The 7 Big, Bad Pitfalls of Desktop Virtualization Deployment

The very avoidable ways things can go wrong (and how to avoid them)
Don’t mess it up.

Desktop virtualization isn’t just a vendor vision any more.

Today, it’s best practice for mainstream enterprises of every size – and the benefits are proven and documented.

The business case varies by company but tends to include these drivers:

- **Agility** – virtual desktops deploy quickly and pivot on a dime
- **Manageability** – faster provisioning, easier moves, changes, patching, testing, upgrading and migrating
- **Security** – with tighter control over the stuff that matters: your data
- **Happy users** – with access to their desktop from anywhere (and almost any hardware)

But just because the why of desktop virtualization is well-established doesn’t mean the how is always a given.

**The risk of over-simplifying**

Done properly and systematically, deploying virtual desktops is actually quite straightforward. But that doesn’t mean it’s a ‘plug and play’ technology (it isn’t) or that one flavor fits every situation (it doesn’t).

The key is to think about your business and make sure your strategy, deployment plan and rollout program are right for your specific circumstances.

That’s what this eBook is all about. It distills the expertise of our top consultants and their experiences across tens of thousands of deployments into seven simple tips.

Some of the tips may seem like common sense. And they are. But they’re also the most common mistakes that even the most experienced IT departments make – and we see them over and over again.

The good news: desktop virtualization is easy if you do it right.

The better news: we’re here to help.

**The Project Accelerator**

We’ve captured even more of our best-practice advice in a free project management & deployment toolset called the **Project Accelerator**.

Answer a few questions in Accelerator and it will guide you through your deployment, from Assess to Design to Deploy and Manage. Including sample architectures, hardware estimates and lots, lots more. Give it a go. [project.citrix.com](http://project.citrix.com)
### A simple, three-step methodology

At Citrix, we preach a systematic, three-stage process for any desktop virtualization rollout:

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Assess</strong> Establish your goals then decide which user groups will be virtualized and the order that will deliver the most value, quickly.</td>
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<tr>
<td>2</td>
<td><strong>Design</strong> Think through your virtualization model, project architecture, hardware needs and installation issues – from Active Directory to storage and networking.</td>
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<tr>
<td>3</td>
<td><strong>Deploy</strong> Build the foundation for a great virtual desktop experience for users, then roll it out methodically.</td>
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The pitfalls discussed in the following pages tend to be the result of a breakdown in this simple methodology.
The Pitfalls
Not starting with clear agreement on goals

If virtualization programs run into problems, it often comes down to this simple issue: different people went into it for different reasons—and they never resolved the agenda-clash. Unlike many IT projects, desktop virtualization touches almost every department—including networks, desktops, storage, security, data center, support and beyond. It’s important to build a team that includes all of these—and to make sure everyone agrees on the goals.

The truth is, there are many reasons to virtualize your desktops. And almost every decision you make as your deployment progresses will vary based on your goals.

Prioritize your goals.
Rank the main benefits—probably including some of these:
- Increase security
- Support virtual work styles
- Increase business agility
- Improve device independence
- Bring your own device
- Branch expansion

If one team member or department is thinking it’s all about remote access while another is driven primarily by security gains, you could hit problems (and both goals could end up being compromised).

Surfacing, prioritizing and aligning everyone around an agreed set of goals is the first, most important step in any virtualization program.

**Actions**
- Run a goals capture and consensus-building exercise on Day One.
- Come out with a prioritized goals list.
- Include every IT department in your planning.
- Make sure everyone agrees to the goals and priorities.
- Post the goals on your project intranet or collaboration space.
Treating all your users alike

No two users are alike.
Sales teams are very different from engineers, accountants or traders. Each group make different demands on their desktops and may need a very different approach to virtualization.

Approaching desktop virtualization as a ‘one size fits all’ exercise almost guarantees that some (if not all) of your users will be frustrated.

Identify your distinct user groups so you can design the right deployment for each.

Take the time to do this carefully and you’ve dramatically improved your chances of a successful deployment.

