

# It's the desktop ... but not as we know it

## A look at the changes taking place in the end user environment and the key factors to consider when developing the next generation of desktop IT.

Our perception of how, where and when we work and the tools we use to perform our daily tasks is changing. This change is not being driven by any one single factor, but rather by a combination of developments spanning business, technology and society. This Capgemini point of view discusses the three streams that are coming together to fundamentally transform our perception of end user IT:

- Business and IT alignment.
- Evolution of technology and its continued penetration into work and home life.
- People and the way they work, play and balance their professional and personal commitments.

How IT decision makers interpret and address the developments taking place within these streams will shape the next generation of end user IT. Of one thing we can be sure... the traditional rules to provisioning the desktop experience no longer apply.

### Business and IT alignment

Today's business decision makers expect more from IT – the support of existing business processes remains a priority but this is typically now joined on IT's agenda by a mandate to contribute to and facilitate the pursuit of strategic and new business objectives.

### The evolving question of cost

These days, IT is required to do more than just keep its own costs in check – increasingly, there is pressure to demonstrate how and where technology can be deployed to save money elsewhere in the business. Energy-efficient IT for power savings, improved communication and collaboration tools for reduced business travel costs and improved productivity, work-from-home IT platforms to reduce office infrastructure requirements – these are just some of the ways in which IT can be deployed to save the business money.

At end user level, restrictions on Capital Expenditure (CapEx) are forcing decision makers to consider how to extract as much as possible from existing IT investments and, where possible, shift the balance of IT spending away from periodic, but heavy, investment, to an Operational Expenditure (OpEx) model in which costs are more sustainable, predictable, and consistent. For many organizations, it's simple – CapEx is out, OpEx is in.

### Improved response times, flexibility and business agility

Merger and acquisition activity, market instability and fluctuating workforce numbers are the realities of business today. As such, they're the realities that IT needs to adapt to if the business is to remain competitive. Practically speaking, IT decision makers need to ensure that the end user IT environment

is capable of seamlessly and cost-effectively absorbing or deleting blocks of users as and when business patterns dictate.

What's more, as technology becomes more deeply embedded within business processes and 'value adding' operations, new IT services and tools will need to be provisioned to users more rapidly than traditional approaches to service provisioning might allow.

These expectations dictate that the end user IT platform be sufficiently flexible and agile to accommodate new services, capabilities and tools as and when they become available and relevant to the business.

#### **Business Continuity and Disaster Recovery capability**

Extreme weather conditions knocking out power at the office or data center, ash clouds leaving workers stranded far from their preferred workstations, acts of terror... the threats are real, have been experienced in recent years and have cost businesses around the world vast sums of money. Downtime or data loss – regardless of cause – translates to lost productivity hours, lost revenue and loss of face. As such, it's simply not tolerated.

Users today – not to mention their employers – expect IT services to be available regardless of whether they're online, offline, at the office, in the home or anywhere between or beyond. For these users, the source of the service is not important. IT needs to understand this and then put the right plans in place and the right technologies to work in order to ensure uninterrupted, seamless delivery of service regardless of what's going on in the world.

#### **IT to improve productivity**

Though important even at the best of times, the recent economic climate has highlighted the need to 'get more from less'. Nowhere is this

more evident than in the workforce, where cutbacks or embargos on new recruitment have become commonplace. The IT department is increasingly being called upon to do more to enable increased workforce productivity, whether that be through empowering sales agents to work more effectively while on the move by providing them with sophisticated mobile devices, or making call logging at the company help desk more consistent and efficient by providing operators with tailored, but simpler, end user experiences.

#### **Carbon footprint reduction**

IT is one of the biggest contributors to the corporate carbon footprint. This view has given rise to the notion of green IT and a great many initiatives aimed at reducing the volume of energy consumed by IT. As legislation such as the UK's CRC scheme becomes more widespread and applicable to more companies, IT's contribution to the corporate carbon footprint will be subject to increased scrutiny.

