

Virtualization in the Contact Center

Best Practices for Success

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Executive Summary

IT staffs have rapidly adopted server and desktop virtualization to reduce operating and infrastructure costs, improve agility and flexibility, and better support disaster recovery. They seek to extend those same benefits to the contact center, as architects look to reduce hardware footprints, improve the ability of the contact center to rapidly adjust to seasonal demand variations, better support distributed agents, and improve overall resiliency.

The Issue

No technology in recent memory has provided more leverage, sparked more interest, or made more rapid progress to mainstream practice than x86-based virtualization, whether for servers or desktops. Server virtualization has, in less than a decade, gone from a mature mainframe technology and commodity hardware science experiment to a central tool in IT's belt for addressing a broad range of operational issues. Server virtualization has saved the day for data centers filled with servers to the point of bursting, power infrastructures out of capacity, cooling systems on the verge of collapse. Desktop virtualization has demonstrated its ability to solve problems with managing desktops with the flexibility, security, and reliability organizations require.

In the contact center, virtualization holds promise to help solve the twin challenges of optimizing budgets and enabling flexibility to support an increasingly distributed, mobile workforce. Virtualization, in multiple forms, enables contact-center architects to meet these challenges by reducing desktop and server operating cost and complexity, increasing deployment flexibility and enabling better support for growing numbers of remote and distributed agents.

Server Virtualization

Server virtualization alters the paradigm of one or more servers dedicated to a specific application. Virtualization changes the equation by piling up multiple application workloads from mostly idle systems onto shared hardware. As a result, virtualization reduces capital costs by more efficiently leveraging the infrastructure to support greater numbers of applications. Reduced capital costs drive reduced operating costs, since the smaller number of servers required to provide IT services consumes a significantly smaller amount of power and generates less heat, requiring less cooling. More than 70% of firms report that reducing infrastructure requirements for servers—power, cooling, and space—is one of the chief drivers behind their virtualization efforts.

But capital and operational cost reduction isn't the only benefit: By extending virtualized "clouds" across multiple locations or to hosted service providers, virtualized environments provide for greater resiliency. For example, 70% of companies report being able to restore services for virtually provisioned applications in less than an hour, where only about 30% could before virtualization. By adding more resources to the cloud (or removing unused resources as necessary), architects can easily adjust infrastructure requirements to meet varying application demands (e.g. adding more resources to support peak contact-center times and reducing resources during normal slow periods).

In addition to providing benefits of reduced capital and operating costs, server virtualization has greatly improved the agility of IT in meeting the needs of the business lines. By removing 80% or more of the provisioning time from a typical request for servers, virtualization lets IT administrators respond very quickly—sometimes in the same day—to the changing needs of the business. In fact, this agility, a second-order benefit to those who virtualized to survive, has been the primary driver for most late adopters of server virtualization. In the contact center, server virtualization offers the flexibility to allow IT to quickly respond to dynamic changes in demand, such as adding new capacity to support a new marketing initiative, adjust to seasonal fluctuations, or rapidly respond to a crisis.

As a result of these benefits, server virtualization is ubiquitous. In 2010, 97% of organizations were using server virtualization (Please see Figure 1), up from 94% in 2009. Only 1.6% of companies have no plans to implement server virtualization. However, few firms are exploiting the benefits of virtualization for their contact-center applications.

