

With the compliments of **Microsoft**® & **FREEFORM DYNAMICS**

Desktop Virtualization FOR DUMMIES®

Microsoft Limited Edition


Uncover the
value of desktop
virtualization

**A Reference
for the
Rest of Us!**®

FREE eTips at dummies.com®



I need to reduce costs and lower my risk.
But how do I do that and keep my IT staff
and end users productive?



The Windows 7 Enterprise operating system was built with one goal in mind—to have it work the way you want. Its combination of innovation and improved performance has resonated with those who need it to deliver business-enhancing results, including increased productivity and mobility, enhanced security and compliance, and streamlined IT management. Combined with the Microsoft Desktop Optimization Pack (MDOP), a suite of Windows virtualization and management technologies, you can achieve greater automation, increase IT and end user productivity, and reduce your overall management costs.

Learn more at www.microsoft.com/windows/enterprise

 Windows 7 Enterprise

Works the way you want.

*Desktop
Virtualization*
FOR
DUMMIES®

***Desktop
Virtualization***
FOR
DUMMIES®

**by Dale Vile, Tony Lock,
Martin Atherton and Jon Collins**

 **WILEY**

A John Wiley and Sons, Ltd, Publication

Desktop Virtualization For Dummies®

Published by
John Wiley & Sons, Ltd
The Atrium
Southern Gate
Chichester
West Sussex
PO19 8SQ
England

For details on how to create a custom For Dummies book for your business or organization, contact CorporateDevelopment@wiley.com. For information about licensing the For Dummies brand for products or services, contact BrandedRights&Licenses@Wiley.com.

Visit our Home Page on www.customdummies.com

Copyright © 2010 by John Wiley & Sons Ltd, Chichester, West Sussex, England

All Rights Reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except under the terms of the Copyright, Designs and Patents Act 1988 or under the terms of a licence issued by the Copyright Licensing Agency Ltd, 90 Tottenham Court Road, London, W1T 4LP, UK, without the permission in writing of the Publisher. Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Ltd, The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, England, or emailed to permreq@wiley.com, or faxed to (44) 1243 770620.

Trademarks: Wiley, the Wiley Publishing logo, For Dummies, the Dummies Man logo, A Reference for the Rest of Us!, The Dummies Way, Dummies Daily, The Fun and Easy Way, Dummies.com and related trade dress are trademarks or registered trademarks of John Wiley & Sons, Inc. and/or its affiliates in the United States and other countries, and may not be used without written permission. All other trademarks are the property of their respective owners. Wiley Publishing, Inc., is not associated with any product or vendor mentioned in this book.

LIMIT OF LIABILITY/DISCLAIMER OF WARRANTY: THE PUBLISHER, THE AUTHOR, AND ANYONE ELSE INVOLVED IN PREPARING THIS WORK MAKE NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF THE CONTENTS OF THIS WORK AND SPECIFICALLY DISCLAIM ALL WARRANTIES, INCLUDING WITHOUT LIMITATION WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. NO WARRANTY MAY BE CREATED OR EXTENDED BY SALES OR PROMOTIONAL MATERIALS. THE ADVICE AND STRATEGIES CONTAINED HEREIN MAY NOT BE SUITABLE FOR EVERY SITUATION. THIS WORK IS SOLD WITH THE UNDERSTANDING THAT THE PUBLISHER IS NOT ENGAGED IN RENDERING LEGAL, ACCOUNTING, OR OTHER PROFESSIONAL SERVICES. IF PROFESSIONAL ASSISTANCE IS REQUIRED, THE SERVICES OF A COMPETENT PROFESSIONAL PERSON SHOULD BE SOUGHT. NEITHER THE PUBLISHER NOR THE AUTHOR SHALL BE LIABLE FOR DAMAGES ARISING HEREFROM. THE FACT THAT AN ORGANIZATION OR WEBSITE IS REFERRED TO IN THIS WORK AS A CITATION AND/OR A POTENTIAL SOURCE OF FURTHER INFORMATION DOES NOT MEAN THAT THE AUTHOR OR THE PUBLISHER ENDORSES THE INFORMATION THE ORGANIZATION OR WEBSITE MAY PROVIDE OR RECOMMENDATIONS IT MAY MAKE. FURTHER, READERS SHOULD BE AWARE THAT INTERNET WEBSITES LISTED IN THIS WORK MAY HAVE CHANGED OR DISAPPEARED BETWEEN WHEN THIS WORK WAS WRITTEN AND WHEN IT IS READ.

Wiley also publishes its books in a variety of electronic formats. Some content that appears in print may not be available in electronic books.