While conventional approaches to green IT have focused primarily on the data center, Capgemini has found that the group of fixed assets that we collectively refer to as the desktop environment (i.e. desktop and, laptop PCs, printers, etc.) accounts for 43% of the total carbon emissions related to IT.\* As such, carbon implications should be high on the list of considerations when deploying next-generation end user IT platforms – from procurement and energy-efficiency credentials of hardware, through to lifespan and disposal.

What's more, as our understanding of the relationship between IT and corporate carbon footprint matures, the IT department will increasingly be called upon to help facilitate carbon reductions in other areas of the business.

*\*Based on an externally reviewed model using accredited independent data sources.*

## Technology

Rapid advances in technology are nothing new, however, recent evolutions and the rising number of technology options available for business use have created an imperative for change. The days of ‘one size fits all’ are over – it’s time to embrace change and transform.

### End of the XP era

More than a decade after its original launch, Windows XP is finally nearing end of life. Support officially ends in April 2014, though individual software vendors may elect to halt support sooner.

For many companies, XP represents close to a decade’s worth of investment in building an IT service around this platform. It is a stable, well-understood entity, familiar to users and support desks alike, however, the size and age of the application landscape built on this platform present their own, unprecedented, migration challenges. In this regard, the end of XP represents a watershed moment for end user IT.

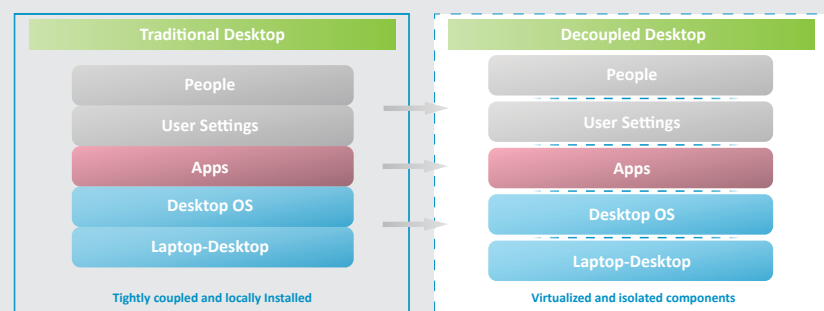
For many, it won’t be a simple case of upgrade and migrate – IT decision makers need to decide whether the like-for-like approach of old is still relevant today. How compatible are existing applications with new platforms and are they all still relevant, and so, worth migrating? Should an Operating System (OS) change go hand in hand with a hardware refresh or is now the time to separate these potentially burdensome procedures in the name of greater flexibility, mitigated risk and smaller, more easily digestible, CapEx hits?

Such decisions will be further complicated by the emergence of new devices and the widening range of OS options available. Continue with XP? Migrate to Windows 7? Wait for Windows 8? What about emerging alternatives – Mac OSX, Chrome,

## De-coupling the desktop ... the emergence of desktop virtualization

The thus-far prevalent approach to what we consider to be the desktop environment has been based on the premise of several components (the applications, Operating System, user setting, etc.) all tightly coupled and bound to a single hardware device. Desktop virtualization is the ‘decoupling’ of these components and the isolation of the desktop ‘image’ from any one single hardware device. The increased flexibility implied by this development makes desktop virtualization a potential game-changing technology and, when deployed effectively, it can facilitate improved workforce productivity, security, and easier administration of the end user IT estate.

Despite the apparent benefits, decision makers need to tread carefully as there is a plethora of compute models, vendors and technical terms surrounding this technology and finding the right fit – or fits – for users can prove difficult.



**Diagram 1:** Find out more about Desktop Virtualization by visiting [www.capgemini.com/desktop-virtualization](http://www.capgemini.com/desktop-virtualization)

Linux, iOS and Android? What role will they play in the future of end user IT?

### New ways of consuming and delivering IT services

The pervasiveness of the Internet, the advance and proliferation of mobile devices, and the rise of cloud computing, have broadened the range of means by which IT services can be delivered. Self-serve app stores, browser-based applications, software as a service and streaming technologies have served to dramatically improve the speed in which services can be provisioned, while also mitigating compatibility issues and enabling a transformation in the way services are procured and paid for.

