

## Virtualization's Past, Present, & Future Ten Strategic Paths for 2012 and Beyond

Greg Shields

Senior Partner and Principal Technologist,

Concentrated Technology, LLC

<http://ConcentratedTech.com>



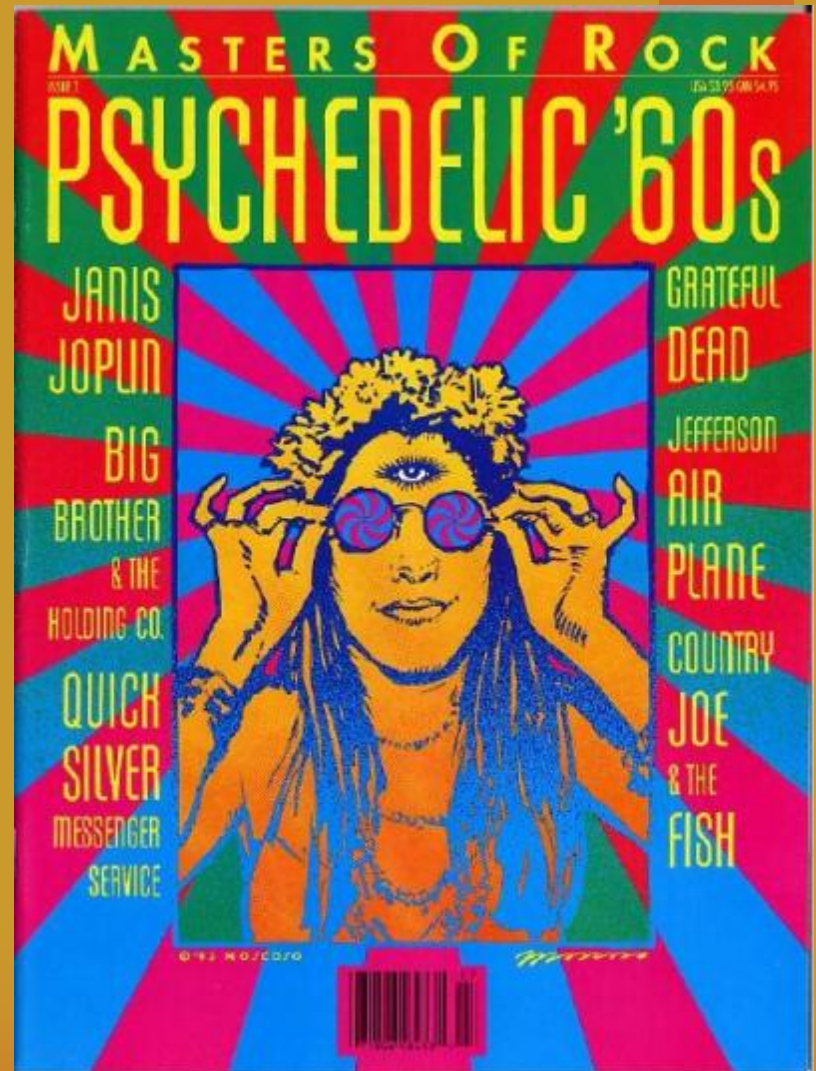
# Where We've Been...

“Those who cannot remember the past  
are doomed to repeat it.”

