REVOLUTIONISING DESKTOP COMPUTING

An Introduction to Hosted Desktop Infrastructure

White Paper from Nuage
Version 3.0

Challenges of Traditional Desktop Computing

Desktop computing lies at heart of the IT infrastructure for businesses of all sizes, from small businesses with just a handful of users, to the largest of enterprise organisations. The PC has become an essential business workhorse, acting as the main productivity tool and company interface for the majority of employees. However, the desktop PC wasn't really designed to meet the needs of today's business users, it's a Personal Computer, not necessarily best suited to the increasing demands of business usage or to being an easily integrated part of a unified infrastructure. As a result, the disparate architecture of multiple end-user devices has led to significant headaches for IT departments and individual businesses.

Though desktop PCs have become indispensible to business, PCs are difficult to manage, maintain and secure, hard to scale and depreciate in value as technology rapidly advances. Though PC desktops should ideally be uniform across a business, or across an individual department within the business, in practice these desktops are continually modified by end users until they bear little resemblance to their starting state, which inevitably impacts on their performance and compatibility.

Similarly, whilst each PC requires the latest anti-virus software, firewalls, password managers, spam-filters and more, in reality these tend to be managed piecemeal by a combination of the end user and an IT administrator, and that's if they're being maintained at all. Similarly, because data is housed locally on devices whose physical security isn't necessarily assured – particularly so in the case of laptops – cases of valuable and confidential information being lost or stolen are becoming all too common.

This also has implications for businesses whose industries are subject to strict regulatory compliance. It's hard enough picking your way through the minefield of ever-evolving compliance requirements, without then having to worry about how to ensure your disparate users are keeping in line with those requirements.

Whilst deploying basic patches and updates is a laborious and haphazard process, even worse are new applications, which require lengthy testin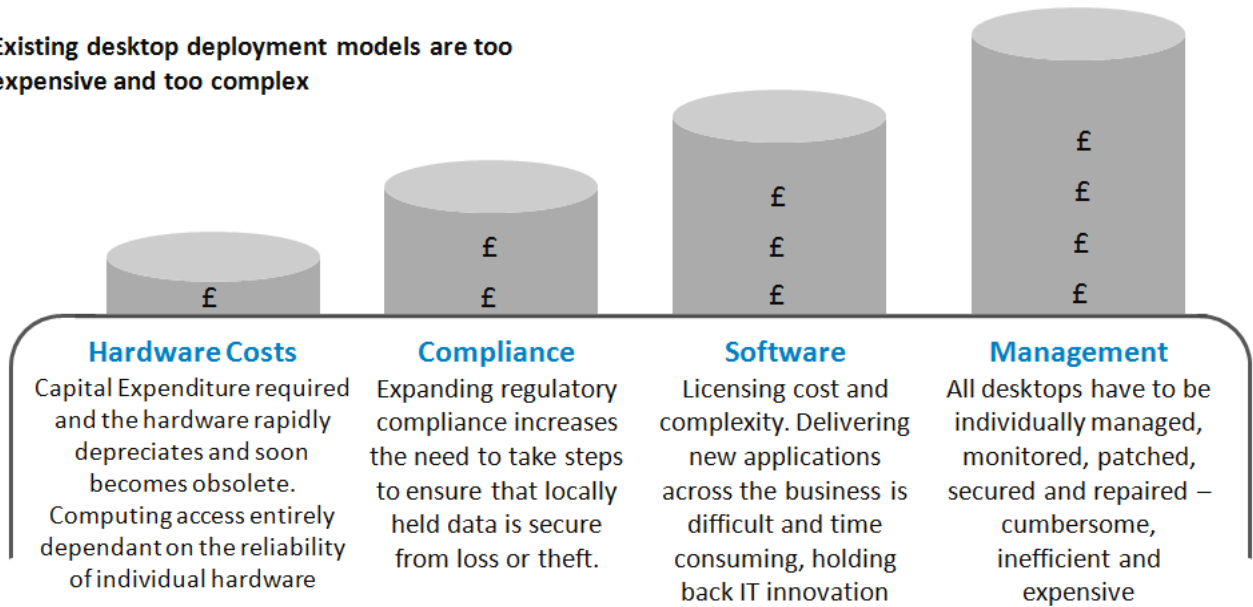g and deployment timeframes. Inevitably, this holds back IT innovation meaning far too much time is spent simply keeping the lights on as often as possible rather than using the time and money invested in IT to actively add value to the business.

