Envisioning Effective Virtual Desktop Infrastructure

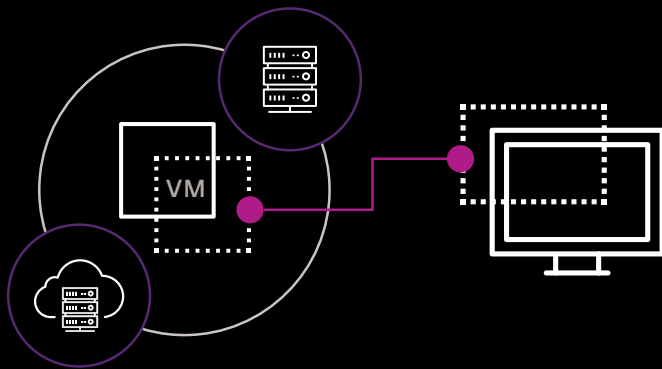## Understanding VDI definitions, misconceptions, benefits, and principles for success

As companies look for new ways to meet workforce needs while accomplishing business goals, solutions that deliver in the areas of collaboration and control are especially attractive. One such solution is Virtual Desktop Infrastructure (VDI).

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Defining VDI

Desktop virtualization came on the scene in the early 2000s and has evolved drastically in the decades since. Today, the acronym VDI is often used as a catch-all name for a variety of different delivery mechanisms enabling users to access apps, data, and desktops. In this informal use, VDI can refer to a numbers of solutions, including:

- Shared hosted desktops
- True virtual desktops
- Virtual apps
- Software as a Service (SaaS) apps

The true definition of VDI, however, is purely virtual desktop infrastructure: a server in the data center — either on-premises or in the cloud — running a Virtual Machine (VM) that hosts a desktop Operating System (OS) for users to access remotely.

Bottom line: Virtualization takes many forms and not all virtualization is VDI.
VDI leverages virtualization to enable users to access what they need to do their jobs.

Why choose VDI

Done correctly, the benefits of VDI are substantial. It consolidates most of the heavy computing work in a company's data center, allowing it to issue lower-cost devices and save on hardware costs. It helps support remote workers by providing the IT department centralized control and simplified deployment for new employees. It also makes it easier to protect the organization from a breach by keeping all data inside the data center or cloud instead of on individual machines.

Key features and benefits of VDI:

VDI gives users access from anywhere to applications running on the corporate network.

Applications and data remain securely in the data center or a cloud location (not on a user's device).