- George Santayana,  
*Reason in Common Sense*

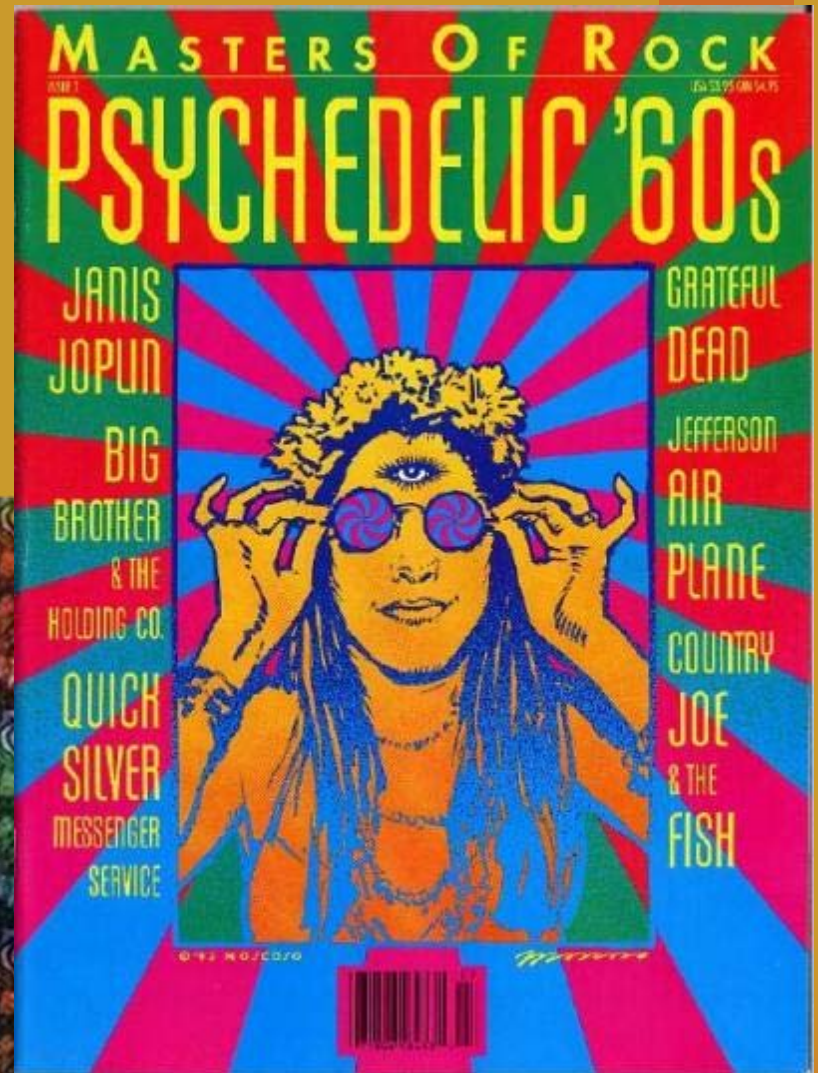
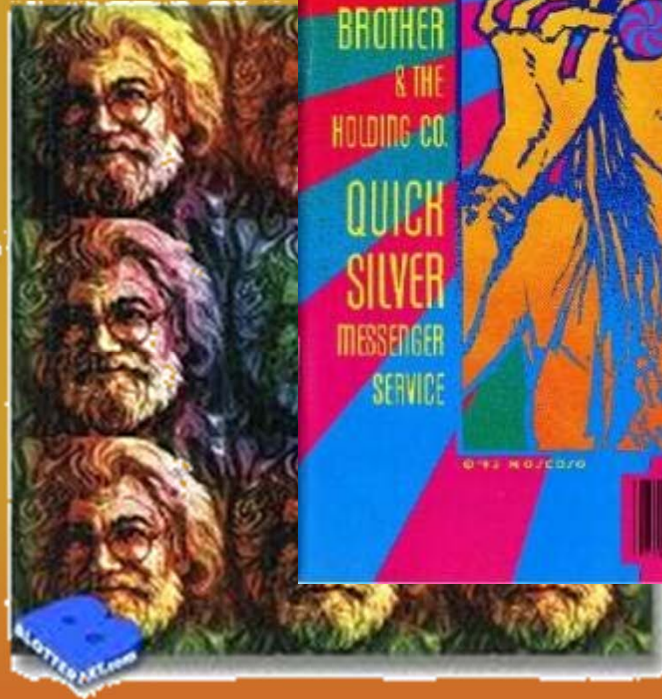
# More Mature than you Ever Dreamed, Man!

- Virtualization has been around since the 1960s.



# More Mature than you Ever Dreamed, Man!

- Virtualization has been around since the 1960s.
- SHOCKER: Cloud computing began at about the same time.



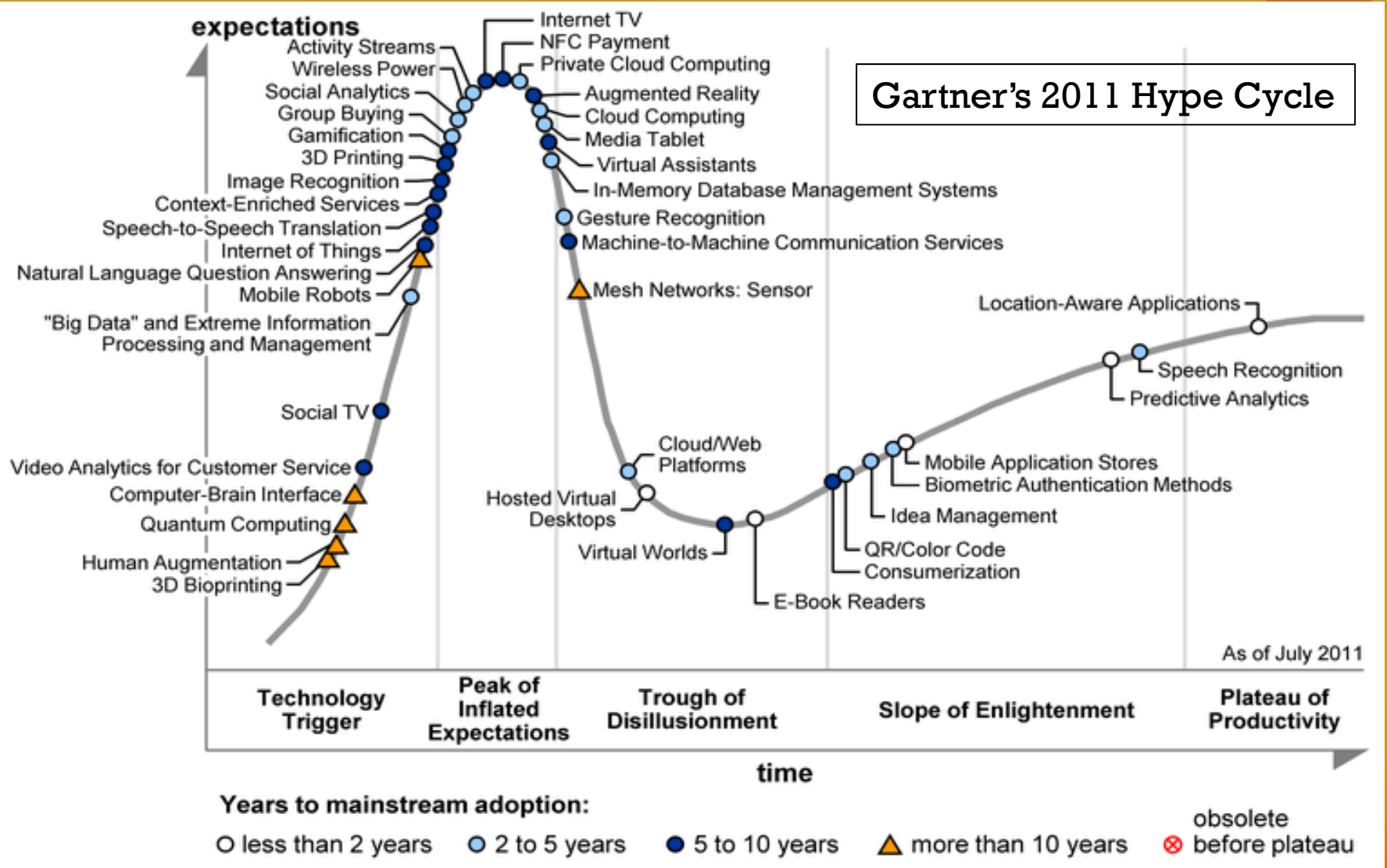
# Virtualization & Cloud Computing are Strategic Decisions