From a hardware perspective, these new application delivery models provide IT decision makers with the

option of distributing compute loads between client device and server more effectively to optimally balance end user needs (user experience, role, workstyles) with those of the business (security, cost, carbon, user productivity).

For end users, the layer of IT infrastructure that underpins the user experience – both the device and the source of service (locally installed, proprietary data center, cloud or third-party provider) will be secondary to the quality of experience provided. It will be the job of IT to orchestrate the provision of services – bring together the proprietary and the third party, the visible and the invisible – and present them as one seamless, secure, and satisfying end user experience, regardless of device or location.

An important element within this will be the integration of 'awareness' into the way IT services are delivered. Networks and applications will need to be able to detect what type of device is accessing the service and then deliver said service in a way that is aware and considerate of aspects such as screen size (e.g. providing a screen layout that is optimized for handheld devices) and CPU capability (up or downscaling the resolution and richness of content according to access device capability). Similarly, applications and networks will need

to be capable of considering the context in which IT services are being accessed, including aspects such as the origin (location) of the request and also circumstances, such as the time of day (or night) at which services or data are being requested, and permitting or denying access accordingly.

### Swallowing the tablet

With the smart phone now well established within the business, the age of the tablet as a fixture on the end user IT landscape looms large. These devices carry the potential to deliver productivity and user-satisfaction benefits, but simultaneously present the IT department with the challenge of supporting a broader range of devices and ensuring that data remains secure not only when the device is in the right hands, but also in the event that it falls into the wrong ones.

In addition to ascertaining how best to accommodate and support this new family of devices, IT will need to confront how and where the provision and support of such devices is appropriate and facilitates improved productivity, and, conversely, where it would represent an inefficient allocation of resources.

### People

Given the rising number of devices and compute models (i.e. the technology by which IT services are delivered to end user devices) available to businesses, the need to develop an intimate understanding of the users for whom IT is being provisioned has taken on increased importance. But it's not just occupational factors that need to be considered – generational and social factors also need to be taken into account.

#### The rise of the 'digital native'

Call them 'generation y', 'digital natives' or 'millennials', the reality is that this generation – a generation born into an environment of PCs,

mobile phones and mp3 players – accounts for a growing share of today's workforce and is playing a central role in the evolution of workplace IT. So what are the characteristics of this growing segment of the workforce and what do they mean for those responsible for provisioning end user IT?

- Tech native. These are users who will have little or no recollection of life before Windows. What's more, their experience of IT will have been as a personal consumer first, work user second (as opposed to previous generations, whose first experience of IT is likely to have been in the workplace). As such, they have their own pre-conceived notions of how end user IT should look, feel, operate and be supported.
- Self-provisioning. These are users who are accustomed to having and using the IT of their choice, whether that's buying custom-spec personal computers, experimenting with web-based software-as-a-service tools as an alternative to conventional software or being among the early adopters of iPads or Android devices. In the business environment, these are the users most likely to procure cloud services using a corporate credit card or set up their email and favorite work applications on a private tablet device, without necessarily running it past IT. Simply put, these are users who know what they want from IT and how to get it.

The emergence of this worker segment presents a challenge to traditional IT but also an opportunity for IT to add value to the business. Decision makers need to balance and mitigate the risks of these emerging characteristics, while simultaneously facilitating the productivity and innovation benefits that these future business leaders are capable of delivering.