Finally, this whole model has a decisive, single point of failure – the PC itself. If anything goes wrong with this – either in the short-term, such as a crash or repairable virus infection, or in the long-term such as hardware failure, loss or theft – then everything goes wrong; productivity is instantly affected and, unless strict procedures are in place and adhered to, valuable work and data is lost.
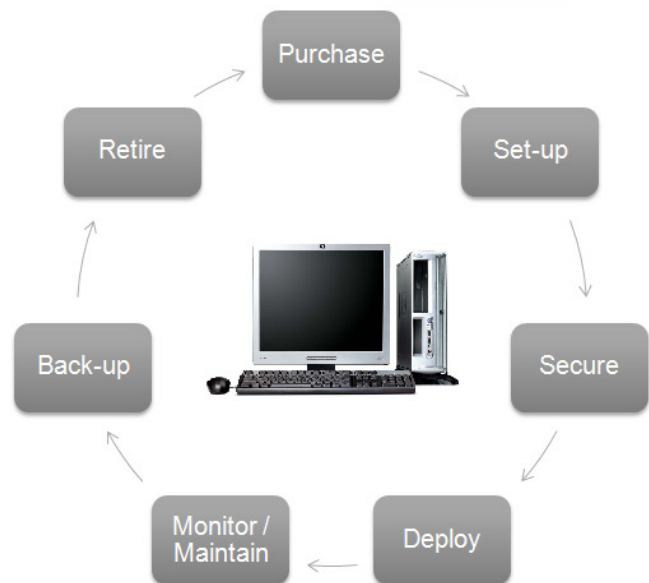
All this means that procurement – in itself a Cap-Ex intensive process - is just the first step in owning and running a desktop PC in a business environment. Of course, that makes for not just a cumbersome and limited model, but also an expensive one.

Existing desktop deployment models are too expensive and too complex

Hardware Costs
Capital Expenditure required and the hardware rapidly depreciates and soon becomes obsolete. Computing access entirely dependant on the reliability of individual hardware

Compliance
Expanding regulatory compliance increases the need to take steps to ensure that locally held data is secure from loss or theft.

Software
Licensing cost and complexity. Delivering new applications across the business is difficult and time consuming, holding back IT innovation

Management
All desktops have to be individually managed, monitored, patched, secured and repaired – cumbersome, inefficient and expensive

As such, though people often think of the cost of a desktop as simply being whatever it takes to procure a PC or laptop, this is hugely misleading and ignores a whole raft of additional costs of ownership.

Indeed, Gartner has reported that "TCO for PCs can range between $4,000 and $9,000 (or more) per user per year".

Interestingly, according to Gartner, the largest cost component of desktops is the so-called 'soft' or 'hidden' costs of end user management, which actually account for more than every other component combined.

As a result, traditional desktop computing isn't particularly efficient, responsive or scalable, nor does it readily lend itself to the mobile access requirements of business IT today.