- Back in 2009, Gartner identified Virtualization and Cloud Computing as two of the top ten strategic IT technologies.
  - Was yours?

# Virtualization & Cloud Computing are Strategic Decisions

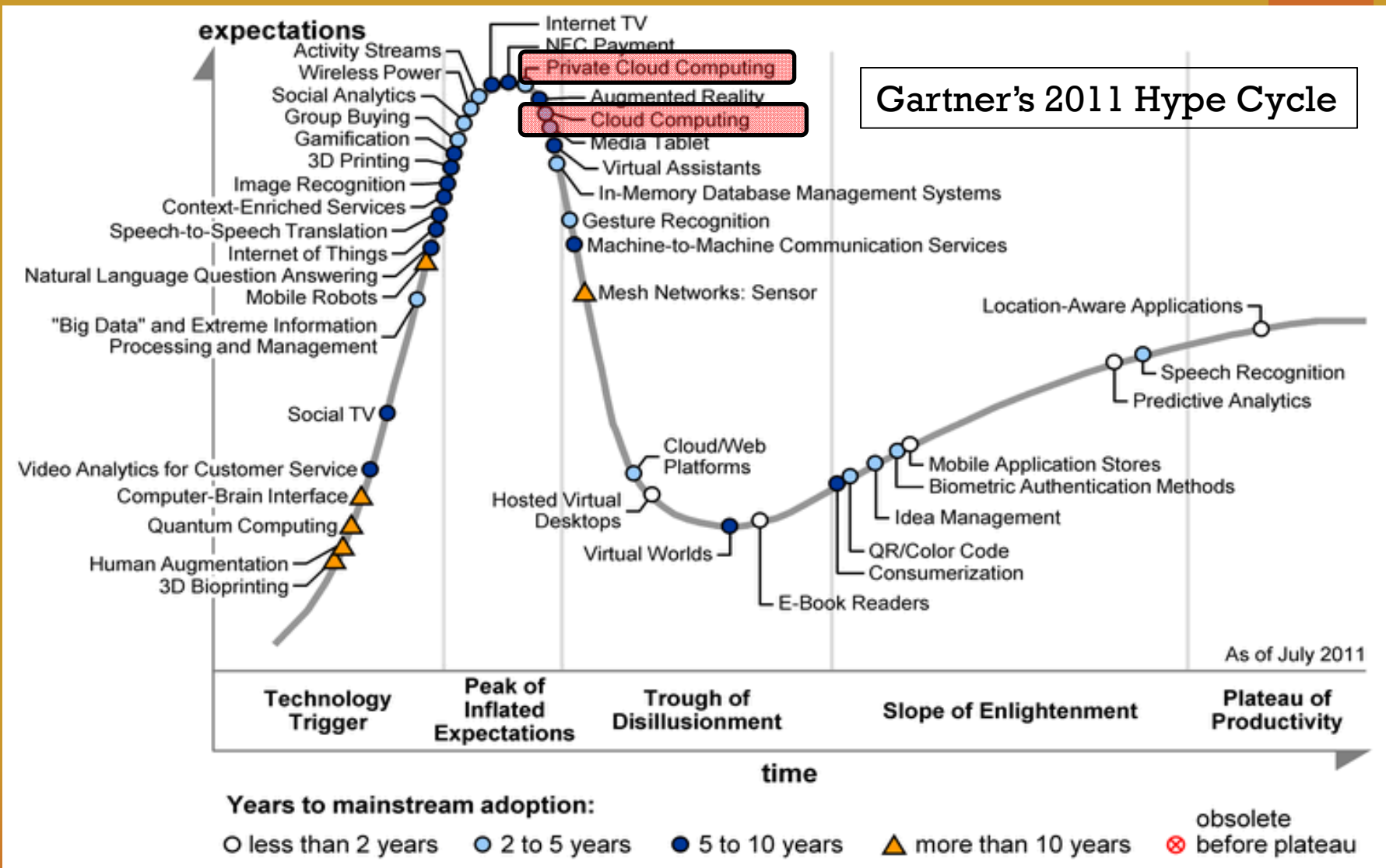
- Back in 2009, Gartner identified Virtualization and Cloud Computing as two of the top ten strategic IT technologies.
  - Was yours?
- It also reported that Cloud Computing had reached the apex of the firm's *Hype Cycle for Emerging Technologies*
  - Expected to be two-to-five years from mainstream adoption.
  - That was four years ago...