The five dimensions

There are five main things to think about when you identify and define user groups:

- **Applications** – what do they use, how much and why?
- **Primary location** – where do they spend most of their time?
- **Mobility** – do they need to work offline?
- **Risk tolerance** – what’s the business impact of downtime?
- **Endpoint capabilities** – thin client or the latest PC spec? Which peripherals are essential?

Actions

- Put a team together to focus on creating user groups.
- Complete a needs matrix based on the five dimensions.
- Decide which group(s) to start with, looking for fast time to value.
- Start mapping groups to the different virtualization delivery models.
## Examples:

<table>
<thead>
<tr>
<th>Apps</th>
<th>Location</th>
<th>Mobility</th>
<th>Risk Tolerance</th>
<th>Endpoints</th>
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</thead>
<tbody>
<tr>
<td><strong>Energy Company</strong></td>
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<tr>
<td>Geophysicists</td>
<td>Complex</td>
<td>Field</td>
<td>High</td>
<td>Medium</td>
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<tr>
<td>Office 1</td>
<td>Office apps + Billing</td>
<td>HQ</td>
<td>Low</td>
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<td>Office 2</td>
<td>Office apps</td>
<td>HQ</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Field Sales</td>
<td>Standard office + CRM</td>
<td>Road</td>
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<td><strong>Healthcare Company</strong></td>
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<td>Nurse</td>
<td>Simple</td>
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<td>Home Health Nurse</td>
<td>Simple</td>
<td>Road</td>
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<td>Radiologist</td>
<td>Complex</td>
<td>HQ</td>
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<td>Transcriptionist</td>
<td>Office apps</td>
<td>HQ</td>
<td>Low</td>
<td>Low</td>
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<td><strong>Finance Company</strong></td>
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<tr>
<td>Bank Manager</td>
<td>Office + CRM + Banking</td>
<td>HQ + Branch</td>
<td>Medium</td>
<td>Medium</td>
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<tr>
<td>Trader</td>
<td>Complex</td>
<td>HQ</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Financial Consultant</td>
<td>Office + CRM + Banking</td>
<td>Road</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Cashier</td>
<td>Simple</td>
<td>Branch</td>
<td>Low</td>
<td>Low</td>
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</table>
Beware of a vendor who wants to lump everyone into the exact same flavor of virtualization. There are different models to consider (we call this FlexCast but you can call it ‘fit for purpose deployment’):

- **Remote PC** – secure remote access to office-based PCs from any device. An easy option for companies who haven’t yet reached full desktop virtualization. *Typical group:* office workers who work remotely part time.

- **Hosted VDI** – a personalized Windows experience, delivered over any network to any device. Central management with full personalization. Up to 150 desktops per server. *Typical group:* product management and administrative staff.

- **Hosted Shared** – locked down, streamlined and standardized on a core set of applications. Little or no personalization. Up to 500 users per server. Big cost savings. *Typical group:* call center.

- **Local VM** – centralized, single-instance management with ability to use laptops offline. Auto-sync of OS, apps and data on connect to a suitable network. *Typical group:* sales force.

- **Streamed VHD** – leverage rich client processing power with centralized single-image management. Easy, low-cost start-up that uses existing PC resources to minimize datacenter overhead. *Typical group:* government lab with secure, specialized (and often diskless) hardware.
Failing to accurately estimate your hardware needs up front

It’s important to estimate just how many servers and how much storage you’ll need for your virtualization program. If you underestimate, you’ll either deliver a poor user experience (with too many users per server) or be forced to go back to your sponsors for more budget (which never looks good).

But if you overestimate your infrastructure needs, you can kill the business case before you even get started.

Never buy hardware before the Assess and Design phases of your project.

This is a classic mistake for first-time virtualization teams and it’s easy to avoid. Just make sure you’re buying what you really need – by going through a proper Assess and Design process first.

The virtualization plan and sizing chart breaks down your needs by user group, and prioritizes how you roll out your virtualization environment.

Actions

• Hold off your hardware purchases until you’ve completed your Assess and Design processes.
• Start your project in the Project Accelerator – it will guide your Assess and Design phases and help with the resulting hardware estimates.
• Plan for extra capacity in case a single controller fails. If the load calls for two controllers, deploy three (the N+1 rule).
Failing to **understand your apps** before migrating

Application migration is too often an afterthought in desktop virtualization programs. But apps are a critically important variable.

