



# Why, What, and How of Virtualization

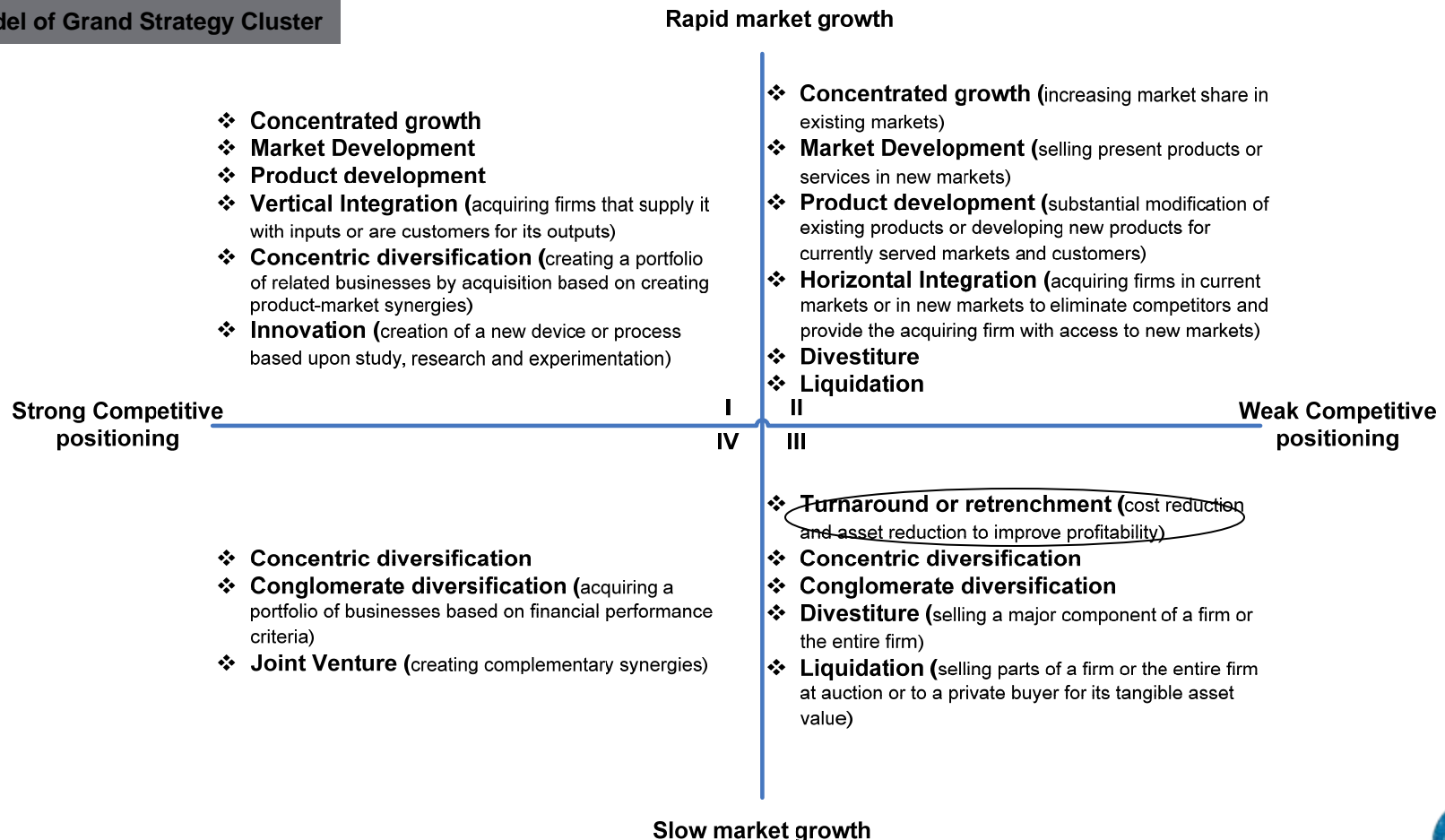
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# Why Virtualization

Weak competitive positioning and slow market growth combined with environmental responsibilities challenge CIO's to "Do More, With Less". The retrenchment or turnaround strategy in the "grand strategy cluster" especially **Virtualization** appeals to IT executives looking to maximize data-center operations, but they must ask themselves 10 difficult questions before rolling virtualization out to successfully adopt the technology