### What does 'at work' mean?

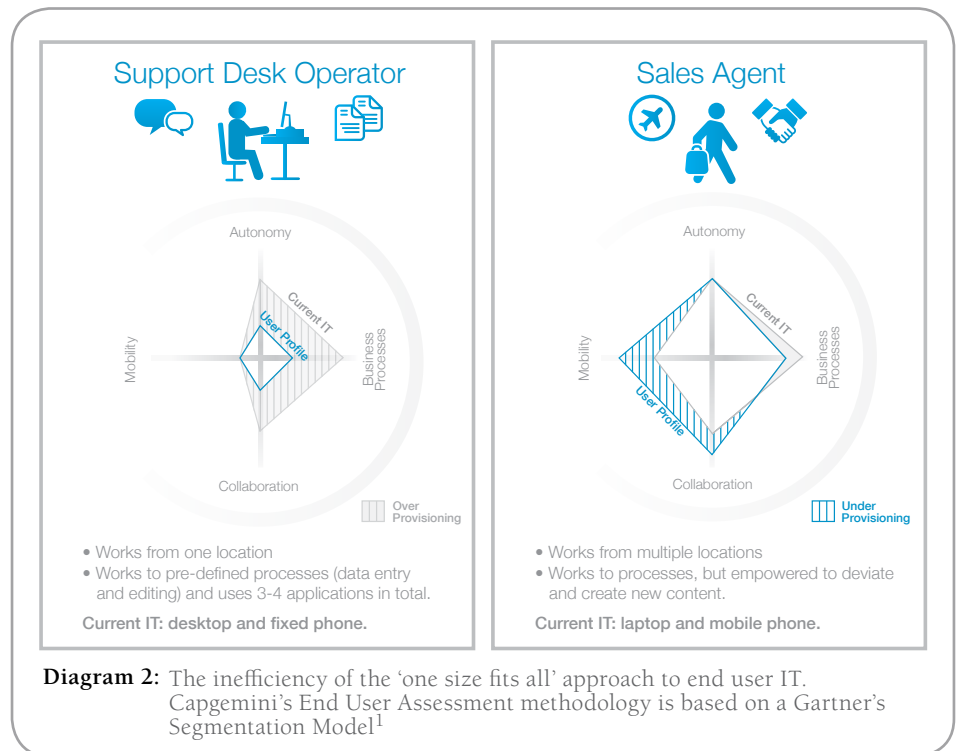
For many, the traditional '9-to-5' working day is a thing of the past. Similarly, our notion of being 'at work' is no longer limited to being at a fixed desk in a conventional office. The 'when' and 'where' aspects of work have become more fluid as we seek to balance the requirements of working in a globalized economy with the ever-present need to maintain a high-quality personal life. Reflecting this, flexi-time and work-from-home are becoming commonplace, as are the notions of working 'client side' or 'on the move'. As these changes take place, so the line between work IT and home IT fades – checking emails from the home PC has become the norm, as has occasionally using work-provisioned devices to take care of personal errands during the working day.

For IT decision makers, this presents a major dilemma: whether to try to maintain and enforce traditional barriers between personal and professional, or facilitate and embrace a more open approach to work and play in the belief that it will deliver greater overall benefit to the business.

### Widening range of IT users within the organization

From processing transactions on the shop floor to product design and development, technology has become fundamental to almost all business processes. As this penetration occurs though, so the gap between the IT needs of different users within the business widens.

In the past, IT departments have been limited to deploying either a laptop or desktop. While appearances and specs differed, the compute model and technology was essentially the same. This 'one size fits all' model was inherently inefficient, commonly resulting in over- or -under-provisioning and sub-optimal user-satisfaction and productivity levels. The increased choice of devices and compute models available today



creates the potential for this problem to be eradicated. IT decision makers will need to understand which technologies are relevant to their users and business, and then deploy them in the right way to bring about the desired results.

### The key factors to consider when planning the next generation of end user IT

#### Know your users

Given the wealth of compute models and devices currently available, mapping the right technology to your workforce can be difficult, and poorly informed deployments can prove costly in every sense. The first step in getting the mapping and deployment right is to develop a detailed profile of the different types of user across the organization. Understand their roles, workstyles, autonomy levels, mobility and service level requirements. Only once this is established, can you consider which technologies best address your needs.

#### Understand the technology options and how they apply to your users

Smart phones, tablets and the 'always on and always connected' approach to end user IT undoubtedly have a place in the business. However, these have obvious cost implications and so it's important to build a real business case for each combination of end user family and IT platform being considered prior to procurement and deployment decisions being taken.