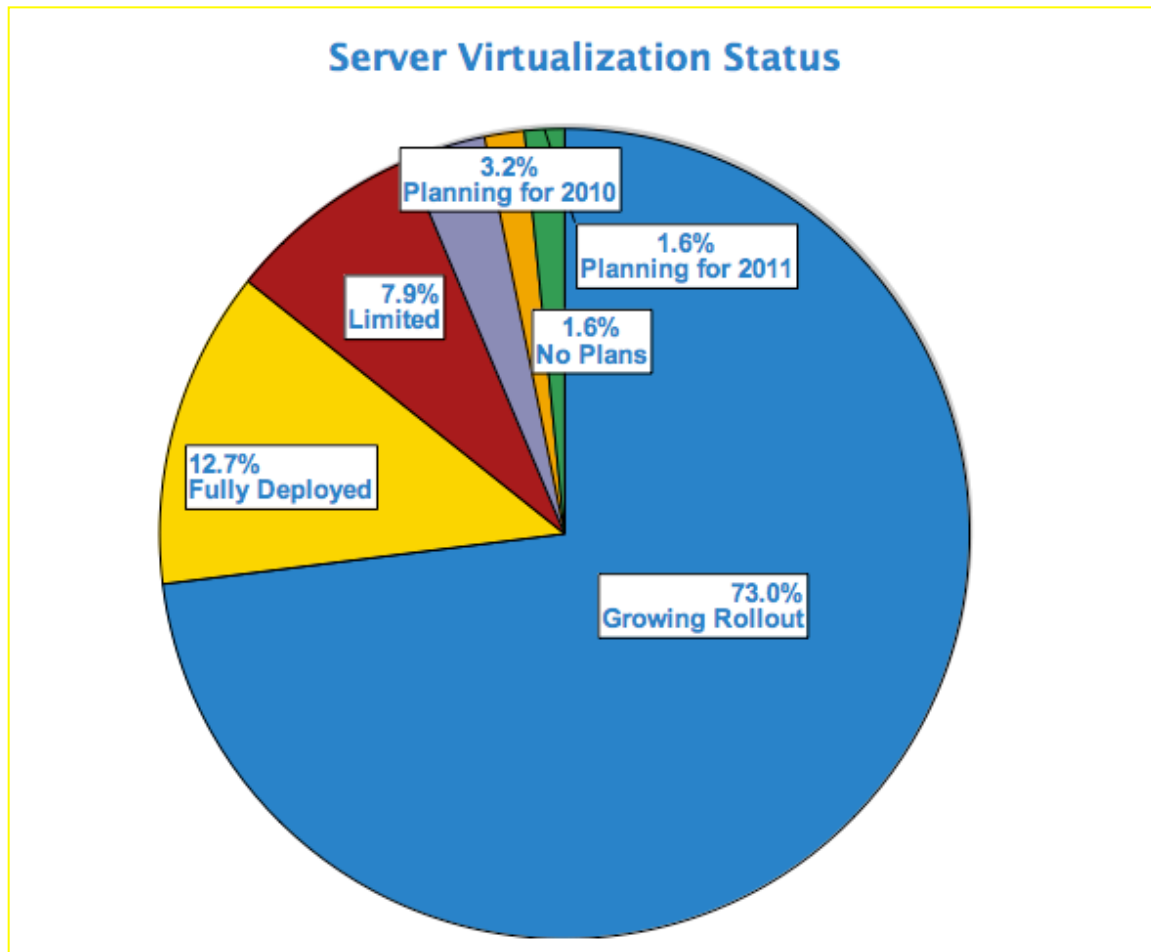


Figure 1: Deployment status of server virtualization

Among companies using server virtualization, 12.7% have fully deployed it. But there’s a catch. Those who say they have fully deployed virtualization tell us that by “fully deployed,” they mean that they have virtualized every application that they can virtualize. On average, only 78.2% of applications are virtualized, meaning 21.8% of applications, according to IT leaders, aren’t suitable for virtualization. (Please see Figure 2).