ISBN: 978-0-470-97364-6

Printed and bound in the United States

10 9 8 7 6 5 4 3 2 1



Table of Contents

<i>Introduction</i>	<i>1</i>
<i>Part I: What Is Desktop Virtualization Anyway?.....</i>	<i>4</i>
<i>Part II: Discovering the Benefits of Desktop Virtualization</i>	<i>9</i>
<i>Part III: Thinking About Your Organization's Requirements</i>	<i>12</i>
<i>Part IV: Choosing Between the Options.....</i>	<i>17</i>
<i>Part V: Taking Things Forward with Desktop Virtualization.....</i>	<i>21</i>
<i>Part VI: Ten (Well, Nearly) Top Tips for Desktop Virtualization.....</i>	<i>30</i>

Introduction



Welcome to *Desktop Virtualization For Dummies*, your guide to understanding the wealth of options for virtualizing your desktop environment today.

This book gives you some pointers to help you decide whether desktop virtualization is for you and, depending on which options are appropriate, how to prepare for a successful implementation.

Fortunately, desktop virtualization is more straightforward than you might think! We hope that after reading this book you'll feel comfortable working out your own organization's needs and be in a position to understand which options might be most suitable for you.

About This Book

Events of the past few years, not least desktop operating system concerns and the still-pervading financial climate, caused many organizations to put their normal desktop modernization and refresh cycles on hold. In the meantime however, a number of new capabilities have matured to help organizations provide desktop facilities to their business users – which we describe here using the umbrella term ‘desktop virtualization’.

With these capabilities in mind, this book helps you think about the desktop needs of your own organization, and sets out the options so you can decide whether desktop virtualization principles in general, and which options in particular, are appropriate to your needs.

To keep things simple, we use the term ‘desktop client’ to refer to desktops, laptops, notebooks and netbook computers. We use the term ‘server’ to refer to a computer that sits in a computer room and is accessed remotely, by desktop clients. Okay so far?

Foolish Assumptions

In writing this book, we assume that you fall into one of these categories:

- ✔ You hold a business management position.
- ✔ You hold a management, operational or architect position in IT.
- ✔ You’re simply curious to discover what desktop virtualization is all about.

How This Book Is Organized

Desktop Virtualization For Dummies is organized into six small, but beautifully structured, parts:

- ✔ **Part I: What is Desktop Virtualization Anyway?** We offer you a definition and describe the different variations.
- ✔ **Part II: Discovering the Benefits of Desktop Virtualization.** Find out why virtualization is worth considering.
- ✔ **Part III: Thinking About Your Organization’s Requirements.** Discover your organization’s needs with user profiling.
- ✔ **Part IV: Choosing Between the Options.** Explore the benefits of each model.

- ✓ **Part V: Taking Things Forward with Desktop Virtualization.** Consider your next steps and think about best practices.
- ✓ **Part VI: Ten (well, nearly) Top Tips for Desktop Virtualization.** Find instant advice.

Icons Used in This Book

We highlight crucial text for you with the following icons:



The target signifies particularly useful advice.



Bear this information in mind as you read on.

Where to Go from Here

Have you ever read one of those books that lets you pick different ways to get to the ending? Well, you can think of this book in the same way. You can take the traditional route and read it straight through, or you can use the section headings as your guide. Whichever way you choose, you can't go wrong. Both paths lead to the same objective – a clear understanding of the business and practical implications of desktop virtualization.

We hope you find this guide useful. If you have any questions or feedback, contact info@freeformdynamics.com.

Part I

What Is Desktop Virtualization Anyway?

.....

In This Chapter

- ▶ Defining desktop virtualization
 - ▶ Introducing the options
-

Virtualization is a much-discussed area of technology, helped by the current success of x86 server virtualization products such as VMware ESX Server, Microsoft Hyper-V and Citrix XenServer. What makes both desktop and server virtualization feasible is that computers are now powerful enough to enable additional software layers to be incorporated between physical hardware, operating systems and the applications they run.

In server virtualization for example, a layer known as the *hypervisor* allows multiple virtual computers to run on a single physical machine – enabling a level of flexibility that many organizations are appreciating today.

Such ideas have been broadened to encompass virtualization technologies for desktop computing. In traditional desktop models, the computer runs an operating

system where individual applications are executed with their user interface displayed on the computer screen. By introducing virtualization however, you break the direct connection between physical hardware, operating system, application and display (Figure 1-1).

