



Virtualization: An Overview

Executive Summary

Improving resource utilization through virtualizing IT infrastructures is becoming a priority for many enterprises. A successful deployment requires up front preparation to determine the appropriate infrastructure components and architecture.

This paper explains the basic concepts behind virtualization, potential benefits and key decisions associated with a virtualization project and how to get started with a virtualization assessment.

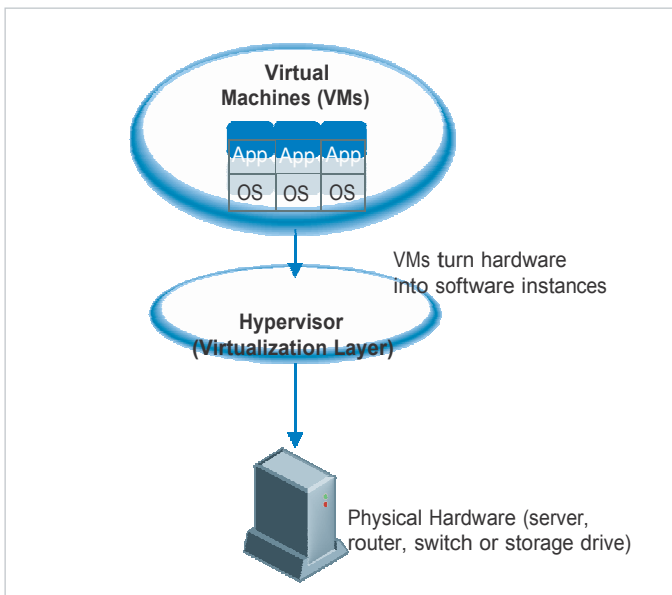
Introduction

Virtualization projects are the focus of many IT professionals who are trying to consolidate servers or data centers, decrease costs and launch successful “green” conservation initiatives. Virtualizing IT resources can be thought of as squeezing an enterprise’s computer processing power, memory, network bandwidth and storage capacity onto the smallest number of hardware platforms possible and then apportioning those resources to operating systems and applications on a time-sharing basis.

This approach aims to make the most efficient possible use of IT resources. It differs from historical computing and networking models, which have typically involved inextricably binding a given software application or service to a specific operating system (OS), which, in turn, has been developed to run on a particular hardware platform. By contrast, virtualization decouples these components, making them available from a common resource pool. In this respect, virtualization prevents IT departments from having to worry about the particular hardware or software platforms installed as they deploy additional services. The decoupling and optimization of these components is possible whether you are virtualizing servers, desktops, applications, storage devices or networks.

To virtualize some or all of a computing infrastructure’s resources, IT departments require special virtualization software, firmware or a third-party service that makes use of virtualization software or firmware. This software/firmware component, called the hypervisor or the virtualization layer, performs the mapping between virtual and physical resources. It is what enables the various resources to be decoupled, then aggregated and dispensed, irrespective of the underlying

Virtualization Model



hardware and, in some cases, the software OS. In effect, the hypervisor takes over hardware management from the OS. In addition to the hypervisor virtualization technology, the organization overseeing the virtualization project requires a virtualization management tool – which might be procured from the same or a different supplier – to set up and manage virtual devices and policies.

Why Virtualize?

One key reason why IT organizations are considering virtualization of some or all of their computing infrastructures is that the technology

Optimizing the Virtualization Project

Many organizations that have gotten started with virtualization projects have taken an overly conservative approach, sometimes leaving significant savings on the table. A large East Coast publishing company, for example, initially virtualized its server infrastructure for an 8:1 consolidation with the help of its primary hardware supplier.

VISIONONLINE Consulting, which offers virtualization services, then entered the scene and found operational opportunities that allowed the publisher to boost its server consolidation ratio to 28:1. This resulted in approximately a \$5.6 million savings in hardware cost avoidance and 21,000 kilowatt hours per year in power savings, compared to the company’s initial physical infrastructure.

VISION ONLINE differentiates itself by its operational assessments and by assisting customers with building out the “people and processes” aspects of virtualization. Its Virtual Infrastructure Operational Review specifically assists organizations that have already rolled out a virtual infrastructure in conducting a detailed operational assessment to help ensure that the business and operations processes have been properly aligned to support the virtual infrastructure.

helps them to derive the biggest bang out of their computing buck. Consider, for example, the case of the server infrastructure. By bumping up the utilization of one or more application servers from 15% each to 85% each, enterprises can eliminate a significant number of physical servers. They simply consolidate what would have been multiple physical servers onto one machine running a number of virtual, or logically separate, servers.

Historically, there has been a 1:1 ratio of server to application, because specific interfaces have bound them together.