Source: Gartner Research
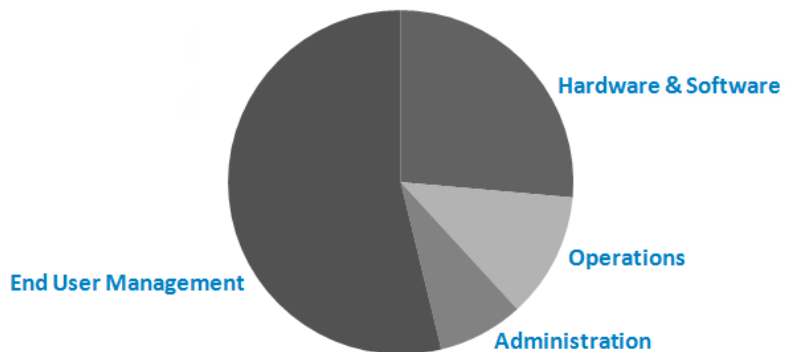
In response to this there's been widespread industry examination of how to reduce the costs and improve the reliability and security of desktop computing. A number of answers to these problems, or at least to some of these problems, have emerged, but technologies such as remote-access clients, server-based computing and VDI tend to only address some of these concerns and/or bring new problems to the table.

What this White Paper proposes is a new approach to desktop computing, one which challenges the fundamentals of traditional desktop infrastructures whilst both retaining a familiar end-user experience and adding a host of new features, together with vastly improved security. This approach takes advantage of the latest industry developments in both hardware and software, leveraging these new technologies to overcome the problems associated with traditional desktops. This White Paper proposes that a Hosted Desktop Infrastructure is the ideal desktop delivery model for businesses for all sizes and looks at how the technology works and what benefits it can bring to businesses of all sizes.

What is a Hosted Desktop Infrastructure...?

In simple terms, a Hosted Desktop Infrastructure is one where personal desktops no longer reside on a specific piece of localised hardware (i.e. a desktop PC or laptop) but are instead hosted by a third-party such as Nuage and delivered to individual end users from centralised datacenters.

End users can then remotely access their individual desktops from any terminal with an internet connection. As can be seen below, this terminal could be a desktop PC, a laptop or, for maximum efficiency, a thin client. However, though the user can access the desktop and their individual data from any location, the data itself never actually leaves the datacenter. As such, Hosted Desktops are far more mobile yet also are more secure than traditional PCs. In terms of delivery and experience, Hosted Desktops require no IT expertise and the server and software infrastructure powering the desktops remains invisible to its end users.

Hosted Desktops - Fast Facts

End User Experience Is Identical To Traditional PC

Each Desktop Belongs To A Specific User

All Data Resides In Secure Datacenters

Data Delivered Using Industry-Standard Encryption

Desktop Includes Windows Together With All Applications & Data

That said, in simple terms the technology stack behind the Hosted Desktop model has five components.

1. Server Infrastructure Housed In Secure Datacenters

The Hosted Desktop model is based on a server infrastructure housed in multiple datacenters based around the world. These servers are constantly replicating to ensure the infrastructure is fully redundant and has 99.99% uptime, even in the event of a disaster. In this respect, Nuage operates on true cloud computing, whereby the resources of all the datacenters are centrally available and can be seamlessly deployed to any customer on demand.

Because all data resides on these servers and the accompanying SAN infrastructure, it's totally secure – it cannot be lost or stolen and because it's regularly backed-up users can simply restore their desktops to a previous state in the event of any data loss or damage. As for the datacenters themselves, these are state-of-the-art installations, monitored, maintained and staffed 24 hours a day, 365 days a year.

2. Virtualisation Layer

Virtualisation technologies such as VMware, XenDesktop and Parallels are used to create 'virtual' desktops by carving these servers into multiple isolated environments, each with full OS, applications and functionality. At Nuage, we use a mix of virtualisation technologies, woven together with our own custom management and automation software.

3. Connection Broker

A connection broker is used to manage the end user's connection to his/her virtual desktops. In essence, it provides session authentication, either to seamlessly direct the end user to their own desktop or, in the instance of desktops being created on demand, to provide the end user with a desktop based on their set user profile and requirements.

In addition, the connection broker provides enhanced connectivity to ensure that the desktops can be accessed at native speed and allows for additional functionality such as local printing, file access and USB integration. Examples of leading

Access and Print Documents Anywhere
Connect to your desktop remotely, access and print locally

connections broker technologies include Provision Networks, Leostream and Ericom.