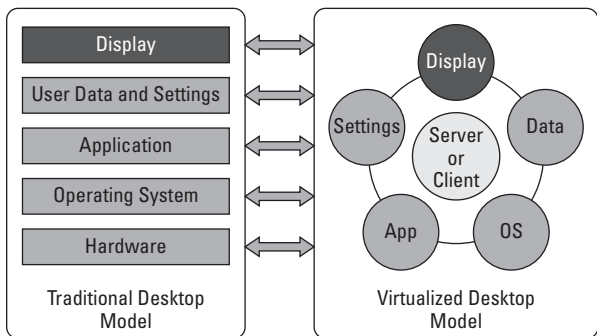


Figure 1-1: Desktop virtualization breaks traditional bindings between layers.

Exploring Desktop Virtualization Approaches

There's no one-size-fits-all desktop virtualization method; rather, it offers a number of options to deliver desktop capabilities to users. What they all share is that they're different from the traditional desktop model.



Why should you care about desktops? Well, mainly because they're so integral to IT service delivery. The desktop is the most

common point of access for users and, as such, how well it performs has a disproportionately high bearing on user productivity, as well as satisfaction and perception of IT. Freeform Dynamics' research shows that allowing the desktop environment to drift out of date has significant cost and risk implications, as well as representing a huge distraction to IT staff.

As shown in Figure 1-1, while the display will always run on the desktop client (otherwise it would be quite hard for users to see what they're doing!), you have a choice about whether the operating system and applications run on the desktop or the server, and indeed, where you store user information in terms of both application data and configuration settings.

The options that emerge from this simple starting point are numerous – read on to delve deeper.

User state virtualization

The simplest option is to virtualize the link between a user's configuration settings and/or data, storing this information on a server so that any connected desktop client can access a user session. User state virtualization works well in tandem with application virtualization and standardized desktop environments, where each desktop runs a similar set of applications. From the user perspective, not only can users log on where they want, but also, if something goes wrong with the desktop, they can continue working on another machine with minimal interruption.

Application virtualization

Traditionally, applications have been tied to the desktop operating system and require installation on the desktop/client where they share resources like run-time libraries, registry and other configuration settings. In the application virtualization model, individual applications are bundled up with the resources they need to run. Applications aren't installed directly on the client computer, which removes potential conflicts with other applications and minimizes changes to the underlying operating system.

Session virtualization

Session virtualization is derived from the 'thin client architecture' model, popularized by Citrix in the 1990s. In this configuration, multiple desktop clients log onto a single instance of an operating system running on a single server. In essence, all applications or the entire desktop runs on the same server, and the display graphics are transmitted to a desktop client. The client can be 'thin' given that it only has to be able to display graphics. Indeed, it may not need any processing power at all: 'ultra-thin clients' contain little more than a network port and a graphics card.

Virtual desktop infrastructure (VDI)

VDI is an extension to the thin client idea. In this case however, as well as using one server to service the processing needs of individual users, each user has an operating system instance on the server, running as a virtual machine. VDI is often what people mean when they use the term 'desktop virtualization' in a general way. But, as you can see, you have many other alternatives!

Blade-based virtual desktops

'Blades' are standardized server computers designed to slide into a specially designed rack (like books on a bookshelf) to minimize space and power requirements. Like session virtualization or VDI, the blade-based virtualization model means that the processing is done on a server and the display is transmitted to the user's desktop. In this case however, each blade runs a single operating system which is allocated to an individual user at runtime.

Single-desktop virtual machine

For completeness, we need to give a mention to single-instance desktop virtualization, where virtualization software is run on a desktop computer. The model was popularized by developers who needed an operating system for testing but didn't have spare hardware to run the second instance, as well as IT pre-sales engineers who could run up a version of their software in a virtual machine.

Importantly, single-instance desktop virtualization doesn't require a network connection because the virtualization software runs on the same device as the desktop itself. These days, single-desktop virtualization is also incorporated into Windows 7 in the guise of XP Mode enabling legacy Windows XP applications; it's also a popular mechanism for running Microsoft Windows on the Apple Macintosh.

Part II

Discovering the Benefits of Desktop Virtualization

In This Chapter

- ▶ Knowing the benefits
 - ▶ Balancing flexibility with control
-

Why bother virtualizing desktops at all? Well, the primary reason why you might want to undertake a desktop virtualization initiative is to centralize the management of your users' desktops. While specifics depend on the selected model, the essential driver behind desktop virtualization in all of its forms is to enable user environments to be controlled and managed from a central point. This can simplify operational challenges such as asset management and patch management, and enables desktop policies to be more straightforwardly defined and implemented.