It's also important to consider developments at the other end of the user spectrum – evolutions in technology, combined with a better understanding of user groups, are revealing cases where less – or simpler – IT makes more sense. End users that have been provisioned with laptops or desktops but, for example, only use a handful of relatively simple applications, can benefit from having their user experience simplified or 'curated'. This is good for the user as it provides them with easier access to the tools they require while, for the business, the improved access promises greater productivity



while a streamlined user experience implies lower hardware and software requirements, and so the potential to lower the IT cost per seat.

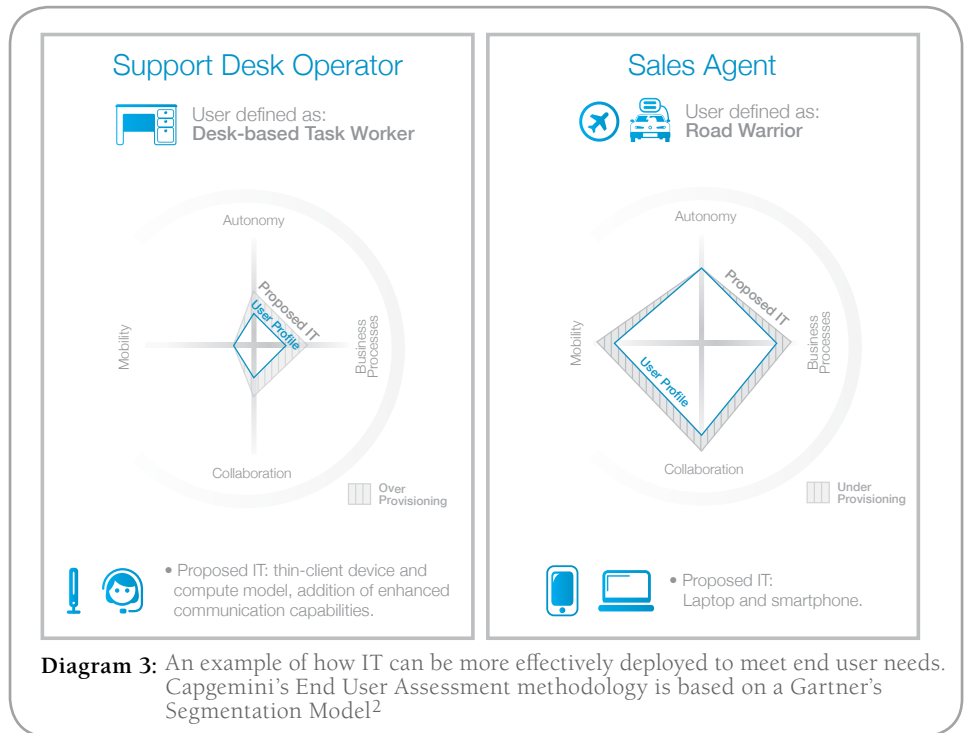
**Embrace ‘managed’ diversity**

We now understand that the ‘one size fits all’ approach to provisioning end user IT is obsolete. The question is, though, how many sizes are appropriate? Providing each user family within the organization with a custom-fit platform might make sense if the sole aim is to improve user productivity and satisfaction, but IT decision makers must ask themselves how many different compute models and devices can realistically be supported and managed before costs and complexity issues begin to outweigh the benefits. In contrast, too few models and the time-old problems of over- or under-provisioning problems and user-dissatisfaction will remain. The answer will be different at each organization but it’s important to find an approach that embraces IT diversity and its benefits, but does not result in an unsustainable number of devices, compute models and support levels.

**Re-think the ‘education, communication and people’ aspects of end user IT**

Changes in the way we work and the evolution of workplace IT mean that we have to re-think the way workplace IT is secured and supported. Firewalls, defined user access levels and VPN will continue to play an important part, but the role of IT can only go so far.

Increasingly, the emphasis will be on people over perimeter. That is to say that the role and responsibility of users in ensuring data and device security, as well as appropriate usage, will become more prominent. Similarly, as the number of devices – both personal and provisioned – used for work purposes increases and the range of locations from which IT services are accessed becomes more diverse, IT departments may need to work more with HR and Legal departments to establish new policies



**Diagram 3:** An example of how IT can be more effectively deployed to meet end user needs. Capgemini’s End User Assessment methodology is based on a Gartner’s Segmentation Model<sup>2</sup>

around data and device security, responsible end user behavior and liability.