# Where We're At...



concentrated technology

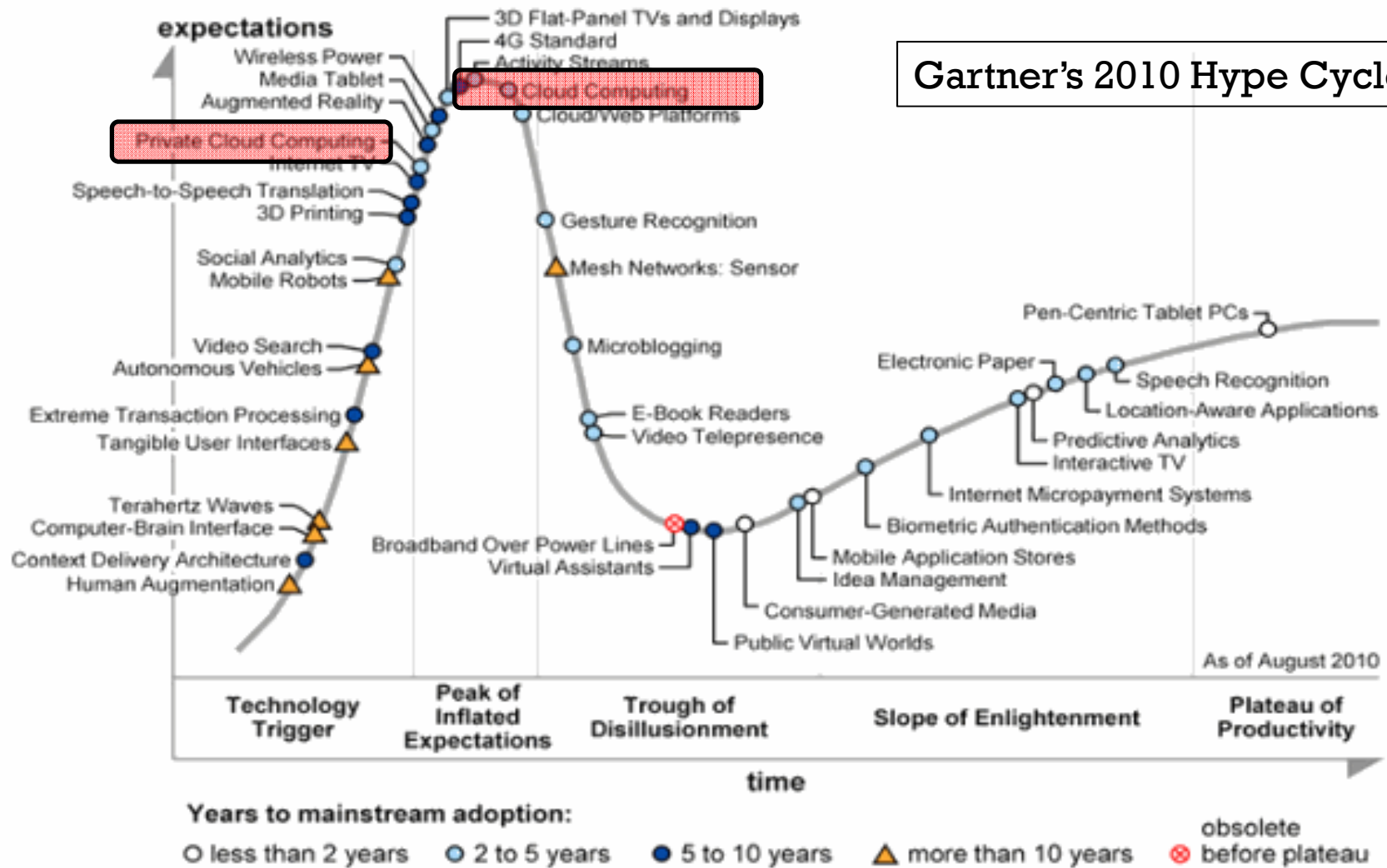
# Where We're At...