Appreciating Flexibility, Security and Availability

As well as improving the lot for IT managers, by breaking the bond between physical technologies and the applications that run on them, desktop virtualization can mean more flexibility for users. Depending on the selected virtualization options, users can be free to access applications and data wherever it's most convenient to them, all the while taking their own configuration needs into account. For example:

- ✓ Accessing data and/or applications from whichever computer is available, for example including running the work environment on a home PC or Internet kiosk.
- ✓ Running an application with specific configuration requirements, in parallel with other applications and operating systems without conflict between them.
- ✓ Provisioning and allocating applications more flexibly from a central point, or allowing users to provision applications for themselves on a self-service basis.

In addition, a number of security benefits exist. Better control helps ensure user environments are as up to date (and therefore secure) as possible, as well as offering the opportunity to lock down the applications people can access, through application virtualization for example. Some desktop virtualization variants also build in security features such as encryption of both data and network communications, while permitting data to be held centrally for enhanced protection.

What about availability and business continuity benefits? Virtual desktop environments have a number of failover options to enable business users to keep working should something go wrong. For example, in the case of user state virtualization, if a local desktop or even the entire office fails, users can access their work from other (appropriately configured) machines, including from home. Meanwhile, some desktop virtualization approaches offer the ability to take ‘snapshots’ of virtual machines which can be backed up and stored in case of system failure.



It's not as straightforward as saying 'desktop virtualization will save you money', but it certainly gives you more options when you come to deciding how that money might be spent – either by reducing operational budgets in terms of minimized downtime, or lowering management and support overheads, or potentially enabling capital expenditure to be reduced or deferred. Equally, higher levels of flexibility and availability can lead to productivity gains which are valuable, even if they can be difficult to quantify. Of course, you need to weigh such factors against the capital costs of investing in desktop virtualization in the first place.

Desktop virtualization is a means to an end – to enable business users to access the applications and services they need in the most efficient manner, both for themselves and the IT department. If implemented correctly, desktop virtualization is one of those ideas in IT that represents a genuine win/win for both IT and users, because both sides stand to gain from the effective delivery of desktop services.

Part III

Thinking About Your Organization's Requirements

.....

In This Chapter

- ▶ Considering your needs
 - ▶ Understanding user categories
-

Before rushing in to adopt a particular technology, you will need a reasonably clear picture of your organization's needs. This part explains the importance of profiling users, and then delivering the right applications to each user category.

Building a Picture of User Types

The best way to kick off identifying your organization's needs is through some form of user profiling exercise. By doing so you can build a picture of what applications are being used, by which types of user – as well as starting to gauge how requirements may vary across user groups.

User profiling doesn't have to be onerous: for smaller organizations, all you really need is a clipboard and a pen, and for larger organizations, a number of automated discovery tools can help.



In some organizations, user profiling may be a pretty big job, either because of the scale of the company, or because of the large number of applications in use. Whether you decide to limit yourself to one part of the organization or to a specific set of users, you still need to ensure that you take all relevant applications into account (you'll no doubt identify a whole bunch of irrelevant ones!) otherwise you could get caught out later.

Armed with this information about applications, the next stage is to identify categories of users according to their behavior. Each group of users has certain requirements on how they access the applications and services they need, which helps to determine the most appropriate desktop delivery option. For example, if:

- ✓ The application set they require is relatively static or changes frequently
- ✓ Users need to change how applications are configured, and how often
- ✓ Applications are likely to be accessed over low latency or less reliable networks, or completely offline from the corporate network
- ✓ Any specific security criteria need to be met, such as the need to handle sensitive data
- ✓ Applications have normal performance requirements, or whether they're compute-intensive and/or graphics-intensive
- ✓ The degree to which applications themselves need to be centrally managed, and/or left for the users to manage and control



Decide what categories are most appropriate to your own user groups – Table 3-1 gives you a good idea of what to look for.

Table 3-1 Comparing User Categories

<i>User Category</i>	<i>Examples</i>
IT development staff	Software developers, architects and testers requiring access to a frequently changing set of applications
IT operations/support staff	Technical experts and administrative staff using a core set of applications, but which may, on occasion, require access to a broader application set
General professional users	Senior management and administrative business users making relatively light and predictable use of email, office tools and so on
Transaction workers	Business users in fixed roles, mostly using enterprise applications in a routine, prescriptive manner
Other (non-IT) technical and creative staff	Research and development staff, engineers, technical designers/architects, graphics designers requiring access to specific and/or more graphics intensive applications
Office based power users	A subset of business users with more complex application needs; for example finance staff, marketing teams and business analysts
Mobile and remote professional users	Similar to power users but also requiring access when on the road or from remote locations, such as sales executives, roaming managers and service engineers