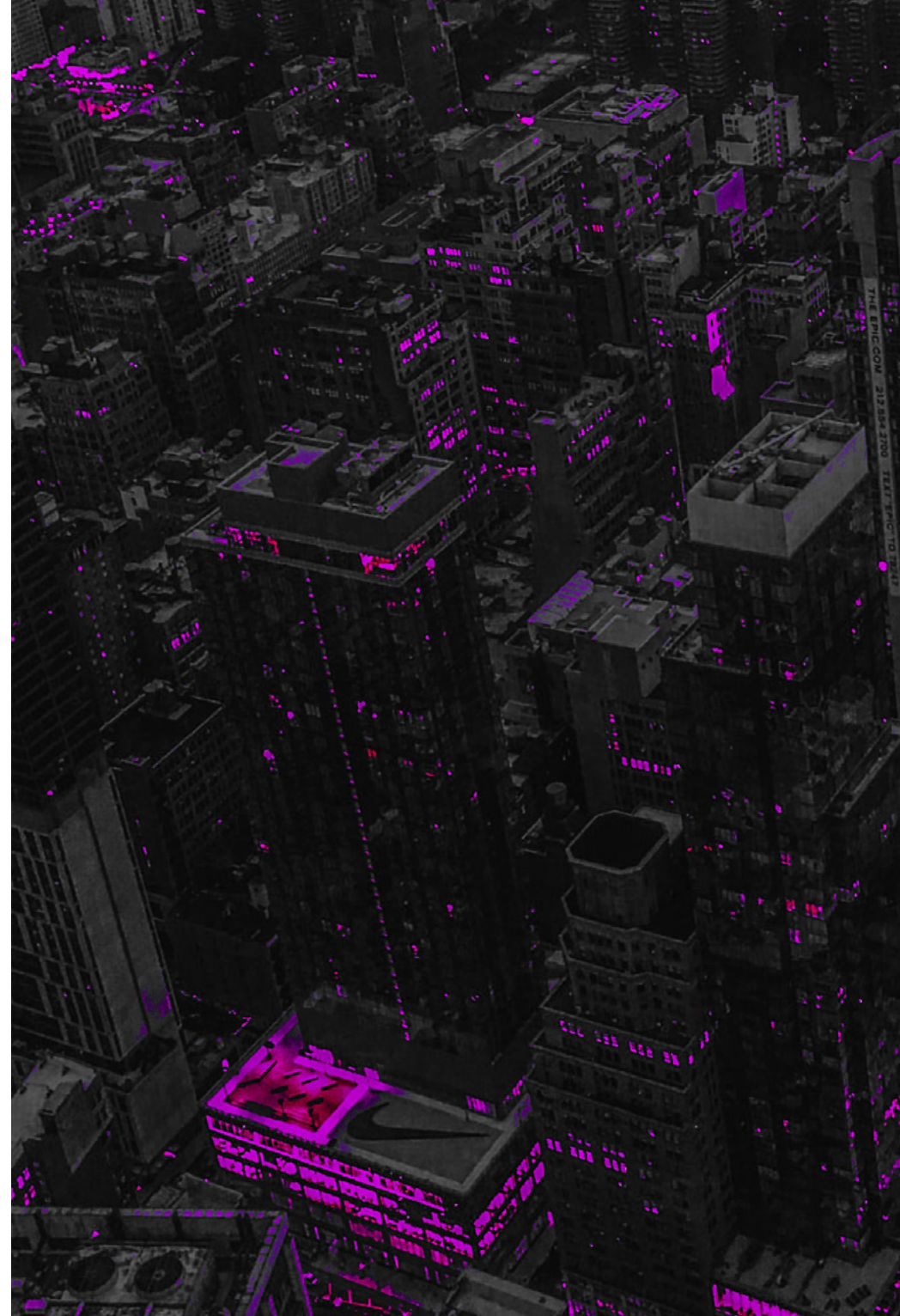IT management is centralized, with better access controls.

Data loss and downtime due to maintenance issues or upgrades are far less prevalent.

VMs can be quickly spun up for dev/test, contractors, or other specific needs.

One of the biggest draws for VDI is the standardization of the backend operating system. You can create customizations for various user needs, but every user is running off the same base template across the board. This standardization drives exceptional improvements in the areas of security and manageability, which in turn support a higher quality user experience for a more productive workforce.

Security

Whether your data is in the cloud or an on-premises data center, you benefit from the added layers of protection and reduced attack surface VDI delivers. The centralized administrative controls enabled in a VDI environment provide simplicity in administering several levels of security.

For example:

- Data lives behind the firewall in the data center rather than at the endpoint.
- Application delivery controllers allow you to set policies for anomalous behavior.
- Access control is customizable and streamlined.
- In the event of a compromise, patch management is quick and comprehensive.
- Governance, risk, and compliance solutions can be applied to desktop workloads.