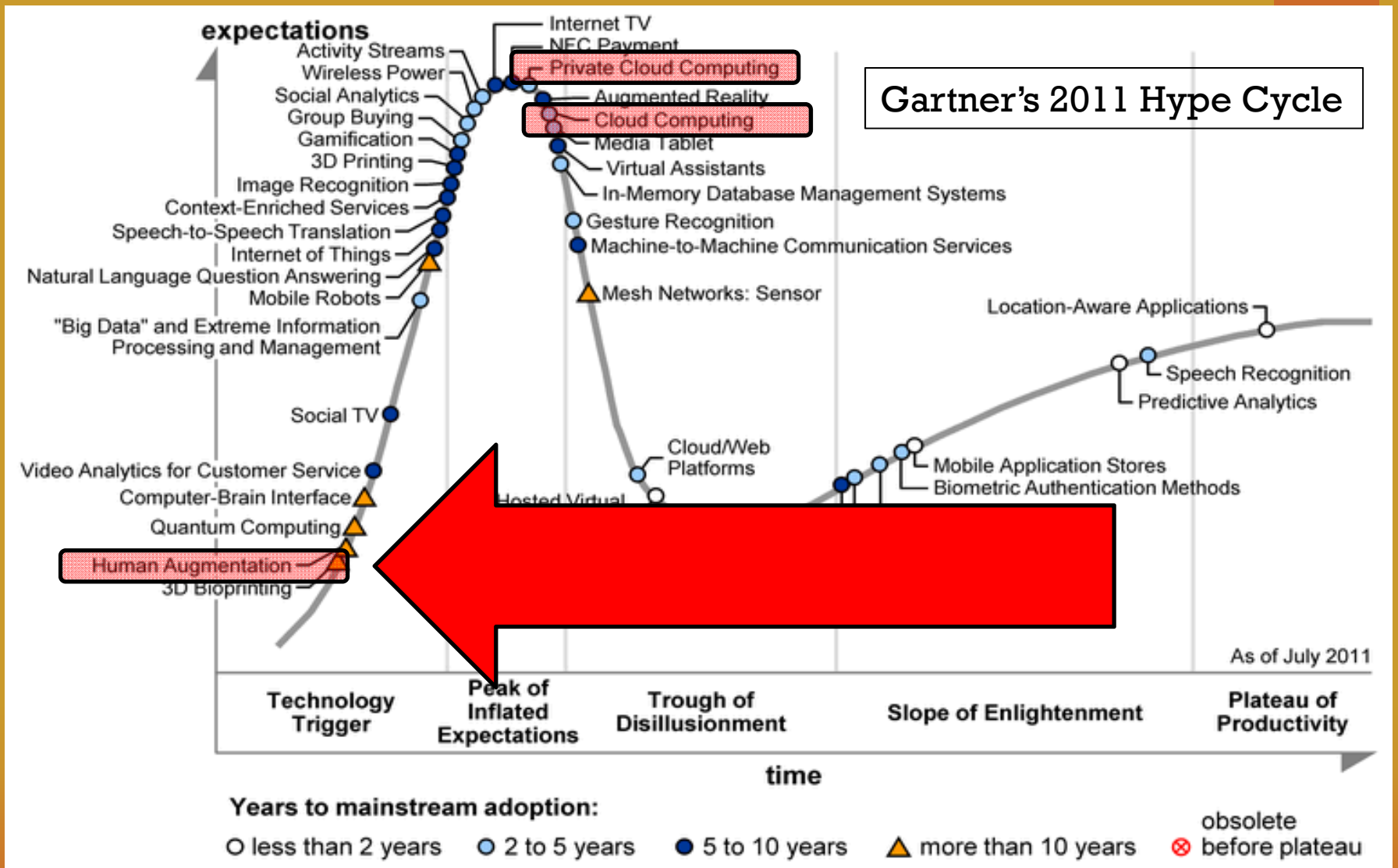
...compared to 12 Months Prior.

Gartner's 2010 Hype Cycle



concentrated technology

# Still a Long Ways Off...



concentrated technology

# Where We're At

(The Good News)

- In its 2010 industry predictions, Garter reported that 51% of workloads will be virtualized by the end of 2011.
  - 23% of installed applications running in a VM.
  - We have met those predictions.

# Where We're At

(The Good News)

- In its 2010 industry predictions, Garter reported that 51% of workloads will be virtualized by the end of 2011.
  - 23% of installed applications running in a VM.
  - We have met those predictions.
- Budgets are returning, according to a recent Data Center Decisions survey.
  - In 2009, 40% of datacenters faced budget cuts.
    - 20% seeing more than 10% cuts.
  - In 2010, only 20% face budget cuts.
    - 46% seeing an increase.

# Where We're At

(The Good News)

- That same survey suggests the reasons for virtualizing are also maturing.
- Take a look at the numbers...
  - 46% - Increasing capacity
  - 42% - Enhancing virtualization capabilities
  - 39% - Replacing servers hitting end-of-life
  - 38% - Supporting new applications
  - 25% - Improving server efficiency
  - 24% - Reducing floor space and server consolidation

# Where We're At

(The Good News)

- These metrics suggest we are no longer only virtualizing for space, power, and cooling reasons.



# Where We're At

(The Good News)

- These metrics suggest we are no longer only virtualizing for space, power, and cooling reasons.
- Evidence? Datacenter capacity constraints have dropped.
  - 60% drop in datacenters expecting capacity constraints.
  - Suggests that virtualization's early SPC value props were valid.

# Where We're At

(The Good News)

- These metrics suggest we are no longer only virtualizing for space, power, and cooling reasons.
- Evidence? Datacenter capacity constraints have dropped.
  - 60% drop in datacenters expecting capacity constraints.
  - Suggests that virtualization's early SPC value props were valid.
- Continuing adoption of virtualization technologies means businesses are seeing process alignment.
  - E.g. Virtualization is better than No Virtualization, net net.



# Where We're At

(The News to Watch)

- VMware today remains far in front of its competitors.
  - VMware enjoys an 78% +/- market share.
  - Compare this to 38% for Microsoft and 18% for Citrix.

# Where We're At

(The News to Watch)

- VMware today remains far in front of its competitors.
  - VMware enjoys an 78% +/- market share.
  - Compare this to 38% for Microsoft and 18% for Citrix.
- VMware's dominance as virtual platform of choice is eroding.
  - Albeit, very, very slowly.
  - Hyper-V market share growing 215% and XenServer growing 290%, although these percentages are on very low numbers (IDC).
  - The "simplified virtualization" meme resonates with low-complexity environments and SME. That meme has heavy association with Hyper-V.

# Where We're At

(The News to Watch)

- Hyper-V and XenServer remain behind on key capabilities...
  - Management tools, particularly those for large implementations.
  - Clustering and cluster architecture.
  - Private Cloud-enabling resource controls.
  - Resource quantification methodology.