The best-run virtualization program will still struggle – and users will revolt – if you can’t bring the business’s most important apps with you.

Invest the time in analyzing your application estate and identifying any app migration problems.

**Start with a survey**

The first step in understanding your application estate is simply to know what apps you have, who’s using them, how they use them and how often.

Automated survey tools can be essential here – but you’ll also want to validate your findings by sitting down with some representative users and talking to them about the applications they depend on.

**Rationalize**

A virtualization program is the ideal opportunity to rationalize your application estate, killing off apps that no one uses or when a better alternative exists.

A rigorous rationalization process can remove 20-40% of your applications, saving money on licensing and support – and saving you the time, money and effort of migrating them to your virtualized platform.

**Actions**

- Inventory your applications and their usage.
- Work with users to determine which apps you want to keep.
- Run a rigorous app-compat testing program to spot remediation needs early.

**The App-Compat imperative**

It’s important to make sure that all key applications are compatible with virtualization before you go too far in any direction. At some point, you’ll need to test but there’s a fantastic application compatibility tool that can speed up this process dramatically. It’s called App-DNA and we liked it so much we bought the company.
When you move to virtual desktops, you're not really migrating desktops or applications – you're migrating users.

Get it wrong and you'll hear a high-pitched screeching sound – that’s your business grinding to a halt.

But get it right and you’ll have delivered a fantastic new experience to your users – and a new way of bringing IT to the business.

**Selling the benefits**

Nobody likes change unless they see the reason for it. As the standard-bearer for your virtualization program, you need to sell users on the advantages.

Your user groups will help here. Map the benefits of virtualization to each group’s needs and ways of working. For road warriors, the ability to access a desktop from anywhere will be important. For others, you may want to emphasize the ability to Bring Your Own Device; or work from home; or speed up changes.

And don’t forget to tell users about the benefits to the entire business. The more they understand the goals, the more on-board they’ll be.

**Include users early**

The best migration processes include time with users before, during and after. And it’s not just for selling the change – it’s for listening to their needs and learning about the way they like to work.

Time spent with users is always repaid.

**User experience testing**

No amount of listening and handholding will help you if the user experience on the new desktops is poor.

Make sure you test the performance of your desktops before rolling them out to the world. Get it right and you’ll deliver an experience at least as good as their old desktops – with lots of added benefits.

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**Actions**

- Earmark time and budget for user input, handover, training, education and support.
- Manage expectations: don’t over-promise; tell it straight.
- Test, test and test again to make sure you have the user experience you need… before you roll it out.

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**Keep the user experience central to your program – and bring users along with you step-by-step.**
Don’t just scale up your Proof of Concept

A Proof of Concept (PoC) is an important step for most virtualization projects – to make sure you can stand up a simple design with the hardware and applications you expect to support.

But a PoC is very different from a fully scaled-up production environment.

Unfortunately, many desktop virtualization projects go off the rails because they simply scale up the basic PoC architecture and roll it out to a massive user base.

It’s critical to design for scalability once your basic Proof of Concept is done.

Desktop virtualization is big news. It can be tempting to get so excited about your POC that you simply promote it to production and let end users have at it… resist that temptation.

And even when you do create a new design for your first roll-out, think in phases instead of one big leap. Your life will be much easier (and your deployments will be much more likely to stand up first time).

Actions

- Design for a scalable environment not just a PoC.
- Roll out in phases if you can.
- Test each rollout phase with proper resilience and scalability testing.
- Use the Project Accelerator to create an architecture and sizing plan.
Not planning for the future

Businesses change. A lot.

But many desktop virtualization programs seem to fixate on current needs only. So they out-grow the architecture far sooner than they’d planned.

Part of planning for the future is to look at your entire virtualization program up-front — even if you’re starting with a single group and rolling out slowly. Knowing where you’re going will inform some short-term decisions.

Think big. Start small.

