Manage Your Data:

Virtualization for Small Businesses

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Introduction

With advances in technology come new possibilities and processes that can help businesses of any size navigate the increasingly complicated maze of IT choices. Virtualization represents one such path to streamlining IT infrastructure. In this white paper, we look at the considerations and advantages of virtualization for small businesses, helping business owners map out a path to making the right IT decisions in support of their business growth

What is Virtualization

Today, virtualization is increasingly seen as a valid option for businesses of any size looking to streamline their IT infrastructure and lower operating costs. It is an opportunity to centralise administrative tasks while improving scalability and overall hardware utilisation. Implemented properly, it will allow a company to run multiple applications and operating systems independently on a single server, or dynamically move them from one server to another to allow for better resource sharing. The new infrastructure view offered by virtualization means that it is possible to treat a group of servers as a single pool of computing resources.

The core idea behind virtualization is to eliminate unnecessary hardware and maintenance costs. Instead of using half a dozen servers 10 percent of the time, virtualization software makes it possible to consolidate the applications from those six servers onto just one or two boxes. Small businesses with three or more servers are seeing real benefits from virtualization today and not just from reduced space utilisation and lower energy consumption.

Most computers do not fully utilise their resources - memory, CPU, disk, network - wasting a potentially significant part of their capability. This means that more often than not there is capacity to condense the IT infrastructure within a small business into fewer servers or computers by making better use of the inherent capabilities of the hardware involved. Rather than installing more applications on the same computers which could cause conflict, it solves the problem by allowing the applications to run on the same physical computer, but separating them by allowing each one to have its own, isolated guest operating system.

Essentially, virtualization involves inserting a thin software layer known as the hypervisor between the server's hardware and the guest operating system. This provides an abstraction layer that allows each physical server to run one or more "virtual servers", effectively decoupling the operating system and its applications from the underlying physical server. Each operating system appears to have the host's processor, memory, and other resources all to itself. However, the hypervisor is actually controlling the host processor and resources, allocating what is needed to each operating system and making sure that the guest operating systems, or virtual machines, do not disrupt each other.

This layer of abstraction between computer hardware systems and the software running on them paves the way for rationalising the IT environment to incorporate a smaller hardware component. Virtualization technologies can be applied across a number of areas of IT – servers, storage, applications, desktops and networks. Of these, server virtualization is commonly viewed as the area where the approach is most successful, with many companies looking at this as a way to save money on hardware costs. The improved reliability of hardware today removes the concern companies may have in placing too many applications on a single physical box.

# What Could Virtualization Mean for your Business

Server virtualization is one of the core elements of an automated and agile infrastructure. It helps speed development cycles and deployment of new resources, and is a key enabler of broader, forward-looking IT strategies like cloud computing. Ultimately, virtualization can help small businesses reduce the cost of IT growth while improving the IT organisation's responsiveness to business needs – an essential aspect of any company's ability to grow.

Managing the IT environment carefully in this way brings tangible, lasting business benefits. Clearly, the reduction of overhead and management costs is a primary benefit and the main reason that many businesses look at virtualization as a possible option in streamlining processes. But with fewer servers to run, the cost benefits also extend to power-saving, cooling and data centre real-estate.

While cost reduction is often the starting point, the advantages of virtualization extend well beyond total cost of ownership. Aside from money-saving, virtualization can help speed up development cycles and allow businesses to deploy new resources faster as a way to keep up with changes in the market and stay ahead of competition.

Using advanced features such as live migration, high availability (HA) and recovery options it is also possible to implement cost-effective, high availability disaster-recovery strategies that are easy to manage and cost effective. By making IT systems less likely to fail, and by making server restoration substantially faster, virtualization enables businesses of all sizes to reduce the cost and minimize the impact of downtime — in terms of lost productivity, lost sales or even damaged reputation. These benefits represent real business drivers and highlight the growing importance of IT in ensuring business continuity. So not only can virtualization result in saving money across the IT infrastructure and other areas, it can also act as an important safety net and insurance policy in protecting the business.
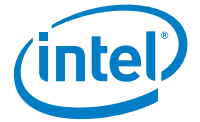
Is Server Virtualization Right for your Business

Choosing the right technology with the right processing power and performance is a key consideration for any small business. Server virtualization is a highly effective approach and there are a number of reasons why companies should begin looking at virtualization as a possible route, either because of the benefits that it can deliver or because of an existing or known business need.