# Where We're At

(The News to Watch)

- Hyper-V and XenServer remain behind on key capabilities...
  - Management tools, particularly those for large implementations.
  - Clustering and cluster architecture.
  - Private Cloud-enabling resource controls.
  - Resource quantification methodology.
- That said, Hyper-V's capabilities are at parity or superior in a few important areas...
  - Memory management, in WS2008 R2 SP1.
  - Transport protocol, in WS2008 R2 SP1, and again in WS8.
  - Virtual networking, in WS08.
  - Driver support, due to its Hybrid Type 1 hypervisor architecture.

# Where We're At

(The News to Watch)

- We're seeing some virtual platform alignment to workload.
  - vSphere in early adopter environments.
  - XenServer in desktop virtualization environments.
  - Hyper-V in low-complexity environments.

# Where We're At

(The News to Watch)

- We're seeing some virtual platform alignment to workload.
  - vSphere in early adopter environments.
  - XenServer in desktop virtualization environments.
  - Hyper-V in low-complexity environments.
- **SEA CHANGE:** Core virtualization technologies appear to be approaching a tipping point.
  - vSphere 5.0 was largely an evolutionary release.
  - Hyper-V v3 is expected to be revolutionary.

# Where We're At

(The News to Watch)

- We're seeing some virtual platform alignment to workload.
  - vSphere in early adopter environments.
  - XenServer in desktop virtualization environments.
  - Hyper-V in low-complexity environments.
- SEA CHANGE: Core virtualization technologies appear to be approaching a tipping point.
  - vSphere 5.0 was largely an evolutionary release.
  - Hyper-V v3 is expected to be revolutionary.
- **The sex in virtualization is no longer in virtualization.**

# Where We're At

(The Bad News)

- 60% of virtualized servers will be less secure than the physical servers they replace (Gartner).
- 44% still avoid virtualization for mission-critical workloads due to concerns about backups and security (VMware Data Protection Report 2010, Veeam).
  - Virtual security controls haven't kept pace with adoption.
  - Some security controls unacceptably decrease VM performance.
  - Backups remain a problem.



What Does This Mean?  
Where are We Going?



# What Does This Mean? Where are We Going?

- **OPINION:**

Virtualization's pace of innovation appears to have plateaued.

# What Does This Mean? Where are We Going?

## ■ OPINION:

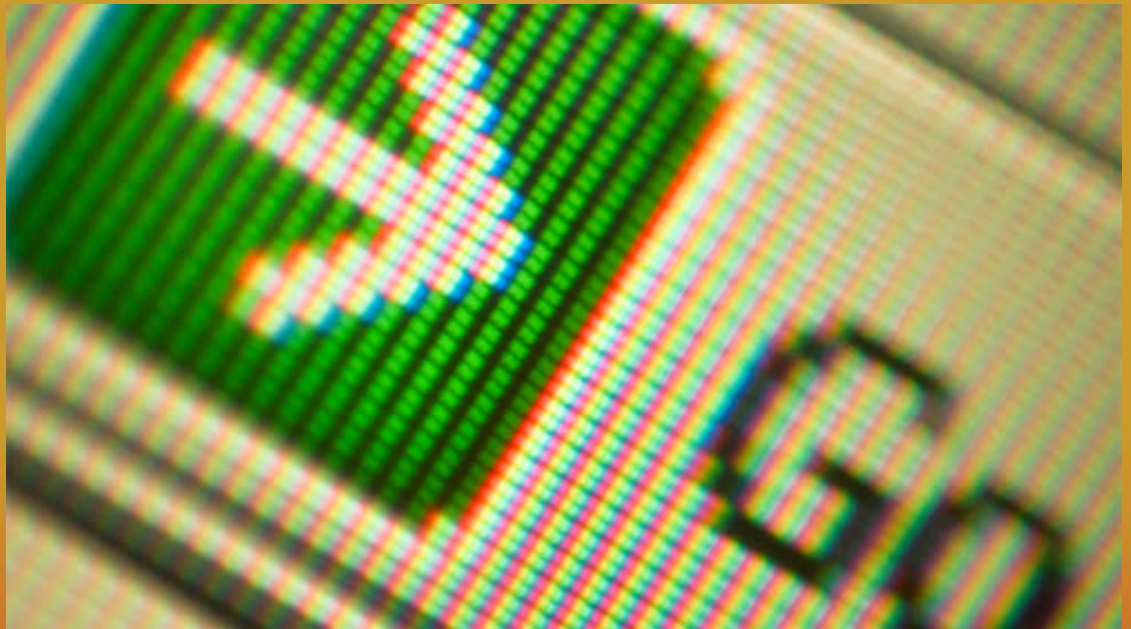
Virtualization's pace of innovation appears to have plateaued.

## ■ This is a good thing.

- Virtualization is undoubtedly the ~~future~~ present.
- Late arrivals are learning from mistakes made by early adopters.
- Simple virtualization will evolve to Private Cloud with less risk.
- Hardware vendors are beginning to catch up. Hardware “designed for virtualization” is now a reality.
- Hypervisor feature stability refocuses ISV attentions on management tools, better approaches, better best practices.

# Ten Strategic Paths

- So...admittedly, statistics lie.
  - But value can be gained in reading between the lines.
  - I suggest they expose Ten Strategic Paths for 2012 and beyond.



# Strategic Path #1

- The hypervisor war is (more or less) over.

# Strategic Path #1

- The hypervisor war is (more or less) over.
  - Today's updates are evolutionary, not revolutionary.
  - All of today's platforms are (more or less) ready for the enterprise.

# Strategic Path #1

- The hypervisor war is (more or less) over.
  - Today's updates are evolutionary, not revolutionary.
  - All of today's platforms are (more or less) ready for the enterprise.
  - A more important battlefield centers around the tools to manage virtualization than hypervisor capabilities themselves.