Manageability

Managing devices, user profiles, and operating systems is incredibly streamlined with VDI. You can push out a piece of software or OS patch without having to touch every device in your network. Since every desktop instance runs from the same program, IT can easily implement or change something in the environment across the board. This eliminates many of the challenges of rolling out updates, making it simpler and more affordable long term to maintain an efficient, secure, and up-to-date IT environment that supports an improved user experience.
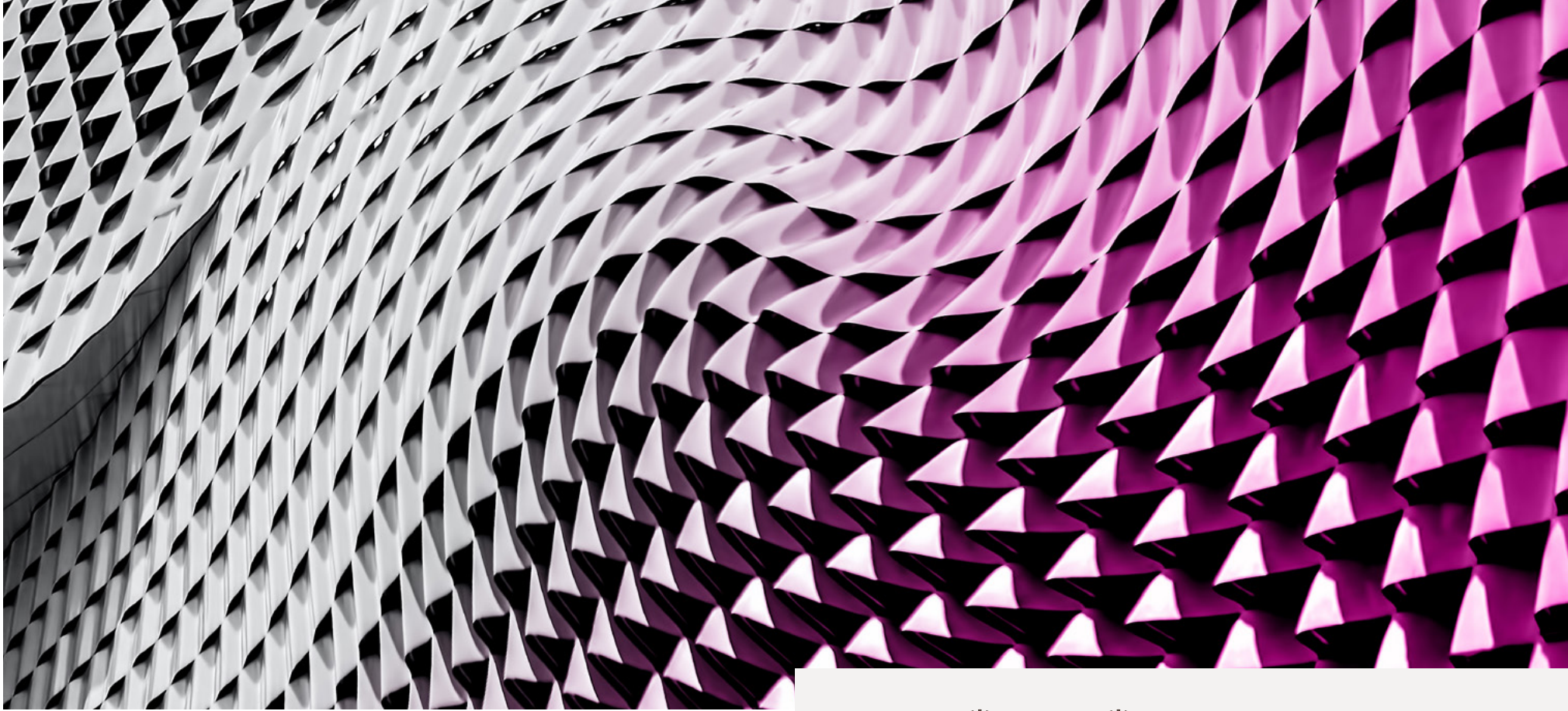
User experience

The flexibility and functionality of using virtualization for desktop applications delivers benefit for the end user as well. A well-planned and executed VDI strategy is crafted around how to ensure an improved experience for users in the workplace who drive the most business value. When this is taken into consideration, VDI can drive a higher level of workforce productivity and support agility and continuity for business transformation.

"If we want to be more efficient, if we want to gain a competitive edge in whatever our business is, then we have to improve the user experience. We have to enable them to do more with less, and that means less interruptions, less change to them long term. And the only way to accomplish that is to modernize how you're operating from an IT perspective when it comes to the user experience."

Matt Darlington, Managing Architect

Creating a more efficient work environment

There's a tendency in organizations adopting VDI to try to cut corners by setting up the environment to meet the needs of the easier users – those who require fewer, less demanding functions and applications. But the way to create value from a VDI environment is to discover which users in the environment deliver the highest business value and to design the environment to best serve those users' specific needs in a way that simplifies the work process and enables stronger results.

VDI sessions are available to users immediately, and if configured correctly, offer improved speed, thanks to data locality. VDI also improves efficiency by delivering data center solutions that turn processes that take hours or days into processes that take only minutes. IT can also enable multiple sessions to increase the number of projects in progress.

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Example: Enabling simultaneous projects

A team of scientists putting together astronomy packages had a dedicated computer in the office specifically for compiling code. Compiling this code would take weeks at a time, rendering the team unable to compile code for more than one project at a time. We upgraded the company to VDI, immediately improving the performance speed of its programs. This change also enabled the scientists to open new VDI sessions while others are compiling, making it possible for the team to now work on more than one project at a time.