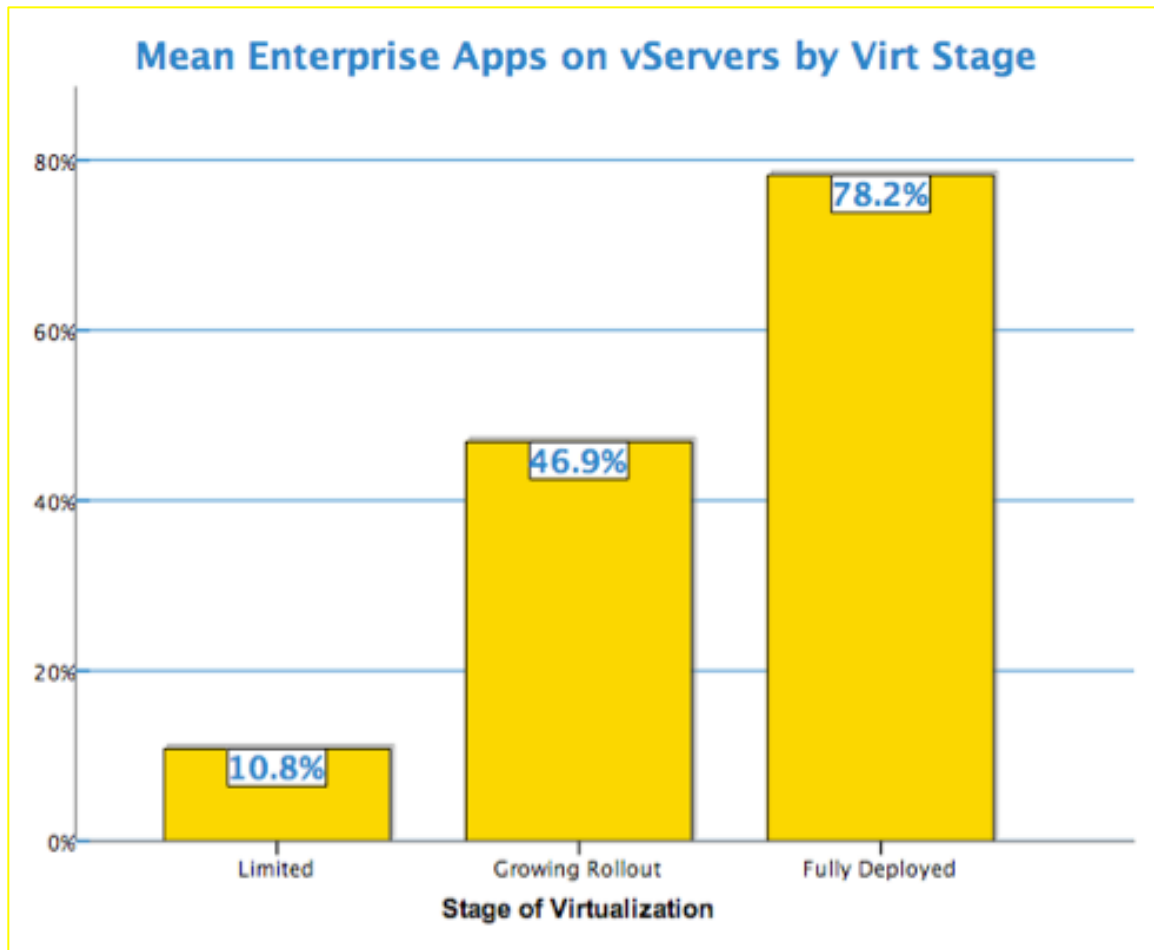


Figure 2: Mean Enterprise Apps on vServers by Virt Stage

The remaining applications are not virtualized for a variety of reasons. Some, such as backup servers, support the restoration of a virtualized environment in case of disaster, and thus, cannot be within that environment. Others have I/O requirements that the deployed virtual infrastructure cannot meet. Some applications run on special hardware, such as manufacturing control systems, or medical equipment systems and cannot be virtualized. Others aren't yet supported by their vendors to run on virtualized servers. As a result, organizations with platforms that can't leverage virtualization are unable to take advantage of its ability to lower costs, simplify management, improve resiliency, and deliver greater flexibility.

Virtualized Desktop Infrastructure (VDI)

Fifty percent of organizations now use some desktop virtualization, up from 22% in late 2008. (Please see Figure 3). In most cases, IT staffs begin

deployments as tactical solutions to specific application-delivery problems, such as:

- ⊕ How do I provide access to the full suite of applications to remote workers?
- ⊕ How do I decrease the risk of giving overseas or on-site contractors access to my applications and data?
- ⊕ How do I improve the economics of providing desktops to task workers?

Fifty percent of the large and 100% of the very large organizations in our research have deployed virtual desktops in exactly these kinds of limited use-cases only.