## \* Model of Grand Strategy Cluster



# Virtualization Changes Business

- **Agility**
  - ❖ Faster deployments
  - ❖ Rapid reaction to change
- **Disaster Recovery**
  - ❖ Cheaper disaster recovery, where it may not have existed before
- **Equipment Sharing**
- **Downtime**
  - ❖ Planned downtime window can nearly disappear
- **Chargeback**
  - ❖ Utility chargeback possible
- **Sourcing**
  - ❖ Enables alternate delivery models (e.g., cloud computing, software appliances, employee-owned PCs)



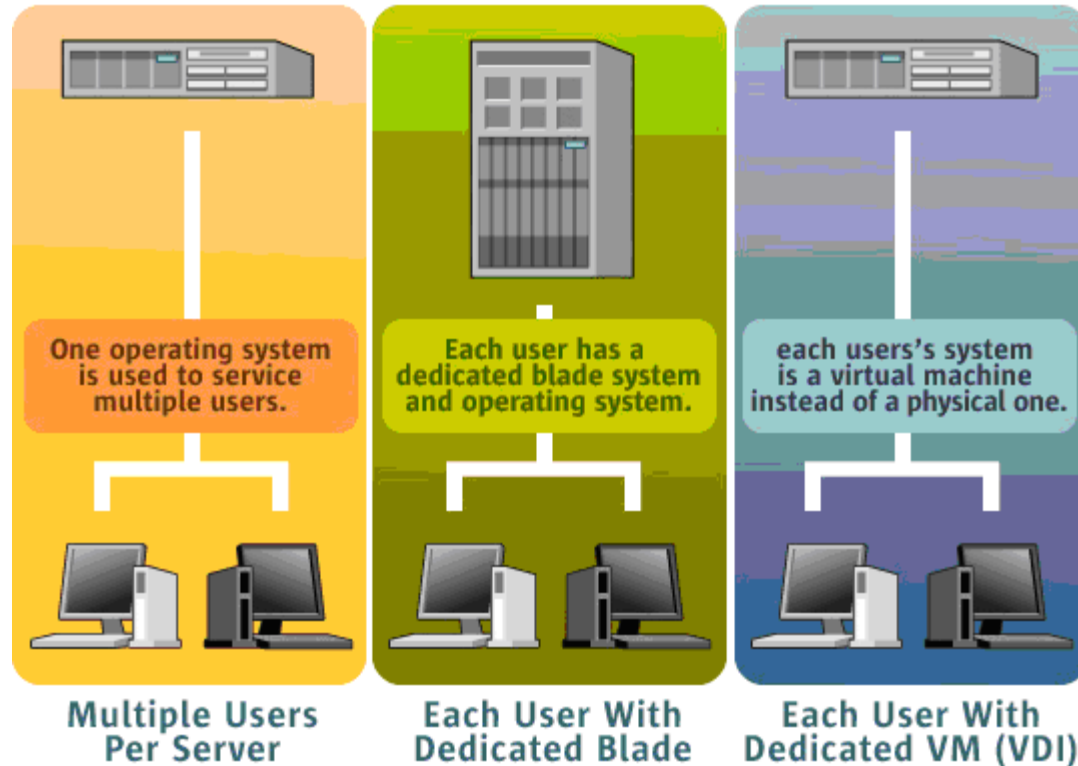
# Most common virtualization technologies

