

■ The PC life cycle

- The use of PCs involves a necessary collection of steps. These steps are often codified into a formal process, often referred to as PC life-cycle management. Although this process typically varies within a given IT organization, four primary steps are consistent across organizations (see Figure 2). These steps can often be simplified through the use of various tools available in the market.

**FIGURE 2**

Four Primary Steps of PC Life Cycles



Source: IDC, 2009

## Benefits of Virtual Computer's NxTop Solution

NxTop is a desktop management platform, the basis of which is a type-1 PC hypervisor pioneered by Virtual Computer's team of engineers, led by CTO Alex Vasilevsky, who was a co-founder of server virtualization vendor Virtual Iron.

NxTop has a range of features and capabilities that can simplify many components of the PC life cycle. Specifically, the NxTop platform, with its inherent virtualization capabilities, enables organizations to efficiently manage PCs.

■ **Consolidated image management**

- By leveraging the benefit of underlying hypervisors, the NxTop platform allows for the consolidation of desktop images. This minimizes the amount of time required to build, maintain, and monitor the various images necessary to support users across various hardware platforms and application portfolios.

#### ■ **Simplified desktop provisioning**

- Because desktop software is not installed (in the traditional sense) on PC hardware, the process associated with the initial deployment of a new PC is simplified. Desktop environments are simply deployed as virtual machines, which are managed by NxTop's hypervisor engine.

#### ■ **Simplified change management**

- Because virtual machines are used as the primary desktop environment, OS migrations, application updates, and most other software changes can be deployed seamlessly.
- Not only does deployment of this new software become simpler, but in the event of an issue with a newly deployed desktop environment (with a new OS, for instance), managers can simply revert to the last known good state of the desktop without any user downtime. This can significantly lower the risk associated with changes to existing desktop software configurations.

#### ■ **Greater user flexibility**

- By being able to run multiple desktops on a single PC, IT management can allow users greater flexibility in access and control without worrying about potential viruses and other security threats affecting the corporate applications and data.

#### ■ **Simplified backup and disaster recovery**

- Moving to a virtual machine–based desktop infrastructure simplifies the process necessary to back up and restore corrupted PCs. Because desktop software is a self-contained virtual machine file, it can easily be reverted to a previous state by something as simple as replacing a file. Also, it becomes easier to back up user images because they can be stored as production-ready files that can easily be redeployed to a given machine.

Leveraging hypervisors as the base for a desktop platform provides unquestionable benefits in terms of how effectively IT departments can manage the PCs strewn across their organizations. Nevertheless, the NxTop platform is not a replacement for other technologies that are used to manage infrastructure. From IDC's perspective, prospective NxTop customers should think about whether and how they can use NxTop within their current management frameworks. For example, how will the move to hypervisor-based PCs affect their existing audit processes, compliance requirements, and service desk protocols, among other things? Also, although desktop software does not have to be traditionally installed when using PC hypervisors, the hypervisors themselves have to be installed on each individual machine. Installing hypervisors on existing production PCs can prove cumbersome, and it may be far more reasonable in many cases to deploy hypervisors as part of the deployment process for only new PCs. Furthermore, this latter approach may result in a hybrid environment that may be more complex to maintain.

Although IDC is confident that PC hypervisors are very likely to become a key component of the desktop environments of the future, one should take a cautious approach when considering solutions such as NxTop. By picking low-hanging fruit users, perhaps users who cannot effectively be managed such as remote employees, organizations can slowly invest in hypervisors and test how the technology will affect their current environments while still reaping significant benefits today.

## Key Trends

Currently, the use of virtualization in the desktop environment has gained most traction through a desktop computing architecture referred to as centralized virtual desktops. These technologies are on track to generate over \$100 million in revenue in 2009.

Although IT organizations have benefited significantly through the use of centralized virtual desktops and are likely to continue to do so, the limitations of the architecture (server-based computing) restrict the extent to which the technology can ultimately be deployed. Issues such as datacenter capacity, capital expenditure requirements, OS licensing costs, and performance limitations will relegate centralized virtual desktops to a limited set of users and use cases.

Nevertheless, the significant cost savings and additional control that are being gained by many IT organizations through the use of centralized virtual desktops are almost certain to extend to a wider range of users as type-1 hypervisors become increasingly available for physical PC hardware.

## Considering Virtual Computer

Virtual Computer was founded in November 2007 by Alex Vasilevsky and Dan McCall, who have combined experience in the areas of virtualization and security. The company has raised \$21 million in venture capital from Highland Capital Partners, Flybridge Capital Partners, and Citrix Systems, the latter providing a small minority of total funding. Virtual Computer is based in a suburb of Boston, giving it potential access to students from some of the most prestigious universities. The company is solely focused on using hypervisor technology to simplify the process of desktop management, and thus it has only one product: its NxTop desktop management platform.

Virtual Computer is one of the earliest innovators to bring type-1 hypervisor technology to PC devices. Although the company has beat virtualization leaders VMware and Citrix to market, both of those companies have announced their own internal development projects to release similar hypervisors. Although these companies will represent competitors in the not too distant future, they also represent a validation of the concept of leveraging hypervisors on desktop PCs in order to improve management capabilities. In order to be successful in what will become, in IDC's opinion, a very high-growth market, Virtual Computer will have to leverage its greatest advantage — its early time to market — by building and ramping its channel and continuing to invest heavily in R&D and customer support.

IDC believes that although Virtual Computer's technology is leading edge, the company is a very likely candidate for acquisition by a PC management vendor that feels pressured to add virtualization capability to its product portfolio. It can also be reasonably anticipated that a company that feels that its product strategy is under pressure from technological innovations will likely pay a high premium for a company such as Virtual Computer, much like what occurred during Citrix's acquisition of XenSource in 2007. IDC feels that any potential acquisition would be beneficial for all parties involved, including current Virtual Computer customers, who would benefit from the larger R&D budgets of a more mature company.

## Conclusion

As one of the leading pioneers of desktop hypervisor technology with its NxTop management platform, Virtual Computer can help IT organizations gain better control over their desktop environments and manage PC life cycles more efficiently. For smaller IT organizations with few desktop management tools, the NxTop platform has a robust set of capabilities that can streamline the management necessary throughout the PC life cycle, from desktop and image provisioning and the development of an asset inventory to software updates such as patching and OS migrations. For larger organizations with existing tools, NxTop may be able to improve the efficiency with which those environments are managed by introducing hypervisor technology as a platform from which to manage the environment.

Although Virtual Computer is an early entrant into a burgeoning market, competition in this space will heat up quickly as larger vendors begin entering the market with their own technologies, sometime in the fourth quarter of 2009. IDC also anticipates that market entrants will go beyond traditional virtualization vendors to include more traditional desktop management vendors that may see hypervisors as a natural evolution of the desktop management toolset.

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#### A B O U T T H I S P U B L I C A T I O N

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