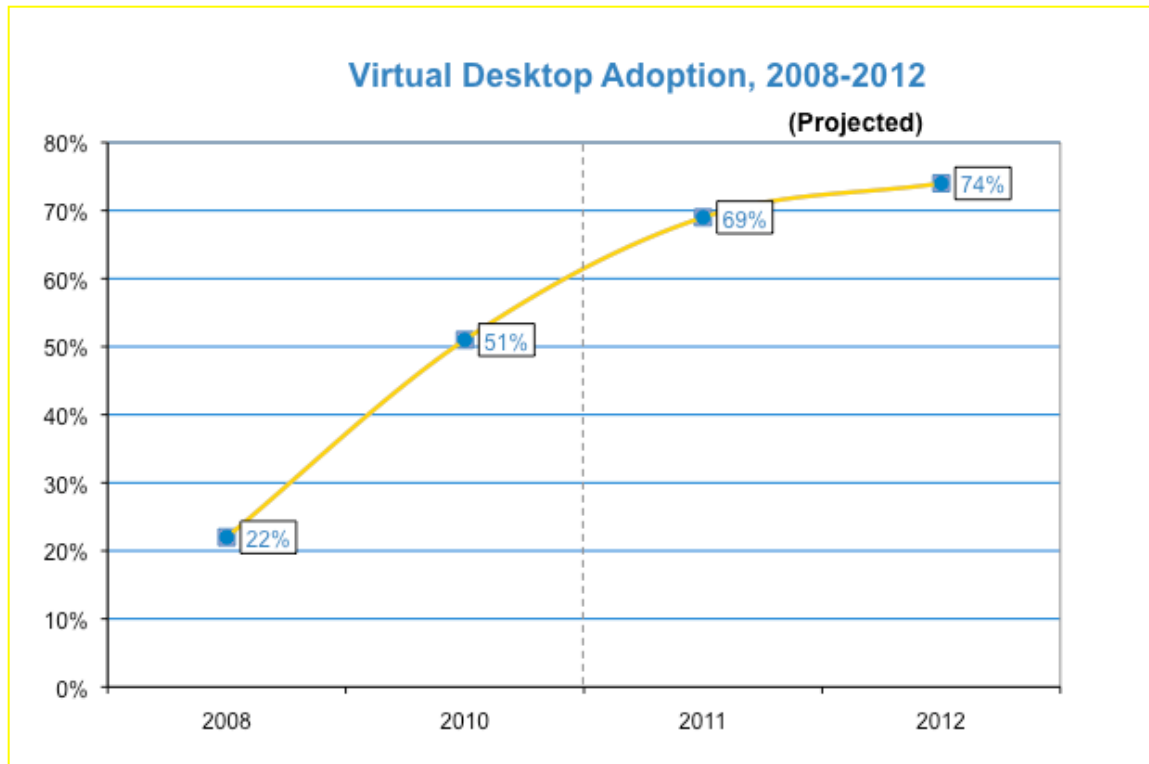


Figure 3: Virtual Desktop Adoption Trend

IT seeks to expand the use of desktop virtualization, to shift from virtual desktops as tactical solutions to strategic platforms for end-user computing. Here, IT looks at the virtual desktop as a baseline method for providing desktops as a service, like other IT services, from the data center. For such organizations, the goal is to bring the economic and security benefits of truly centralized management to the notoriously difficult, expensive, and thankless task of managing distributed physical desktops. Fifteen percent of large organizations

have begun such a rollout, compared to 7.4% of midsize companies. Although 8.3% of small companies have fully virtualized their desktops, virtual desktop rollouts in small organizations is not growing.

IT departments deploy virtual desktops almost exclusively in the form of VDI: centrally hosted virtual Windows PCs running on data-center servers. As virtualization platform vendors integrate use of desktop hypervisors into the picture, IT can centrally deploy and manage virtual desktops but host them locally on physical PCs. This extends the management and security benefits of the model to use cases where users are disconnected from the company network, or have performance requirements that preclude hardware sharing or remote desktops, or have constraints on data-center resources limiting centralization.

Contact-center managers see virtual desktops as a means to support a more globally distributed agent population by minimizing desktop support requirements. Virtual desktops are also an ideal solution for remote/home agents for the same reason. IT staffs can minimize PC support costs when the only application resident on an agent's or manager's PC is a thin-client.

However transitioning agents to virtual desktops isn't without its challenges. Moving from physical to virtual desktops involves both direct user experience and all of the IT organization that supports it. Managing desktop images and user profiles is a distinct challenge from managing server configurations, and virtual desktops' use of infrastructure—most prominently storage—can be radically different from virtual servers'.