# Strategic Path #1

- **The hypervisor war is (more or less) over.**
  - Today's updates are evolutionary, not revolutionary.
  - All of today's platforms are (more or less) ready for the enterprise.
  - A more important battlefield centers around the tools to manage virtualization than hypervisor capabilities themselves.
  - Includes first-party management capabilities, but also critically necessary add-on products.
    - Service-centrism is a focus in the next evolution.
    - Some tools for this exist: HP, BMC, Quest, Microsoft, others.



# Strategic Path #1

- **The hypervisor war is (more or less) over.**
  - Today's updates are evolutionary, not revolutionary.
  - All of today's platforms are (more or less) ready for the enterprise.
  - A more important battlefield centers around the tools to manage virtualization than hypervisor capabilities themselves.
  - Includes first-party management capabilities, but also critically necessary add-on products.
    - Service-centrism is a focus in the next evolution.
    - Some tools for this exist: HP, BMC, Quest, Microsoft, others.
  - **Success requires filling certain notable gaps:**
    - Capacity and performance management.
    - Backup and restore.

## Strategic Path #2

- Virtualization in the enterprise datacenter must become the standard.

# Strategic Path #2

- Virtualization in the enterprise datacenter must become the standard.
  - Intel estimates 99% of all workloads can be virtualized today.

# Strategic Path #2

- Virtualization in the enterprise datacenter must become the standard.
  - Intel estimates 99% of all workloads can be virtualized today.
  - Private Cloud represents the most viable solution today for optimizing enterprise hardware resources.

# Strategic Path #2

- Virtualization in the enterprise datacenter must become the standard.
  - Intel estimates 99% of all workloads can be virtualized today.
  - Private Cloud represents the most viable solution today for optimizing enterprise hardware resources.
  - Consolidation need not always be the goal.
    - 1:1 virtualization can make sense when other factors are considered.

# Strategic Path #2.5

- Virtualization in SME must also become the standard.

# Strategic Path #2.5

- Virtualization in SME must also become the standard.
- Five Key Reasons:
  1. Simplified Virtualization meme brings an assist.
  2. Virtualization platforms are now more cost-effective, net net.
  3. Storage options are growing in number. Watch this space carefully in the Server 8 wave.
  4. Add-on products for backup/DR/security/management see excellent momentum in SME. Short sales cycle and low complexity are an assist.
  5. Virtualization knowledge and experience is now mature. Architectures can be implemented by technology generalists.

# Strategic Path #3

- Embrace “The Cloud”.
  - Or, better yet, stop fearing it.
  - “The Cloud” is already all around you.
  - Yes, Cloud will be a disruptive force, including with people’s jobs.



# Strategic Path #3

- Embrace “The Cloud”.
  - Or, better yet, stop fearing it.
  - “The Cloud” is already all around you.
  - Yes, Cloud will be a disruptive force, including with people’s jobs.
- NOTEWORTHY OBSERVATION: The iPad and its copycats may be our industry’s greatest motivator towards embracing cloud ubiquity for applications.
  - First acceptable new form factor for application delivery since the laptop.
  - World of work is forcing IT to evolve towards a coming “IT 2.0”. (More on this in a minute)

# Strategic Path #4

- Desktop virtualization mustn't be the default answer.

# Strategic Path #4

- Desktop virtualization mustn't be the default answer.
  - Think back about that iPad story.
  - IT 2.0: “It is the core mission of IT to create, manage, and ensure the secured access to business applications and data.”  
- Greg Shields, TechNet Magazine, Feb. 2010

- VDI can fulfill that mission, but it is merely one in a suite of potential delivery mechanisms.

Presented applications  
Streamed applications  
Web applications  
VM-hosted applications

Presented desktops  
Cloud-based applications  
Client-based desktops

# Strategic Path #5

- ...yet virtualization at the desktop might be.

# Strategic Path #5

- ...yet virtualization at the desktop might be.
  - Honestly, still too early to tell.
  - Client hypervisors suggest a future where we can care less about desktop hardware, drivers, deployment, management.
  - These are all the expensive activities that don't add much recognizable value.
  - IT 2.0 is all about ubiquitous and secure access to applications and data, the “same experience” indifferent of form factor and location. Client hypervisors facilitate this.
- SUGGESTION: {Watch this space.}

# Strategic Path #6

- Performance and capacity management are absolute requirements.

# Strategic Path #6

- Performance and capacity management are absolute requirements.
  - Virtualization complicates troubleshooting.
  - Any human lacks the necessary instrumentation and analysis to best determine VM composition and consolidation ratios.

# Strategic Path #6

- Performance and capacity management are absolute requirements.
  - Virtualization complicates troubleshooting.
  - Any human lacks the necessary instrumentation and analysis to best determine VM composition and consolidation ratios.
- A central tenet of Private Cloud thinking is the quantification of resource supply and demand.
  - Hardware presents supply of resources; workloads exert demand pressure.
  - These two must meet for successful performance.
  - Virtual platforms must provide actionable data to administrators on existing and projected supply/demand.



# Strategic Path #7

- Pay particular attention to security and compliance implications.

# Strategic Path #7

- Pay particular attention to security and compliance implications.
  - Legal Problem: Many compliance regulations have not kept pace with virtualization innovation. Lawyers and senators don't grok virtualization.
  - Security Problem: Most security solutions work. Many of security's early brute-force approaches were inappropriate for virtual environments.
  - Performance Problem: Virtual environment-friendly solutions require a lighter touch.