At the end of the profiling exercise, for each user category you should have a good feel for:

- ✓ Applications used by the category
- ✓ The required level of management controls
- ✓ The required level of user flexibility
- ✓ Additional benefits you're hoping to achieve, such as security and availability

Delivering the Goods



Once you have a clearer picture of which user categories are accessing which applications, you can ask yourself: How can we deliver the right applications and services to the right users, in an efficient and effective manner? In some cases, this is going to be through locking things down; for example, by providing transaction workers with a fixed set of applications. In other cases, it may be by opening things up; for example, giving power users access to the widest set of available applications so they can get what they need as their requirements change.



Desktop virtualization offers options for both flexibility and control, so the trick is about getting the balance right. To achieve this, keep two things in mind:

- ✓ If cost savings are your ultimate goal, the benefits of desktop virtualization are as much (if not more) about centralizing control over application delivery, as centralizing the technology upon which programs actually run.

- ✔ You need to understand the difference between the user's desktop (including how it looks, feels and is configured), and the individual applications that run on it, as in some cases you might want to virtualize one without the other.

Part IV

Choosing Between the Options

In This Chapter

- ▶ Equipping yourself
 - ▶ Choosing between the options
-

There's no one-size-fits-all for desktop virtualization, and in this section we explore some of the alternative models. Each model gives you a variation on the theme of what runs on the desktop, versus what runs on the server. While the display always runs on the desktop client, you have a choice about the operating system and applications, and where you store application data and configuration settings.

Considering the Benefits



As you can imagine, some desktop virtualization options are better at certain things than others, and each combination has different benefits for both business users and for IT. The good news is that you may find that one of the simpler (and cheaper!) options is suitable for your own needs, which is why it's worth doing a thorough analysis up front.

Benefits of user state virtualization

This model is the simplest of all virtualization options, given that it builds on top of the traditional file server and desktop client model and so requires little in the way of new hardware or software. As well as the flexibility benefits from being able to log into any appropriately configured desktop computer, this model also affords availability benefits in that user data and state information are stored on a central server.

Benefits of application virtualization

The main benefit of application virtualization is user flexibility, because applications can be linked to users rather than specific computer hardware. It also offers application stability and reliability, given that every application has its own protected configuration. IT managers can build and deploy cleaner operating system images and reduce the time they spend in application interoperability testing, application deployment and patch management. Application virtualization can also be used to reduce licensing costs by providing access to certain applications only when needed.

Benefits of session virtualization

The main benefit of the session virtualization model is centralization of control and data storage, though it can be made quite flexible by offering multiple configurations to meet the needs of individual user categories. However, like virtual desktop infrastructure and blade-based virtual desktops, the session virtualization model depends on the network being available and so is more suited to corporate environments.

Benefits of virtual desktop infrastructure (VDI)

As with session virtualization, the main benefit of VDI is centralized control, and equally the model has considerable flexibility when it comes to offering different options for different user categories. Given the reliance on virtual machines, this model also has availability benefits because a virtual machine can more easily be copied or moved than a physical machine. However, given that each user is allocated a virtual machine, VDI requires more server and storage resources than session virtualization.

Benefits of blade-based virtual desktops

While benefits of the blade-based model are across the board, this model is particularly applicable to heavy processing and graphics applications such as computer-aided design. This model also takes advantage of the space- and power-saving benefits of blades, as compared to running individual servers. However, the one-blade-per-user model is expensive in hardware terms when compared to deploying session virtualization or the VDI model.

Benefits of single-desktop virtual machine

The single-desktop model offers flexibility to individual users, particularly where it's necessary to separate business from non-core working; for example, to run a business environment on personal equipment, or to keep multiple client environments separate. This is also a popular approach for software developers to, say, create target computer environments for test purposes. This model also has management benefits, in that the

virtual machine can be controlled and distributed centrally, for example to preconfigure a virtual machine to assure compatibility with a legacy application.

Mapping the benefits to your own needs

Phew! That's quite a list, isn't it? However, depending on the configuration, different benefits come to the fore, so you need to decide which are most applicable to your own users. The key is to get the balance right between flexibility and control. You may also have specific needs around security and availability, or constraints around remote access or high performance. Bear your needs in mind as you compare the overall benefits in Figure 4-1.