Emerging multi-channel contact-center applications, such as those that support video or VOIP, create additional challenges. In a normal desktop UC deployment, voice/video encapsulation/decapsulation happens in software running on the user's computer. Carrying this voice/video stream back to the data center for processing on a hypervisor isn't practical due to latency and bandwidth concerns. A few solutions exist today, including thin-client phones or Web cameras that support localized voice/video processing via USB-connected devices. Local execution of applications is also a viable solution depending on hardware capabilities. But so far, adoption of voice and video over VDI is minimal. IT leaders seeking to leverage the benefits of VDI for their agents must evaluate solutions on their ability to support both voice and video via thin-client, and they must address network optimization and management requirements to ensure acceptable application performance. So far, just 40% of IT managers have tested optimization with their desktop virtualization products. (Please see Figure 4).

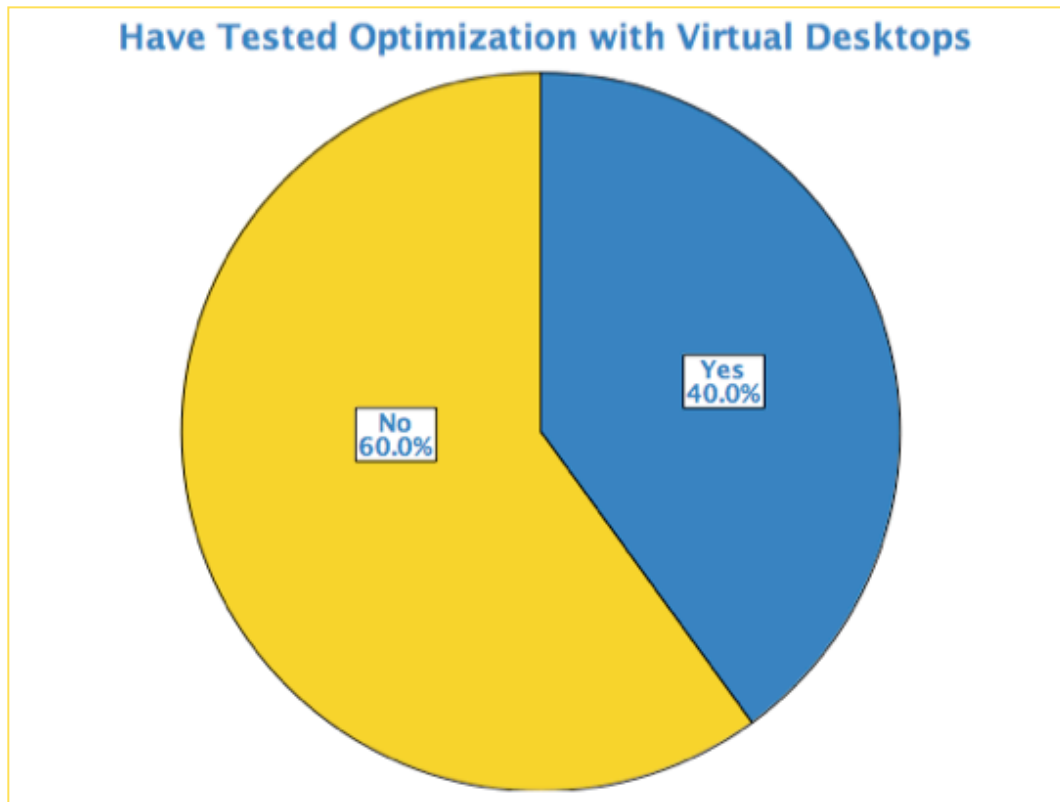


Figure 4: Have Tested Optimization with Virtual Desktops

Virtualizing the Workforce

It’s not just servers and applications that are virtualizing. Employees also are moving away from fixed offices to virtual offices. Nemertes has tracked the process along a number of axes: the shift to virtual workers, the increases in branching and telework, and the spread of mobile and collaborative technologies.