Supporting agility and continuity

The efficiency that comes with standing up a well-planned VDI environment is a great enabler of agility. When IT is freer to spend resources in more strategic ways and employees are empowered to be more productive during workdays, it's possible to accelerate your modernization initiatives, protect business continuity, and support ongoing transformation.

Example: Business continuity despite COVID-19

One client in the manufacturing business pivoted to VDI shortly after the COVID-19 pandemic hit. Fortunately, it had been planning the move for some time and already had much of the groundwork laid for adoption. Much of the company's revenue is dependent on users who design and produce the company's products — job functions that are highly dependent on graphics-intensive applications.

When the pandemic caused much of the workforce to shut down or go remote, the company's largest competitors fell off. Enabled by VDI to not only work remotely, but to empower its workforce with even better graphics processing than before, the company was able to improve the user experience and execute flawlessly to not only maintain business continuity but to gain significant market share.

When to consider VDI

The benefits of VDI make it an effective solution for many use cases. Most people know of VDI as a remote work enabler, but it's also especially helpful for situations in which:

- A user relies on the same tools or applications across multiple devices
- Many users rely on the same device
- Different environments are needed for different users within the work environment
- Centralized or custom controls are needed to manage access to data and applications

Example use cases

Healthcare

VDI enables custom permissions for each medical professional's desktop environment and allows consistent and convenient access regardless of device or location.

Field techs

VDI provides remote workers of all types with reliable access to the tools they need, wherever they have connectivity, on both corporate and personal devices.

Shift work

VDI enables effective device sharing with fewer endpoints than users, allowing individual workers to access their own desktop environment for their shift.

VDI myths examined

Technology solutions that deliver impressive results are almost always bound to be misunderstood. VDI is no exception. There are two common myth-based sentiments we hear about VDI regularly:

#1: "I want to save money, so I'm going to VDI."

Myth: VDI is a sure way to save money.

Reality: VDI can deliver strong value over time, with the right strategy in place. Simply adopting VDI will not reduce costs — in some cases, it entails significant upfront costs, especially when the hardware and software involved require upgrades to your network and storage solutions. However, with a strategic approach to adoption and management, the initial investment can result in savings over time through benefits including reduced hardware needs, improved productivity, stronger security, and simplified management.

#2: "Desktop is dead; VDI is the new desktop."

Myth: VDI will replace the traditional desktop.

Reality: People have been saying this for years. If VDI was going to replace physical desktop environments, it would have already. Traditional desktop infrastructure isn't going away anytime soon, simply because VDI is not the best framework for everyone. VDI is not a one-size-fits-all solution. Adopting VDI requires considerable upfront work to match the solution to your workforce and ensure no loss of performance or user experience. If you reduce the user experience, you won't see the long-term value of your VDI infrastructure, and many organizations are simply not prepared to adopt VDI with the commitment it takes to make it worthwhile.

VDI vs. VPN

In the discussion of remote access solutions, we often come across the question "Are VDI and VPN the same thing?" They do both enable remote access, but they are entirely different tools and not at all interchangeable.

The biggest difference between a VPN and VDI is that a VPN puts a user's physical machine on their corporate network. VDI is the user's virtual machine already running inside the data center in the corporate network — the user is only interacting with it visually at the endpoint, seeing what the monitor would look like, interacting with a keyboard and a mouse, but it's running in the data center.

So, with VDI, applications are running on those servers that are behind the corporate firewall, behind your intrusion detection, etc.

VPN is simply a connectivity method; it's a single point of authentication, and it is a functional solution for access to data from the endpoint, but it should ultimately be paired with other security parameters and solutions to be most effective.

VDI is much more comprehensive, as a solution for both access and security. With VDI, if it's implemented properly with application delivery controllers, you reduce the attack vector and gain visibility into your environment.

Advice for successful VDI adoption

Adopting technology requires that you adapt your processes and policies. Organizations that adopt new technology and keep the same processes and policies will fail to reap the desired rewards. With that in mind, here are a few considerations to keep in mind for more successful VDI adoption:

01.

Plan upfront by looking at business requirements and segmenting users and use cases to deliver the best experience for the users whose work will have the most business impact.

02.