The same principle will apply when considering how home- or client-side working and the potential reduction in contact between managers and supervisors and their team members, impacts organizational and reporting structures.

Simply put, as much as evolutions in technology are facilitating changes in workplace IT, these changes will only be as effective in delivering benefit and mitigating risk as the ‘people’ aspects – that is, the education, communication and policy aspects – that accompany these changes.

**Take a stance on ‘Bring Your Own’**

Corporate IT can’t keep up with the consumerization of IT. Attempts to keep pace will inevitably result in spiraling costs and/or administration issues and yet trying to stem the tide of personal devices an non-approved IT tools entering the workspace and vice versa will either fail, result in user discontent or, more likely, both.

‘Bring Your Own’ (BYO) can be interpreted in several ways –

from providing end users with complete freedom to use the device of their choice for work purposes at one end of the interpretation spectrum, through to simply relaxing restrictions on user settings and so enabling workers to install and use the applications of their choice.

How this is interpreted and applied will differ from business to business and sector to sector, however, sooner or later IT decision makers will need to formulate strategies to deal with end users determined to bypass traditional IT channels to find their technology ‘best fit’.

A ‘Bring Your Own’ approach to end user IT can deliver significant benefits, including an opportunity to optimize IT investment and resource allocation, and also user empowerment (and so potentially productivity and innovation).

However, the ability to reap these benefits depends on the policies and support that accompany such an approach. Security is an obvious concern and decision makers will need to consider how best to resolve questions of device ownership, use and accountability. This will require

a fundamental change in the way IT supports – and manages – its users and, as discussed earlier in this document, may not be a question that the IT department alone can answer. In those areas where the IT department is responsible, decisions will need to be made on whether approaches should be policy based (e.g. responsible usage agreements), technology led, (e.g. containerization of applications and entire desktop images within a device or integrating self- or remote-wipe capabilities), or a combination of both.

For application provisioning and manageability of the IT estate, consider creating an app store so that users can serve themselves in much the same way as they would purchase music or applications for their personal devices. Provisioning approved or recommended applications in this way enables the IT department to retain control over services and costs, while also being able to roll out upgrades and fixes on a one-to-many basis.

For IT support, consider encouraging social media approaches to knowledge and best-practice sharing. Online communities, for example, can help foster a self-help approach to issue resolution. This will enable users with similar devices to share their tips and experience of issue resolution, thereby providing an alternative method of building a knowledge base for IT support.

#### **Broaden the TCO discussion**

Total Cost of Ownership (TCO) is and will remain an important consideration when building a business case for the next generation of end user IT. It cannot, however, be the ‘be all and end all’. Organizations today strive for IT that is aligned to the business. If this truly is the aim, then the TCO discussion must be broadened to take into account the value delivered to the business by IT. The absorption of new devices, compute models and levels of support will require increases in IT investment and so it is imperative that

business cases for new technology include not only total cost, but also the gains delivered as a result, such as improved productivity and carbon emission reductions, for example.

#### **Re-think the conventional approach to the desktop lifecycle with an eye on the future**

The conventional approach to refreshing the entire desktop environment every three, four or five years has become cumbersome and tantamount to a lack of business agility. End user IT platforms of the future will be expected to evolve quickly and cost effectively in line with business trends and objectives.

In addition, as our understanding of users and their varying IT needs evolves, we will see instances where some user groups will require more-frequent technology refreshes and, conversely, some instances where device lifespans can be extended well beyond conventional expectations.

Seek to understand technology developments taking place and their potential relevance to the business and the different end user groups, or families, within your business with a view to deploying them as and when they become sufficiently mature for adoption.

#### **Assess your existing application landscape and revisit conventional views on application delivery, management and licensing**

Any transformation of the desktop environment will require a re-think of both the existing application portfolio, and the way applications are to be delivered, managed and licensed in the future.