- ❖ **Operating System Virtualization** : where multiple logical (or virtual) operating systems run (aka "guests") on top of a fully functioning base (or "host") operating system. This method of virtualization usually uses a standard operating system such as Windows or Linux as the host, plus a virtual machine manager, to run multiple guest operating systems.
- ❖ **Server Virtualization (also known as "system virtualization" or "native virtualization")** : where multiple virtual operating systems run directly on top of the hardware without an intervening operating system. Typically, virtualization software will run directly on the base hardware, and the operating systems will be installed onto that virtualization software. So- called "paravirtualization" is (arguably) a subset of server virtualization that provides a thin interface to run between the base hardware and a modified guest operating system.
- ❖ **Application Virtualization** : where an application is provided to the end- user, generally from a remote location (such as a central server), without needing to completely install this application on the user's local system. Unlike traditional client-server operations, each user has an isolated, fully functional application environment, sharing few if any components with other users.
- ❖ **Desktop Virtualization** : where remote access to a complete desktop environment allows access to any authorized application, regardless of where the application is actually located. Desktop virtualization generally falls into three categories — sharing an operating system among many users on a single server, using dedicated blades for each user, and virtualizing the entire desktop environment.
- ❖ **Software Streaming** : essentially a subset of other virtualization technologies that provides a way for software components - including applications, desktops, and even complete operating systems - to be dynamically delivered from a central location to the end-user over the network. A user can start using streaming software before the entire download has completed, much like video streaming without a complex and lengthy installation process.
- ❖ **Storage Virtualization** : a way for many users or applications to access storage without being concerned at where or how that storage is physically located or managed. Typically storage virtualization applies to larger SAN or NAS arrays, but it is just as accurately applied to the logical partitioning of a local desktop hard drive.

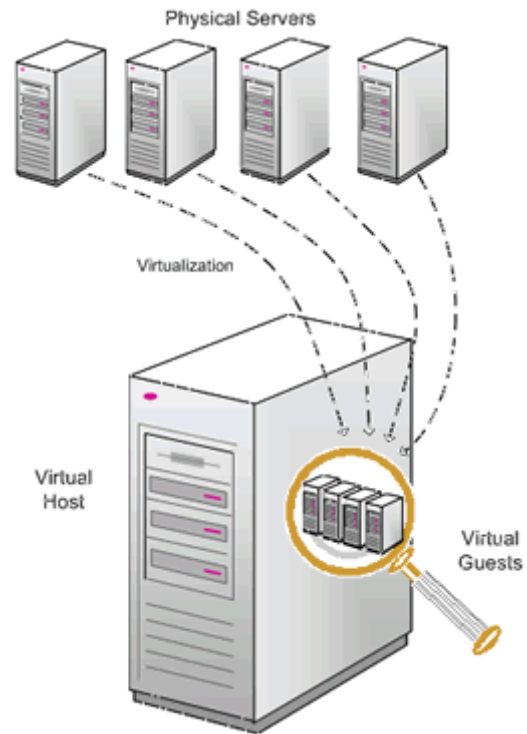


# Simple illustration of Desktop Virtualization

## Virtualized Desktop Solutions



# Simple illustration of Server Virtualization



# 10 Questions to test your Virtualization readiness

- Does virtualization help you address business objectives?
  - Aligning the technology implementation with specific business goals
- Do you have the skills to support virtualization?
  - Lack of "appropriate skills" is the biggest barrier to successful virtualization deployments
- Are you ready for the politics virtualization could introduce?
  - *some groups may not wish to share server resources*
- Have you considered and can you accept the risks?
  - the impact of hardware failure, human errors, security breaches, planning problems, support issues and more are vastly magnified in a virtual environment.
- How will your security systems hold up?
  - Virtualization can introduce more security holes, more forms of malware and more
- Do you have compatible systems and applications?
  - Some applications and systems do not mesh well with virtualization
- Do you have a capacity-planning discipline?
  - Virtual server sprawl is a common result of virtualization deployments outgrowing their existing capacity
- Is there support for your environments?
  - while many popular, packaged applications support virtualization, many applications do not
- Can your network support virtualization?
  - virtualization technologies that focus on the user, such as application or **desktop virtualization** or application streaming, don't work well over low-bandwidth connections
- Can your management systems handle virtual environments?
  - the ease of deployment leads to a proliferation of virtual machines, or virtual server sprawl, which makes management exponentially more difficult



## CIOs and IT managers should ...

- Today
  - **Build** a virtualization management plan. How will you avoid virtualization sprawl?
  - **Evaluate** key business outcomes and potential risks.
- Near Future
  - **Align** your virtualization strategy with the business.
  - **Avoid** vendor hype, grand strategies, nervous vendors and ill-conceived offerings.
  - **Beware** software pricing and licensing, including early virtualization pricing experiments.
  - **Experiment**, but be the scientist, not the subject.
- Longer Term
  - **Analyze** the impact (and opportunity) for alternative delivery models.