Telework is up. As the tools supporting collaboration by teleworkers and remote access to enterprise applications have improved, and as broadband has continued to become more broadly and cheaply available, an average 19.7% of employees now telecommute, either full- or part-time. Of those, 48% still have an office at a branch; 13.3% are “hotel” office users, taking an available space when they need to be on site but having no dedicated location; and 38.6% work remotely all the time.

Virtualizing the workforce enables contact-center managers to gain additional flexibility, and additional opportunity to reduce costs. By moving to a model whereby agents can work anywhere, at any time, companies are no longer required to maintain large contact-center locations staffed by on-site workers.

Instead, they can shift to a model that allows them to hire agents around the world, shift workloads easily among centers, and better support and utilize work-at-home agents. Nemertes finds companies supporting teleworking have higher retention rates, less turnover, and reduced infrastructure costs. IT leaders often cite the ability to support flexible working environments as a key factor enabling them to attract and retain skilled personnel. “We did shut down a reservation center last year and were able to reduce our staff by a few hundred people,” says the IT director for a hospitality company, which launched a virtual agent program for its contact centers. “The reason we shut down the contact center was the high cost of the wages.” By virtualizing contact-center employees, the company reduced facilities costs by shifting agents to home offices and hiring outside their traditional (more costly) market, reducing salary expenses. Overall, nearly half of all companies (48.7%) now have formal teleworking policies, up from 37% in 2008. (Please see Figure 5.)

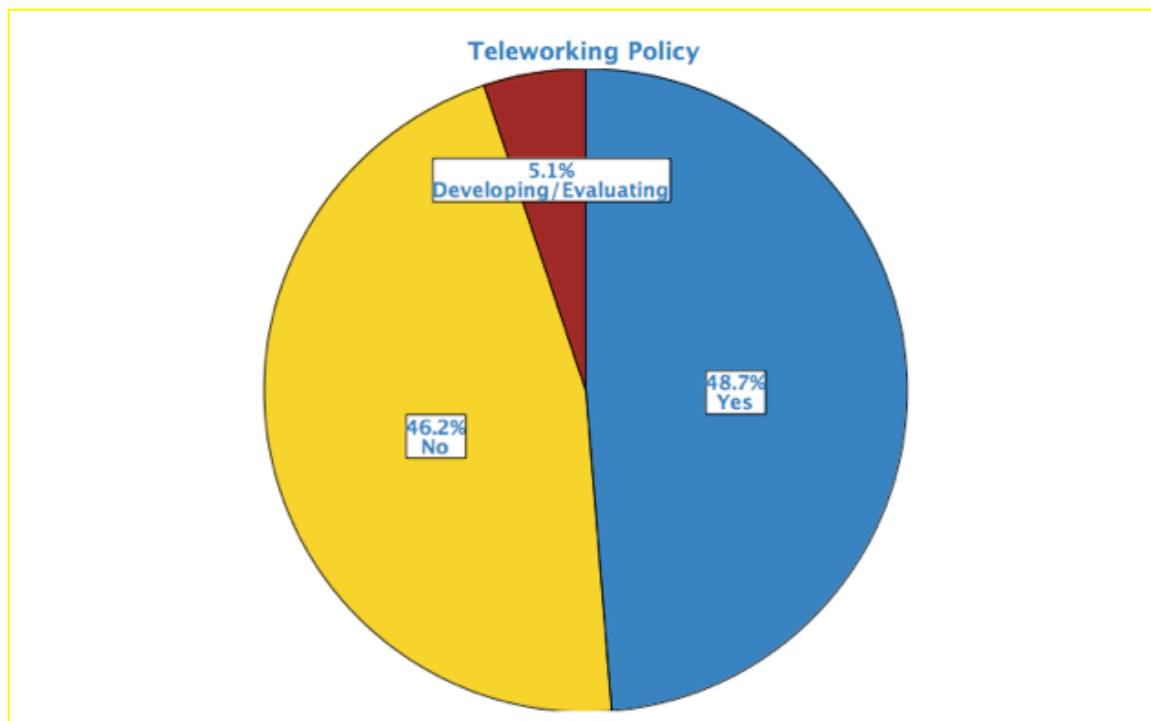


Figure 5: Teleworking Policy

Virtualization of Knowledge

The trend toward greater distribution of the workforce isn't limited to agents. Increasingly, organizations seek to leverage technologies such as virtualization, unified communications, and mobility to better enable employees to work from any place at any time via any device. This means that Subject

Matter Experts (SMEs), whom agents rely on for second level assistance, can be located virtually anywhere. By bridging unified communications infrastructure with contact-center agent applications, agents can reach the resources they need, boosting first-call resolution rates. For example, agents can leverage presence-enabled UC dashboards to find an SME, engage in a conversation (text, voice or even video), potentially bridging the SME to a call or desktop-sharing session to provide real-time support to the customer.