4. The Internet

Virtual desktops are streamed to the remote terminal using industry standard encryption to ensure that data cannot be viewed by external parties. Local mouse movements and key strokes are then seamlessly relayed to the datacenter using the same encryption protocols.

 As the data itself never leaves the datacenters and is never actually transferred to the local device, this means that if a desktop is accessed from, say, an internet cafe, there is no possibility that the data could be retrieved by someone else once the session has been terminated.

Data Security
Controlled access to centralised data repository. Data never leaves the datacenter

5. The Terminal / End User Access Point

There are a number of different terminals that can be used to remotely access a Hosted Desktop – the key requirement is internet connectivity. In the case of existing hardware, both desktop PCs and laptops can be used, either to avoid additional capital investment or to allow older machines to run the latest technology at high performance levels (as all the processing power exists in the datacenter

Alternatively, for maximum efficiency, a thin client can be used. Because thin clients have very little computing power of their own, they're small, inexpensive, consume a fraction of the power of a PC, need little or no maintenance and rarely go wrong.

Extend PC Life
Convert old PCs into high performance remote access terminals running the latest business applications

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Why Consider Hosted Desktops?

Using the Hosted Desktop model not only solves the problems associated with traditional PCs but brings a number of key benefits over and above both PC infrastructure and creating an internal VDI solution.

Cost and CapEx Reduction

Rather than investing in depreciating assets, which require expensive Cap-ex in the first place and drain the business's resources, opting for a Hosted Desktop means it's no longer necessary to purchase PC infrastructure or office applications. Instead, a Hosted Desktop provider should provide you with a transparent, subscription-per-user model, ensuring predictable monthly costs rather than large, lump sum expenditure. With businesses and IT departments under huge budgetary pressure due to current economic circumstances, this model makes more sense than ever, allowing businesses state-of-the-art IT without strangling budgets.

Connect Anywhere

Hosted Desktops are ideal for mobile working, proving anywhere, anytime access. Because the desktop and all its data, settings and personalisation resides centrally, it can be accessed from anywhere with an internet connection, making it the ideal solution for home working, hot-desking and mobile workers.

Research shows there's already a significant penetration of mobile workers across the UK, with nearly a quarter of all businesses polled considering more than half of their employees to be mobile workers in some capacity. However, mobile access doesn't just benefit individual user groups but all users – because anyone can access their desktop from anywhere, people can work from home, on the move, in a internet cafe, at a second office or even abroad, on a case-by-case basis.

Mobile Workers Within The Business

Source: ZDnet
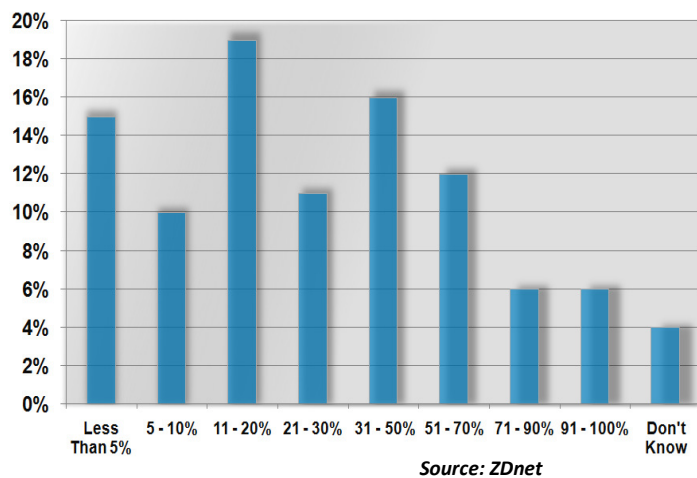
No Management or IT Experience Necessary

Hosted Desktops are easy to use and easy to deploy. All initial set-up and configuration of the desktops, and deployment of applications into them are handled by the hosting provider, from an end user standpoint it's simply a case of switching on, connecting in and away you go. Similarly, it's no longer necessary to patch and maintain your desktops personally, or to worry about application compatibility or upgrades, the hosting provider can take care of all day-to-day IT administration.