Server virtualization might be right for your business if you want to achieve any of the following:

- Reduce unnecessary hardware and maintenance costs
- Change and scale the infrastructure to support your business needs, without ripping out and starting again
- Reduce the risks of IT outages and data loss, and implement affordable business continuity strategies
- Provide streamlined test and development environments that are adaptable and configurable
- Make better use of IT resources by reducing the time spent on routine IT administrative tasks, such as adding and managing new server workloads or adding new employees
- Grow in your existing space and energy envelope

The time might be right to introduce a virtualized approach if there is a need to replace aging servers or to improve the low utilisation rates of existing servers. Virtualization could offer a way to solve constrained data centre space, minimise the risk of disruption from natural disasters or provide a path to handle significant business growth ahead.

Virtualization can be evaluated at a company from a number of perspectives. It can be part of a wider server refresh or address business needs across a number of different areas including power-saving, business continuity or disaster recovery. Some companies choose to move non-mission critical applications to a virtualized environment first in order to test its positive impact while not taking any risks with regard to core business functions.

Barriers to Adoption

Although many small businesses have already implemented virtualization, budget and resources are sometimes impediments to rolling it out more broadly within their organizations. Of those small businesses that have not yet virtualized, lack of budget is often the leading reason. Other key inhibitors include uncertainty over the business benefits, which solution to adopt, and a lack of IT skills.

Virtualization is only achieved through careful deployment and failure to do this could mean a company falls prey to server sprawl where multiple, under-utilized servers take up more space and consume more resources than can be justified by their workload or indeed cannot be fiscally justified. Common causes of server sprawl include the purchase of a large number of inexpensive, low-end servers and the practice of dedicating servers to single applications. This is a phenomenon created by a virtualization strategy that is not tightly managed and planned, resulting in increased management costs to support numerous virtual machines which may not be needed.

Five Steps for Successful Server Virtualization Implementation

There are a number of actions that small businesses can take to ensure a successful virtualization implementation. The five key considerations are:

1. Work with the right partner

There is an ever-increasing array of vendors and partners in the IT space. Success in virtualization will depend on your ability to use IT in the best way for your business needs. Expertise from the right partner is instrumental in answering your questions, helping you to save time, guiding you towards the right choices and in giving you access to best practices to ensure that you get the most from your investment every day.

2. Research your options

Look for the right solution for your business including those that provide cross-platform systems management for both the virtual and physical machines and ones that provide easy-to-use tools for gathering statistics and applying dynamic policies to better allocate physical resources. It is also important to support the integration of virtualization with legacy management tools and to create more flexibility in your IT infrastructure.

3. Set expectations correctly

Know what you want from virtualization before you deploy. Are you looking primarily for cost benefits or do you need to create disaster-recovery mechanisms? Be conscious of the areas of your business that you are looking to virtualise - the management information system, email system, file storage - and understand what the benefits and pitfalls of the virtualization process will be in each case.

4. Agree on operational and financial goals

Your best virtualization strategy depends on your goals and on the demands of your specific environment. Virtualization will require a number of operational and financial changes and you should be prepared for the investment that will be required and for the changes in the business that will result.

Project Management

The successful implementation of virtualization in any business is largely down to how it is managed. A carefully designed rollout schedule will help the IT team and external partners stay on track with day to day and overall changes and will ensure that the business is disrupted to a minimum level while virtualization is being carried out.

Summary

Virtualization is the first step to making cloud computing possible but there is some confusion about how cloud computing, either public or private, fits into the virtualization story. A private cloud helps increase efficiency beyond virtualization and if done correctly offers a seamless transition to a public cloud. With a public cloud, small businesses can implement an enterprise-grade application, such as a customer relationship management solution, or an off-site storage service, in a way that avoids unfeasible upfront costs.

Virtualization is receiving a lot of attention currently from businesses of all sizes as new vendors enter the market and enterprise software providers weave it into the latest versions of their product lines. In tandem with this, virtualization continues to demonstrate additional tangible benefits the more it is deployed, broadening its value at every turn. For many small businesses it can offer a fresh approach to managing IT which carries tangible cost benefits at multiple levels. It creates a platform for better use of IT and non-IT resources, supports a business' ability to compete and improves its preparedness for a natural or other disaster.

However, it's important to understand that virtualization does not increase the overall amount of computing power available - that is still dependent on the server hardware. It does, though, help you use that hardware more effectively, making it easier to use a single physical server for several different needs. Cloud computing can create a single fabric out of all the available resources so they can be aggregated together if someone needs them.

Scoping and sizing a virtualization solution can be a daunting task for any IT professional. Dell can help you achieve the full benefits of virtualization using our world-class, standards-based solutions which provide flexibility in your selection of hardware, software and services components. Dell can analyse your current environment and performance data to determine your company's actual server and storage utilisation to create a solution that's specifically sized for your environment today, and which can scale to meet your needs tomorrow.

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