Virtualization: Benefits Realized

IT is largely getting from virtualization what it seeks—decreases in all sorts of footprints, improved ability to live through growth, increased agility, and better support for an increasingly distributed workforce. Among those enterprises that carefully track hardware, software, and administrative costs—usually because they have some form of chargeback between IT and the business lines—virtualization reduces the amount IT charges for providing servers by as much as 83%.

Unfortunately, most organizations don't track internal IT costs in a way that allows them to quantify the effects of virtualization, especially at the desktop. There is no hourly cost assigned to downtime, for example, so it is hard to quantify the benefit of improved uptime. Nor are there productivity metrics for users or IT staff in many (or most) organizations, so the financial benefit of one IT staff member being able to manage many more servers or desktops is hard to calculate. These organizations can, though, evaluate their return on virtualization by looking at some straightforward metrics, such as:

- ⊕ Number of server workloads managed per administrator, for example (about which, more below)
- ⊕ Capital costs per server workload
- ⊕ Number of outages from untested operating system patches, per virtual and non-virtual server
- ⊕ Number of bugs found in new services after release to production, per virtual and non-virtual server
- ⊕ Number of desktop images maintained
- ⊕ Number of desktop reimages per year
- ⊕ Time for restoring service in event of hardware failure, per virtual and non-virtual server
- ⊕ Ratio of servers required in disaster recovery (DR) facility to servers in production.

Indeed, DR is an area where reduction in resource footprints has both cost and business continuity benefits. Organizations that do not currently have DR sites now leverage virtualization to easily establish remote DR locations. They can

reclaim a larger network closet (or other space with conditioned power and AC) and equip it with dense server and storage racks. Virtualization allows them to run (albeit at degraded performance levels) all their critical systems out of these non-data centers. For other organizations, especially those with multiple hot data centers, virtualization accelerates failover to DR sites. “We’re bringing up a backup facility now, and will now have near-real-time failover,” says an IT manager in a financial-services firm. DR is especially important in the contact center because of the potential revenue loss or customer complaints that an outage during a peak time can bring.

Since agility is the new central driver for virtualization, it is significant that nearly half of organizations cite agility benefits from their virtualization efforts. Agility is manifested in many ways:

- ⊕ Faster server provisioning allows easier creation of testing environments, allowing IT to take on more projects
- ⊕ Lighter-weight test environments mean enable wider testing scenarios, allowing developers to find more bugs without affecting production
- ⊕ Test and development environments more closely replicate production environments, increasing the number of bugs IT finds in testing, shortening pilot deployments and decreasing outages in production
- ⊕ Faster server provisioning means faster moves from test to production
- ⊕ Faster server provisioning allowing server farms to scale up and down, more quickly than in non-virtualized environments
- ⊕ Contact center operators can easily add and remove computing resources as necessary to account for demand fluctuations during holidays or other peak call times.

Conclusions and Recommendations

Virtualization is poised to do for contact-center infrastructure what it is already doing for general-purpose applications: reduce capital and operating costs, improve flexibility and agility, and support enterprise disaster recovery requirements. Contact-center managers should:

- ⊕ Work with their vendors to evaluate capabilities to support server and desktop virtualization for contact-center back-end infrastructure (e.g. ACDs) and desktop applications
- ⊕ Understand how virtualization can better support changes in contact-center populations (e.g. agent locations, distributions)
- ⊕ Leverage virtualization to improve resiliency and disaster recovery
- ⊕ Use virtualization to flexibly respond to variable call loads
- ⊕ Optimize virtual application performance by evaluating design alternatives.

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