Increased Computing Power

The speed with which technology is advancing means that PCs are typically becoming obsolete in as little as 12 months as they struggle to cope with the demands placed on them. Being part of a hosted infrastructure means desktops have access to server class processing power, no matter what end device they're accessed from. This means desktops are automatically kept up-to-date with the latest computing technology at the backend, even though the access point might be a decade old PC.

Reliability and Uptime

A Hosted Desktop provider should give 99.99% uptime guarantees, with global multi-site failover on its infrastructure, simple back-up-and-restore capabilities available on its desktops and phone and email support available 24/7.

For smaller businesses, this means access to enterprise class IT which would otherwise be beyond their budget and expertise.
For medium and enterprise businesses, this removes the headache and capital expense of building a full disaster recovery solution and running a large support department for their desktop infrastructure.

Hosted Desktops - Fast Facts

No Capital Expenditure

Hassle-Free Set-Up & Maintainence

Desktops With 99.99% Uptime SLAs

Fully Supported Around The Clock

Backup-&-Restore Functionality

Security

More and more stories of confidential information being mislaid are hitting the press every day, with laptops particularly at risk, and many companies have had painful experiences of departing employees illicitly taking valuable company data with them to a new employer. However, with a hosted desktop infrastructure end users no longer house their own data, nor is it tied to a specific piece of hardware, meaning company information is secure and cannot be lost, stolen or inadvertently erased.

One Simple Platform
No more worries about synching data and applications across office desktops, home PCs and laptops – one desktop platform, with all your files, accessible from any terminal

Global Access
Securely connect to your own personal desktop from anywhere in the world with internet access

Scalability – Desktops on Demand

One of the most impressive advantages of Hosted Desktops is the complete flexibility they allow, because they can be provisioned and delivered on demand. That means if a new employee joins the business, their own desktop can be made available in a matter of minutes, simply by clicking a few buttons to add them to the existing account. This makes the hosted model a perfect fit for growing businesses but also means the model can be easily applied on a gradual basis, it's not an 'all or nothing' approach. For example, if a 100 employee business has 20 users' PCs that are coming to their end of their lifecycle, these 20 users could be moved onto a hosted desktop infrastructure. Thereafter, the business could seamlessly move additional users onto the same infrastructure as and when appropriate.

Dynamic IT

In addition to the above, some Hosted Desktop providers take the infrastructure one step further to allow for a truly dynamic desktop computing model. In essence, this means being able to simply and seamlessly add resources to a desktop infrastructure. Therefore, if a desktop requires more RAM or CPU, this can be added at the click of a button without the user even noticing that anything has changed. This means peaks in demand for computing power can be easily dealt with and, once the peak has passed, resources returned to normal – as a result, it's not necessary to pay for additional processing power when it's not required.

This model also applies to software applications, which can deployed to one or multiple desktops within minutes, without any interruption of service. This means that the laborious installation process and headaches associated with upgrading or add new applications are no longer applicable, massively increasing business and IT agility.

Hosted Desktops – Potential Usage Scenarios

As suggested above, the Hosted Desktop model isn't a case of all or nothing, nor is it a 'one size fits all' approach in terms of who might use it. Whilst it can be implemented for anything from one to one hundred thousand users and can bring benefits to the vast majority, it may initially be more appropriate for users some rather than others.

Similarly, businesses may wish to take a softly-softly approach by finding a specific user group or problem that needs addressing and use this to test the waters before migrating other parts of the workforce on to a hosted model.