Option Type	Flexibility	Control	Security	Availability	Offline Access	Performance
User state virtualization	◐	◐	○	●	●	●
Application virtualization	●	◐	◐	◐	●	●
Session virtualization	◐	●	◐	●	○	◐
Virtual desktop infrastructure	◐	●	◐	●	○	◐
Blade-based virtual desktops	◐	◐	◐	◐	○	●
Single-desktop virtual machine	●	◐	◐	◐	●	◐
Key: ● Fully applicable ◐ Partially applicable ○ Not applicable						

Figure 4-1: How the different desktop virtualization options provide different benefits.

Part V

Taking Things Forward with Desktop Virtualization

.....

In This Chapter

- ▶ Taking things forward
 - ▶ Delivering the benefits
-

Your organization, like every organization, is unique in terms of its needs and the challenges it faces. It's all very well offering up a theoretical model of desktop virtualization that looks good on paper, but how exactly can you make it work in practice?

In this part we consider the steps you need to work through to make desktop virtualization a reality, and we present some best practices that we've gleaned from research and anecdotal feedback.



Keep desktop management in mind whichever route you go down – desktop virtualization isn't a panacea for operations and support, though it can help if implemented in the right way. We cover management aspects at the end of this part.

The First Step: Pragmatic User Segmentation

The first thing you will need to get right is identifying groups of users for whom desktop virtualization makes sense. Let's face it, while every organization is unique, you're going to share quite a few similarities with your peers. Here are some reasonably standard example scenarios that you might find similar to your own:

- ✔ **Academic institution** with researchers requiring specific configurations; administrative and management staff; and students whose environments you want to lock down more tightly.
- ✔ **Financial institution** consisting of front-office staff needing flexibility in the applications they access, and back-office and customer service users who have pretty fixed requirements to access a specific set of applications which don't change very often.
- ✔ **Private or public organization** where the majority of users require access to a standardized set of productivity and collaboration tools and web-based applications, but access may be required while travelling or working from home. A subset of users may have specific requirements to access more powerful applications.

As you can see, the majority of your organization's users are likely to fit into a relatively simple set of categories. If you start to identify more than a handful of clearly defined groups, then you may want to distil them down. Or if, having assessed your needs, you

decide that most users have unique requirements and need to be treated accordingly, then perhaps desktop virtualization isn't for you!

Evaluating Your Desktop Software and Hardware Portfolio

It's one thing to document who requires access to what applications. It can be quite another to pick through how those applications are structured, where they're stored and so on. We've heard of organizations with many thousands of applications in constant use. While desktop virtualization may help simplify how applications are accessed, such a complex portfolio of software makes any such exercise more difficult.



If you have a complex portfolio of software, you could consider desktop virtualization and application rationalization as parallel initiatives. Remember that you don't need to virtualize everything – in the case of application virtualization for example, virtualized applications can run alongside non-virtualized ones. You can choose whether to virtualize on an application-by-application basis if that helps your decision making.

Perhaps you're in a situation where it's time to review, refresh or renew your desktop hardware. You can look into desktop virtualization options as part of such an exercise, and consider funding opportunities you can tap into. You might re-allocate money that would have been spent on desktop hardware, to desktop virtualization software, or to servers to use for VDI.



Don't ignore either the complexity of your existing environment, or any ongoing initiatives to deal with it. Whichever route you decide to go down, getting there might be tough if you're mired in spaghetti!

Determining the Best Mix of Delivery Models

Multiple desktop virtualization options are available to you, but you don't have to use all of them – or even limit yourself to one.

Out of the exercises you've conducted, you may identify one or two categories of users for whom one or more of the desktop virtualization options will be appropriate. Equally clearly, for certain categories of users, the traditional desktop-connecting-to-server model may be more applicable.

While your own needs are unique based on the user categories you've identified, Figure 5-1 gives an indication of how virtualization options might map onto specific categories. Use it as inspiration to draw up a similar table that fits your own needs!

After you identify candidate categories for desktop virtualization, it's time to get hard-nosed. Each option comes with a set of benefits, for sure – but it also comes at a cost. Your business case needs to take into account:

- ✓ The cost of procurement
- ✓ Costs involved in migration from the existing environment
- ✓ Ongoing costs of operational management