Capgemini’s 2011 Application Landscape Report found that more than half of the large businesses and enterprises surveyed currently maintain ‘more’ or ‘far more’ applications than are required by the business.<sup>3</sup> This is a burden at the best of times. Desktop transformation should be seen as an opportunity to assess the state of the

existing application portfolio and undertake rationalization. Only by establishing an accurate and up-to-date understanding of the application needs of the organization can decisions on hardware and compute model be made.

It will also be important to consider how applications are to be delivered and the capabilities – application, device and network – that will be required to support the choices made. Building in device- and context-awareness may have ramifications for the way applications are developed and networks configured, and so network performance capabilities and bandwidth will need to be fully understood prior to the integration of new delivery methods such as desktop- and application virtualization.

Consider also how best to monitor usage and licensing. While progress is being made by vendors to catch up with newer application delivery methods (such as virtualization), licensing issues remain (per user, per device or per virtual image?).

Consider seeking external assistance for license management so that your IT department can focus on providing the right service to users and adding value to the business.



**Don't stop at green IT, embrace IT for green**

There is much that can be done to reduce the carbon footprint of workplace IT. Desktop virtualization compute models and lower-function devices in place of conventional desktop images, managed print services, PC Power Management – these all help drive down energy consumption and so carbon emissions from IT.

While efforts to make conventional end user IT greener make sense – both from an economic and environmental perspective – they represent just one side of the green IT coin. Consider how the effective deployment of IT at end user level can help reduce carbon emissions in other areas of the business. Examples of this are improved unified communications capabilities, such as desktop video conferencing as a means of reducing the need for business travel or virtualized desktop experiences as a way of enabling home working, thereby reducing office infrastructure requirements as well as commuter miles and emissions.

**Consider the role of cloud**

The influence of cloud computing – public, private or hybrid – is extending into the domain of end user IT. It's time to evaluate and take a stance on how this applies to your organization. Increased utilization of software-as-a-service tools, for example, affords IT decision makers greater choice when provisioning devices while simultaneously improving the flexibility and agility of the end user platform.

Consider also, the potential role of private-cloud Infrastructure-as-a-Service offerings, perhaps first as a testing ground for new or non-mission-critical applications but later as a means of backing up virtual machines or as a platform on which to deliver a true Desktop-as-a-Service (DaaS) experience.

**Capgemini as a provider of Workplace Services**

Capgemini is a leader in the workplace services market – we currently support over one million end users worldwide. Our global delivery network includes tens of thousands of servers positioned with pre-assembled technology. We offer the experience and expertise of 22,000 outsourcing employees worldwide.

Capgemini workplace services represent a standardized, secure end user environment supported by industry-standard incident- and change-management processes, all of which is delivered to collaboratively defined service levels.

**Intelligent Workplace**

Capgemini's Intelligent Workplace is an innovative, end-to-end approach to workplace platforms that helps you improve end user productivity, boost business agility and address environmental objectives, all while reducing IT costs. It comprises three key components:

**Assessment Services:** A comprehensive assessment of employee roles and requirements to determine the optimal platform for each end user group.

**Assignment of service levels and compute models:** based on End User Assessment findings, service levels and compute models are assigned and tailored to ensure that each end user family has the right toolkit for their role.

**Provision of managed service:** Intelligent Workplace puts users at the heart of a comprehensive managed service that brings together offerings such as Global Service Desk, Service Management, and Data Center and Infrastructure Services.

1,2 *The Gartner Segmentation Model on which Capgemini's End User Assessment is based is detailed in:*  
Gartner Inc.: "Using Gartner's Segmentation Model for Mobile and Client Computing", Monica Basso, Brian Gammage 25 October 2010, G00207330, <http://www.gartner.com/resId=1456927>; and "Toolkit: Segmenting Users for Mobile and Client Computing", Brian Gammage, Monica Basso, 25 October 2010, G00207332, <http://www.gartner.com/resId=1456932>.

3 *Application Landscape Report: 2011 Edition. Capgemini & HP, March 2011.*



**About Capgemini and the Collaborative Business Experience™**

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