Build out your architecture based on the specific needs of each of your user groups. This diagram (produced by Citrix’s Project Accelerator) illustrates how different user groups’ needs map to desktop delivery models and supporting infrastructure. Get this right, and you’ll have a robust platform to deliver your project.
Successful deployments are all about taking baby steps. That means starting with a single use case and a small group of users. Most companies choose to start with the easiest use case for the quickest wins. Others like to start with the hardest use case to torture-test scalability and performance issues.

**Plan to scale**

The key is to always keep one eye on wider organizational needs as well as the needs of each tactical group. Build your infrastructure in a way that you can easily scale it. For Citrix components that is typically pretty easy, since you can just scale-out horizontally (i.e. add more controllers).

For the underlying infrastructure, it takes some planning. You need to estimate the maximum number of users and plan network (i.e. subnet or throughput), storage (i.e. disk space or IOPS), rack space and power accordingly. When you understand how to scale the infrastructure and where the bottlenecks could be, you can build a good rollout plan.

**Actions**

- Ask key line-of-business leaders how their world will change in the next 12-24 months and make sure you plan for it.
- Get your bigger picture strategy in place before you do the design for your first group.
- Estimate the maximum user base and plan your hardware accordingly.
- Use the Project Accelerator to easily create an Architecture Overview that incorporates all of your potential target user groups.
You can do this

The benefits of desktop virtualization are beyond dispute and best-practice deployment processes are also well understood. But we still see projects that grind to a halt because they’ve fallen into one of the pitfalls discussed here.

We hope this summary of the 7 major pitfalls will help you steer clear of the problems and sail straight to value.

Follow the three steps

Take your desktop transformation project one step at a time and you’re much less likely to stumble:

1. **Assess** – decide what you want to do for which users

2. **Design** – create the right architecture for your users and goals

3. **Deploy** – implement your design, step by step – testing for performance and scalability before going live

Best-practice advice for each step in this process is captured in the free **Project Accelerator** – our web-based project management environment that guides you through each step, generating recommendations and plans specific to your needs. Give it a go. project.citrix.com
We've captured the best practices of our top consultants and packaged it up to make every step easier.

Answer a few questions about your users and apps in the Assessment module and we'll generate your recommended priorities, models and designs – including hardware estimates.

Project Accelerator is where people like you manage their move to desktop virtualization.

The Assess section helps you define and focus your project.

Try it right now: project.citrix.com
About the Project Accelerator

Try it right now: project.citrix.com

When you’re done with the Assess section, download your Virtualization Plan and Sizing doc, plus an Architecture diagram to get you started.

The Accelerator generates a five-layer Architecture Overview for you.

Your Virtualization Plan & Sizing gets you off to a great start.
More resources

Our XenDesktop Blog
For best-practice advice from some of our top people

The XenDesktop Support Forum
There’s not a lot this community doesn’t know about desktop virtualization

The XenDesktop Design Handbook
With reference architectures, planning guides and lots more

The Citrix Knowledge Center
Dig in - we share everything we know

eDocumentation
All our documentation in an easy-to-use format

The Ask the Architect blog
An excellent team blog by some of the best in the business

Podio
The social collaboration platform that you make your own.

AppDNA
The application compatibility testing tool that accelerates and de-risks migration.
We’re Citrix consultants, teachers and support engineers and we’re all about one thing: making sure you succeed.

With our help, you’ll deploy high-performance, robust virtualization and networking projects, faster and with dramatically lower risk and higher return. From free online tools and 24x7 support to intensive training, live events and deeply committed consulting engagements – we’re here for you.

How we can help

**Citrix Consulting**
Intensive engagements for complex, critical or just plain massive projects.

**Citrix Support**
Always-on support services that leverage everything we know about best-practice deployment and maintenance.

**Citrix Education**
The fastest, most efficient way to get your team the virtualization skills they need. Online, on-site or in class.

Plus free tools & resources, including:

**The Knowledge Center**
Online forums, documentation and support resources

**Citrix Auto Support**
The automated online troubleshooter and health-checker.

**Be sure to check out Project Accelerator:**

**Project Accelerator**
The project management environment for your entire desktop virtualization project.