# Strategic Path #8

- Don't discount storage.

# Strategic Path #8

- Don't discount storage.
  - Virtualization's needs have created an incredible resurgence of storage innovation.
  - The old storage norms are growing irrelevant: "Good riddance to monolithic!"
  - Early storage adopters suffer under early infrastructure purchase decisions. In fact, for 89% of you storage selection is not motivated by virtualization! (Forrester, 2009)

# Strategic Path #8

- Don't discount storage.
  - Virtualization's needs have created an incredible resurgence of storage innovation.
  - The old storage norms are growing irrelevant: "Good riddance to monolithic!"
  - Early storage adopters suffer under early infrastructure purchase decisions. In fact, for 89% of you storage selection is not motivated by virtualization! (Forrester, 2009)
- Windows 8. Windows 8. Windows 8.

# Strategic Path #9

- Get yourself a working Disaster Recovery solution, now.

# Strategic Path #9

- Get yourself a working Disaster Recovery solution, now.
  - Notice I didn't say "plan" here.

# Strategic Path #9

- Get yourself a working Disaster Recovery solution, now.
  - Notice I didn't say "plan" here.
  - Virtualization and its ancillary technologies enable businesses of all sizes to find affordable DR solutions.
  - Hot site → Warm site → Cold site → A Really Big USB Drive
  - Just go get one. Soon.



# Strategic Path #10

- “Virtualization is no longer cool.”

- Keith Ward, Former Editor,  
*Virtualization Review Magazine*

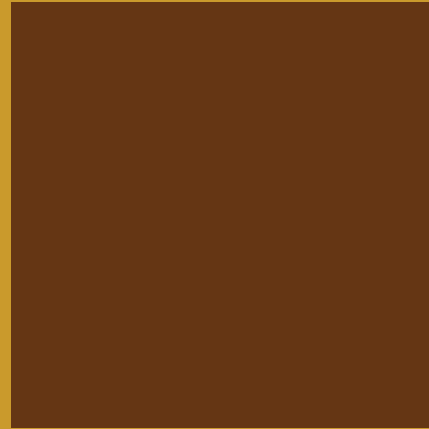
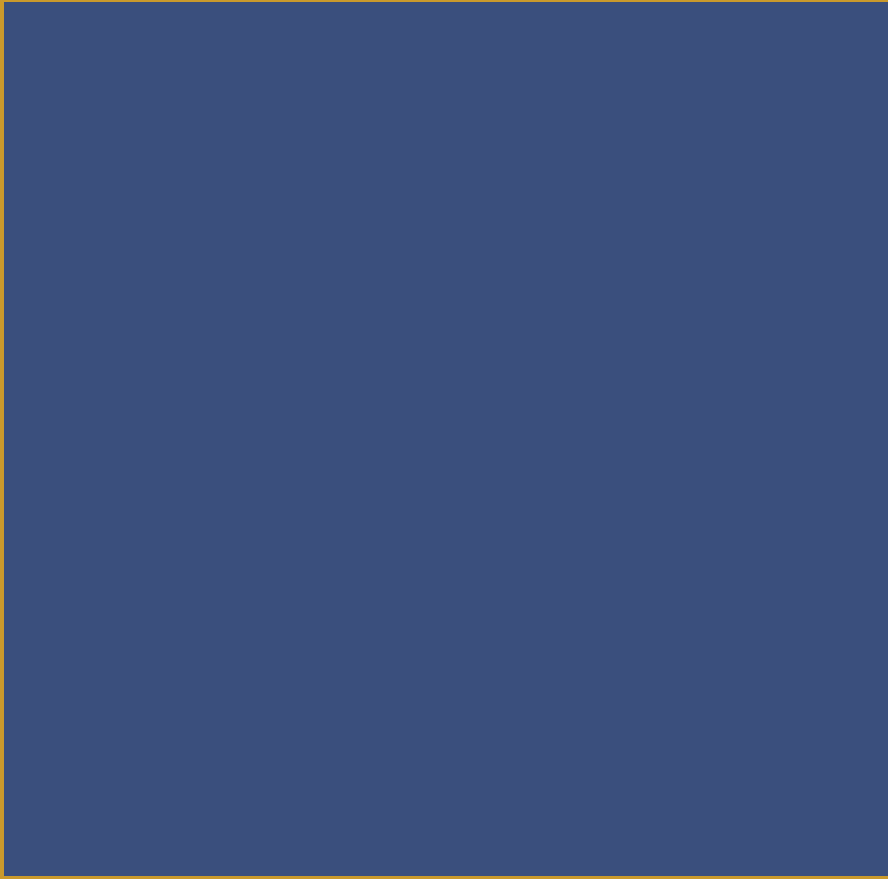
- This is also a good thing.
  - When a technology is “cool”, we make irrationally exuberant decisions about its implementation.
  - When a technology is “no longer cool”, we can make smart decisions about its implementation.

# Strategic Path #10

- “Virtualization is no longer cool.”

- Keith Ward, Former Editor,  
*Virtualization Review Magazine*

- Virtualization isn't the answer to everything.
- Today's virtualization approaches may not be tomorrow's.
- Smart orgs recognize that change is the only constant.
- Plan for change.



## Virtualization's Past, Present, & Future Ten Strategic Paths for 2012 and Beyond

Greg Shields

Senior Partner and Principal Technologist,

Concentrated Technology, LLC

<http://ConcentratedTech.com>