User Category	Flexibility	Control	Security	Availability	Offline Access	Performance	Potential Option
IT development staff	×		×	×	×	×	May benefit more from the single-desktop virtual machine approach, and/or potentially application virtualization for specific applications. VDI is also a good option if the IT development staff is operating offsite or offshore.
IT operations/ support staff	×	×		×	×		A session virtualization approach may be appropriate for the majority of applications, particularly as it would enable easier access from wherever staff members are working.
General professional users	×	×		×		×	Session virtualization or virtual desktop infrastructure are alternative models for this category of user, though in more straightforward situations, application virtualization or user state virtualization may prove more cost effective.
Transaction workers		×	×	×			Session virtualization using thin clients would likely be the most appropriate model for this category.
Other technical and creative staff		×	×			×	While virtual desktop infrastructure may be appropriate, in many cases standardized desktops augmented with application virtualization would suffice.
Office based power users	×		×	×		×	Power users may benefit from blade-based virtual desktops specifically, but application virtualization may be worth considering.
Mobile professional users	×		×	×	×	×	The single-desktop virtual machine approach may be applicable where security is less of an issue (though encryption features can also be enabled for some virtual machine types).
Key: X indicates a potential priority area for this category of users							

Figure 5-1: Mapping desktop virtualization options against user categories.



Keep in mind that desktop virtualization isn't a short-term solution, and the business case may have to span many years to prove its worth.

In some cases you may find that the simplest desktop virtualization option really is the most appropriate, at least initially. For example, you may have begun by thinking that VDI would be a good option for some of your users. After evaluation however, you may decide that application virtualization gives you the required balance of flexibility and efficiency, at the most cost effective price for your own organization.



You may even decide that desktop virtualization isn't appropriate at all. If it's difficult to identify user categories for example, you could have no choice but to stay with the status quo. Alternatively, you may decide that standardization of desktops will meet your needs – where you store an 'image' of the required desktop configuration on a server and use it as a template every time you want to deploy a desktop to a user.

Implementing in the Best Possible Way

Before you kick off any deployment activities, think about the impact your chosen option will have on the existing IT environment. Remember, the goal is to make things simpler! If you do end up identifying multiple solutions for different user categories, think about how they're going to integrate with the rest of the IT environment, and with existing management tools and processes.



Don't forget just how important the resulting configuration will be to the category of users it affects. The desktop is the main connection between IT systems and their users, so the 'desktop experience' has a major impact on how IT is perceived by the business in general. Nor should you underestimate how much network bandwidth is required for remote displays in the case of session virtualization, or misjudge how many users can work in parallel on a single server, in the case of VDI!

The virtualized desktop experience needs to be at least as good as what the user has traditionally experienced. Give due consideration to storage and networking aspects, as well as the servers and desktop clients. To maximize the chances of success, pilot and comprehensively test the proposed configuration with a select group to ensure it meets their needs and delivers the expected service levels.

In addition, don't overlook user training. While the differences in user experience between old and new may be small, during training you can ease the transition and also identify any last-minute gotchas, such as shortcuts missing from the newly-virtualized desktop.

Remembering Management and Operational Aspects

For desktop virtualization to benefit both the business and IT, you need to ensure that you've taken into account the management requirements and operational constraints of your own organization.

Desktop management isn't straightforward at the best of times, and while desktop virtualization may help, the resulting environment still needs to incorporate such disciplines as:

- ✔ **Asset management.** Desktop virtualization should make configuring individual desktops simpler, but you still need to maintain a pool of hardware.
- ✔ **License management.** Ensure that the licensing regimes and agreements you have with software vendors are appropriate for your virtualized environment.
- ✔ **Software distribution and patch management.** These should both be rendered more straightforward with desktop virtualization, depending on the option you choose.
- ✔ **Help desk.** As well as expecting a larger than usual influx of calls during the transition period, make sure that your support processes are geared up to the specifics of virtualized desktops and applications.
- ✔ **Health monitoring.** Ensure that desktop clients, physical and virtual, run efficiently and deliver the required services to their users.
- ✔ **Backup and recovery.** User data as well as application and configuration settings need appropriate backup and recovery.

Fundamentally, management and operations of the virtualized desktop environment should be more straightforward than managing an equivalent number of traditional desktops. However, there'll also be

management best practices specific to the virtualized desktop environment – for example, how to minimize the number of images you need to support.



You probably won't end up with an entirely virtualized desktop estate – you'll be managing both physical and virtual machines in parallel. By planning in management and operations of both physical and virtual resources from the start, you avoid the possibility of uncovering hidden costs later on.

Part VI

Ten (Well, Nearly) Top Tips for Desktop Virtualization

.....

We hope this book gives you a reasonable idea of what desktop virtualization is, where it might fit in your organization, and where to start when it comes to defining and deploying a solution appropriate to your own needs. In this last section we draw out some tricks, tips and traps to keep in mind as you embark on your desktop virtualization journey.