Understand that performance is connected to your total environment, including Active Directory® (AD) integration, network bandwidth, proper Quality of Service (QoS)/lack of QoS, etc. Prepare ahead of time to ensure your infrastructure is well-matched to your VDI implementation.

03.

Quantify the benefits of VDI adoption. Making a change that affects end users has to be done carefully. Adopting a method to measure performance so that you can back up the decision with empirical data as to the benefits will support a smoother transition.

04.

Cross-pollinate skill sets and prepare to drive a cultural shift. The clients that have been most successful with VDI have cross-pollinated technical skills across teams, creating integration of teams across the business and awareness of how certain functions will impact the environment as a whole.
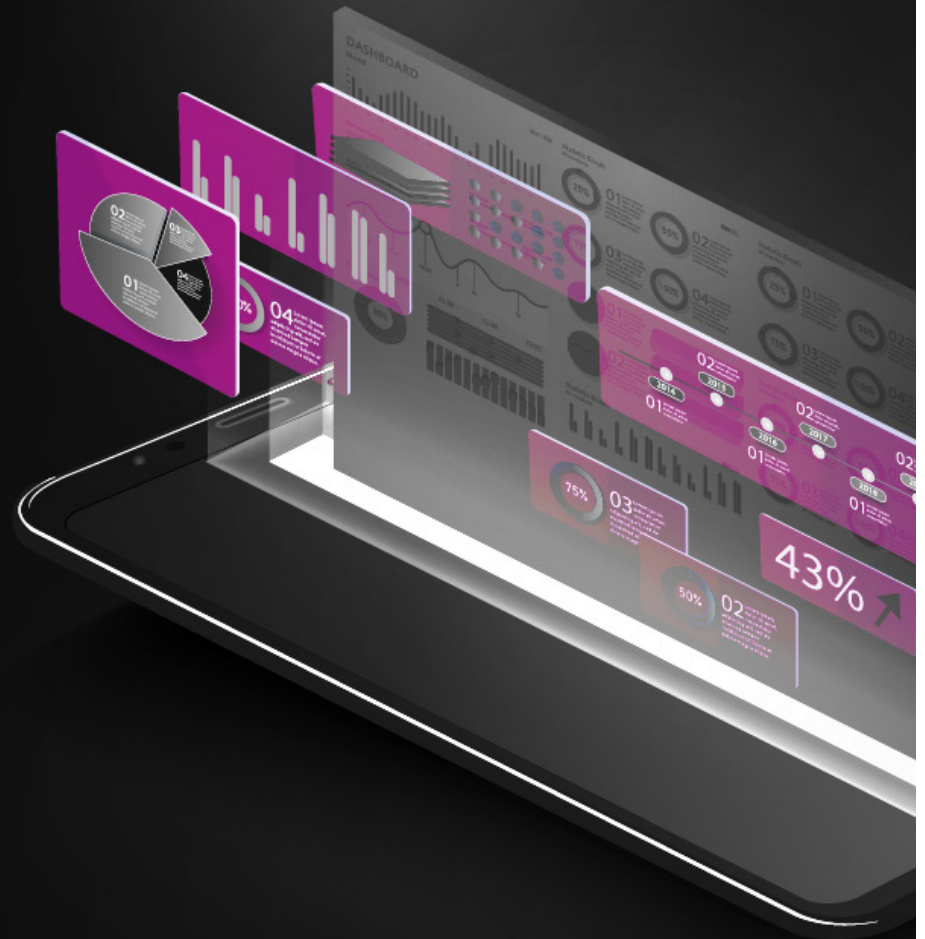
In conclusion

If you do choose VDI, prepare yourself for the variety of needs that will come along with it. Virtual desktops on their own will not solve challenges such as poor application performance, CPU overload, and resource overutilization. But for every challenge, there's a solution, whether hardware upgrades, **migrating your VDI to the cloud**, or adding virtual GPUs (vGPUs) to your client virtualization strategy.

Interested in learning how vGPU-enabled VDI can improve the user experience with better mobility and more seamless integrations? Check out the whitepaper "**vGPU and VDI for an Efficient and Productive Remote Workforce**."

VDI is a long-term strategy for business transformation that delivers improved capacity, security, and controls for those with the capabilities to implement and manage it well. Whether and how you choose to implement it will depend on your business goals and your unique workforce.

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