Scenario	Problem	Solution
Start-Up Business	No IT Infrastructure of Experience	None Needed with Hosted Desktops
Growing Business	Unpredictable Future Requirements	Desktops and Resources Available on Demand
Moving Offices	Cumbersome Desktop Infrastructure	Virtual Desktops Housed in Remote Datacenter
Workforce Spread Over Multiple Locations	Disparate Desktop Infrastructure	All Desktops Centrally Managed
Budget Restrictions	Pressure on Capital Expenditure	No CapEx Required
Company IT Subject to Industry Regulations	Difficult to Ensure Employee Compliance	User Policy & Data Centrally Managed
Desktop Refresh Due	CapEx Required, Inefficient Model	No CapEx, Enterprise-Class IT
Mobile or Home Workers	Require Local Access to Company Desktop	Anywhere, Anytime Global Access
Task-Based Workforce	Fluctuating No. Of Desktops Required	Desktops on Demand – Switch On/Off as Needed
Green / Environmental Pressures	Desktop PCs Very Power Hungry	Accessible from Highly Efficient Thin Clients

Hosted Desktops – Things to Consider

It's worth noting that there are certain points to consider around the Hosted Desktop model in addition to those covered above. For example, there are some users who will not be suited to a hosted desktop, in particular ones needing graphics intensive applications such as CAD – such users would be best advised to remain on 'fat' desktop hardware.

Equally, Hosted Desktops are not ideal for media streaming, which will make them unsuitable for a small handful of potential users. However, for the most part, businesses will be more than happy for their employees to be using a desktop that's *not* ideally suited to watching YouTube.

In addition, the Hosted Desktop model requires users to be connected to the internet via Broadband, Leased Line, 3G or WiMax. Although for large businesses this connectivity can almost always be assumed, it is a point which requires due diligence and happily a number of options are available to increase the resilience of existing connections and to provide for alternate methods of connecting.

In terms of hosting providers, there are also certain things to look out for. In particular the ability to dynamically add resources and applications to desktops should be considered a sign of an advanced back-end infrastructure. It's also well worth asking any prospective provider about their datacenter provisions, which need to be across multiple, geographically-dispersed sites, ideally globally.

Beyond the desktops themselves, if the hosted model seems an attractive one for your business, you may also wish to consider allying it to a number of complimentary services such as Hosted Exchange, Hosted Blackberry, Hosted VoIP & Dynamic Servers.

Case Study – Parcel Country

Parcel Country, a new business run by former senior executives from John Lewis aims to revolutionise the home delivery component of online shopping. With a network of Community Recipients - local people and local businesses able to take in customers' parcels – Parcel Country is designed to address the conundrum of shopping from home: easy to order, hard to deliver.

Already well aware of the benefits of outsourcing IT operations, such as the freedom, cost efficiency and speed of implementation it affords, Parcel Country selected a hosting provider to support and manage the infrastructure they needed to get up and running.

Naturally, a key component of this was employee desktops, for which Parcel Country went for the hosted model. As Robert McCarthy of Parcel Country says;

"By using [Nuage] hosted desktops, we don't have to purchase, maintain and upgrade traditional desktop PCs – instead we access all of the software and data via a secure internet connection. This solution provides us with everything we would normally have access to on an office network but without the costs, hassle and risks of installing and maintaining the hardware and software needed to provide these services. Set-up was almost instantaneous, so we were able to start work right away, and we can easily add additional power, storage, features and functionality as we need them"

Conclusion

The Hosted Desktop model, made possible by recent developments in technology, promises to be the future of the delivery of desktops to businesses of all sizes. In addition to the various specific innovations it introduces, it means that, for the first time, enterprise class IT is available to all. Moreover, the broader concept of IT infrastructure on demand – with its flexibility, efficiency and cost-savings – is perfect for today's uncertain economic climate, with budgets being squeezed and businesses operating in rapidly shifting circumstances.

To learn more about Hosted Desktops, visit www.nuage-it.com where you can find a range of other White Papers and Datasheets or contact us on 0845 868 5743 to find out how the Hosted Desktop model could fit your individual circumstances.

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