- ✔ **Put the users first.** This doesn't mean 'giving people what they want', but it does mean giving people what they need to do their jobs in a productive and motivated manner. For some users, a locked down desktop is preferable because less can go wrong. For others, a locked down desktop may be too restrictive. If in doubt, ask, and make sure you manage user expectations throughout and after the deployment process.
- ✔ **Focus on a subset of users with clear needs.** You may be in the fortunate position of identifying that the majority of users in your organization require a restricted set of applications which you can provide using locked-down virtual desktops.

Or you may find a pocket of users for whom a particular approach to desktop virtualization is appropriate. Whatever the case, be sure that you categorize users according to a well defined set of requirements.

- ✔ **Remember that there's more than one way of doing things.** Desktop virtualization actually constitutes a number of options for delivering applications and services to the user. It's up to you to understand your requirements before you try to work out what option might be most appropriate. But don't feel you have to use all the options just because they're there. Sometimes the simplest option is the best.
- ✔ **Be hard-nosed on the cost-benefit.** Desktop virtualization has its attractions from a management perspective but, ultimately, it will only make sense if it's a cheaper alternative to the traditional model of application delivery. So, once you've identified relevant options, be prepared to do the calculations.
- ✔ **Get the configuration right.** Too many desktop virtualization initiatives are hamstrung by inadequate specification of the hardware and software required to work at scale, notably around storage and networking. Consider the worst-case scenario in terms of your own user needs (the 9 a.m. login window on a Monday morning is one example), and be sure that your planned configuration is able to deliver the required levels of service.

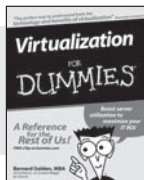
- ✔ **Consider management aspects up front.** Once the configuration is up and running, it's too late to discover whether you've covered the required management considerations. As well as taking traditional areas of management into account, desktop virtualization technologies have their own management requirements which need to be costed in as part of the business case.
- ✔ **Build in continuity, data protection and security.** Desktop virtualization offers a number of security and availability benefits you need to take into account when you're specifying an appropriate configuration for your organization. Ensure that the chosen option ticks as many boxes as you need when it comes to protecting user data and countering relevant security threats.



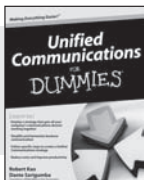
FOR DUMMIES[®]

A Reference for the Rest of Us![™]

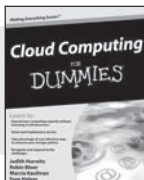
Sharpen Your Business Edge – Easily



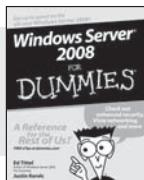
978-0-470-14831-0



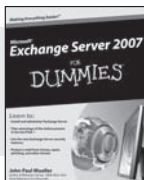
978-0-470-40144-6



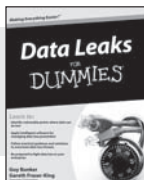
978-0-470-48470-8



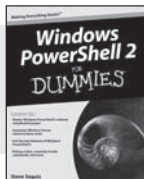
978-0-470-18043-3



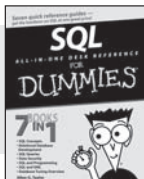
978-0-470-39866-1



978-0-470-38843-3



978-0-470-37198-5



978-0-470-11928-0



978-0-470-38688-0

Available wherever books are sold

 **WILEY**

Technology needs context

Freeform Dynamics is a research and analysis firm. We track and report on the business impact of developments in the IT and communications sectors.

An innovative research methodology allows us to gather feedback directly from those involved in IT strategy, planning, procurement and implementation.

Our output is grounded in real-world practicality for use by mainstream business and IT professionals.

For further information or to subscribe to the Freeform Dynamics research service, visit our website or contact us at

info@freeformdynamics.com



freeformdynamics.com



Exploit desktop virtualization for business benefit

How can I benefit from desktop virtualization?

Desktop virtualization offers a range of alternatives to the traditional way of approaching desktop computing. Armed with an understanding of your needs and the choices out there, you can equip your organization to harness the next generation of desktop computing technology.

This book is a powerful yet compact guide to desktop virtualization options, steering you clear of the hype, highlighting the benefits and helping you avoid potential pitfalls.

*Explanations in plain
English*

THE
DUMMIES
WAY[®]

*'Get in, get out'
information*

*Icons and other
navigational aids*

A dash of humour and fun

ISBN: 978-0-470-97364-6
Not for resale

Discover how to:

*Identify your
requirements*

*Appreciate the
different approaches*

*Make the right
decision for your
business*

Get smart!
@www.dummies.com

- ✔ Find listings of all our books
- ✔ Choose from many different subject categories
- ✔ Browse our free articles

For Dummies[®]
A Branded Imprint of

 **WILEY**