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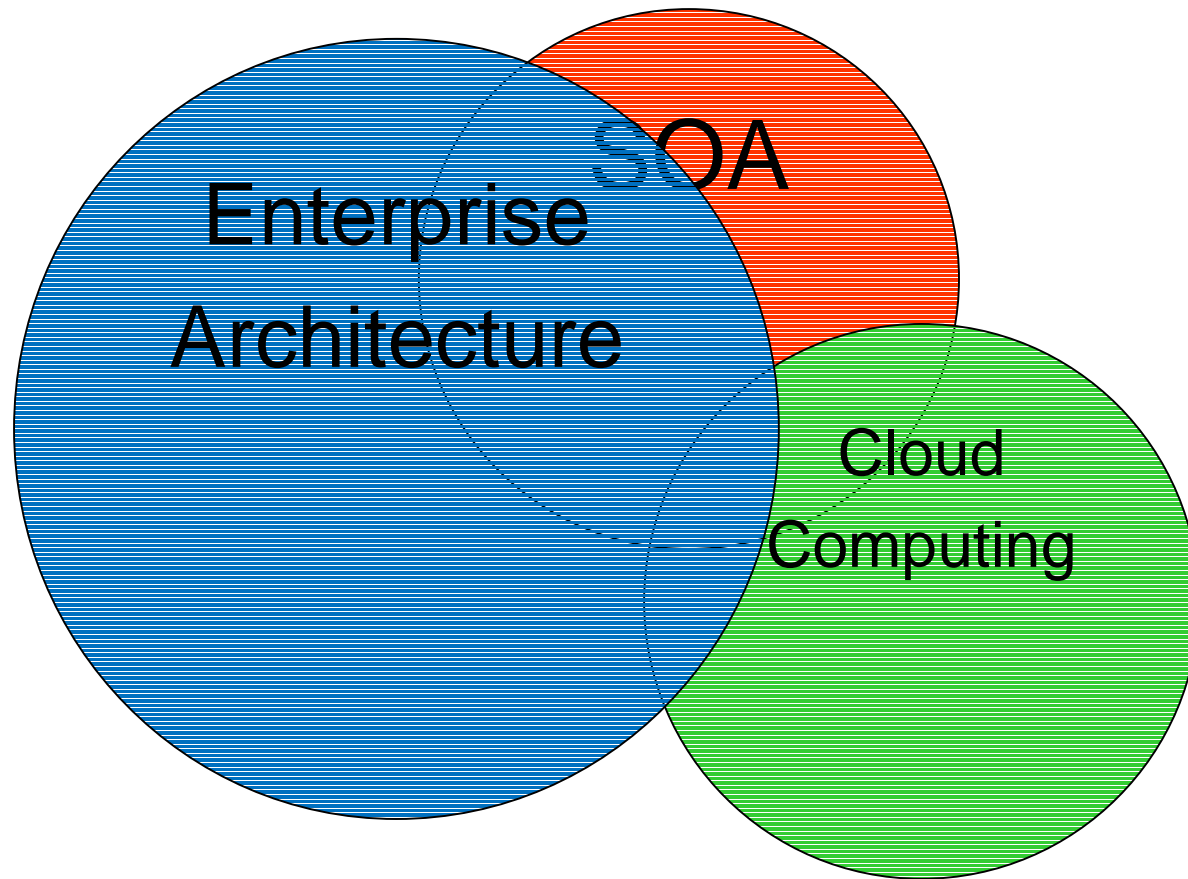
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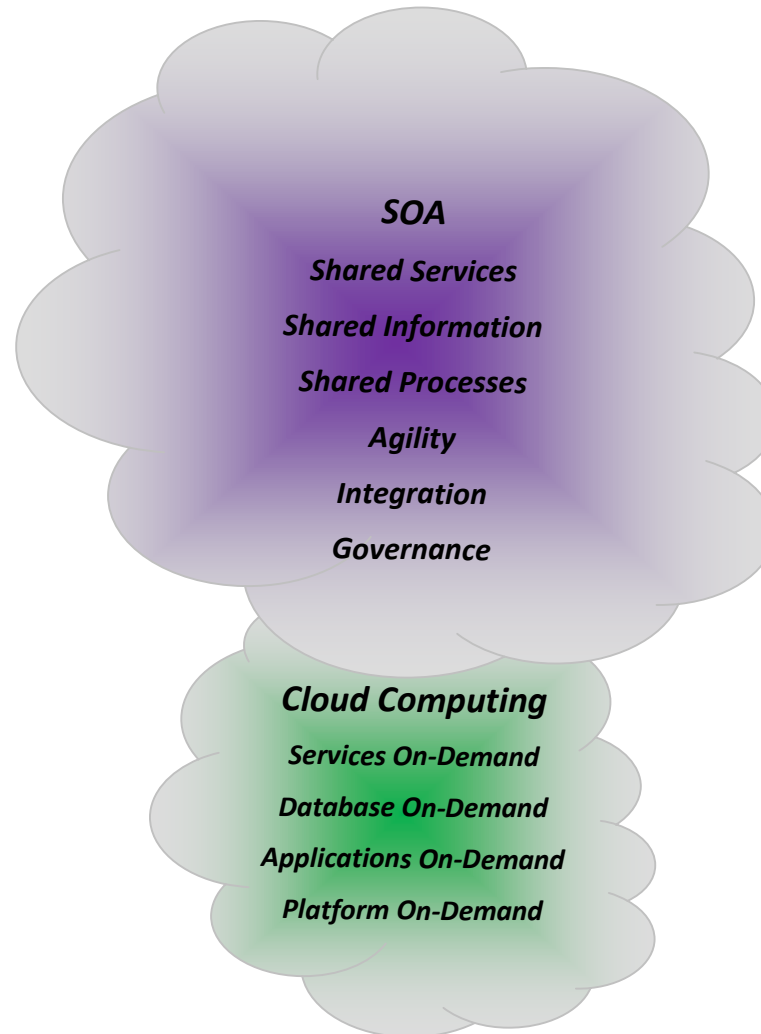
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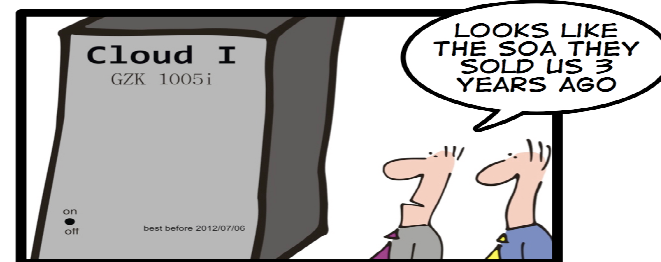
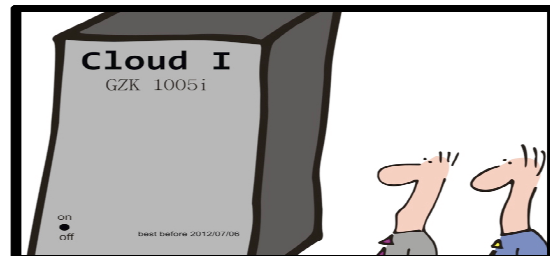
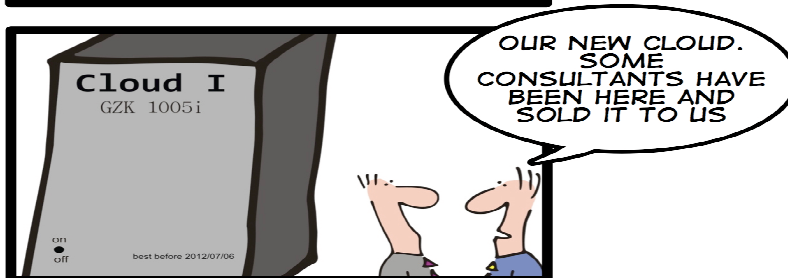
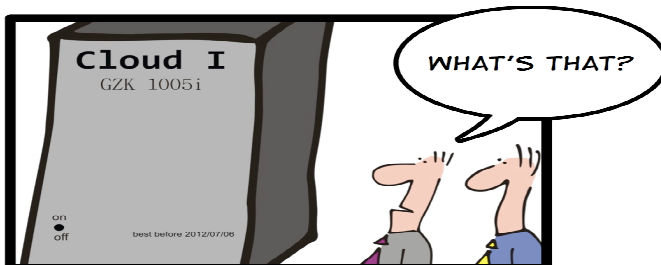
## Preparing for the Convergence of Healthcare, SOA, and Cloud Computing

# Understanding the Relationships



# SOA and Cloud Computing





# Things to Remember about the Cloud and SOA

- SOA is the foundation of cloud computing, not a replacement.
- When thinking about cloud computing strategies, SOA is systemic.
- Make sure to always consider service governance and service security.
- Understand what you control, and what you do not control.

- “Cloud computing promises enormous benefits for healthcare world. These could include improved patient care, better health for the overall populations providers serve, and new delivery models that will make healthcare more efficient and effective. And cloud computing can help do all of this in a cost-effective way.”

– Microsoft Official Blog

# Three layers of cloud computing

## Software as a Service (SaaS)

*Finished applications that you rent and customize*

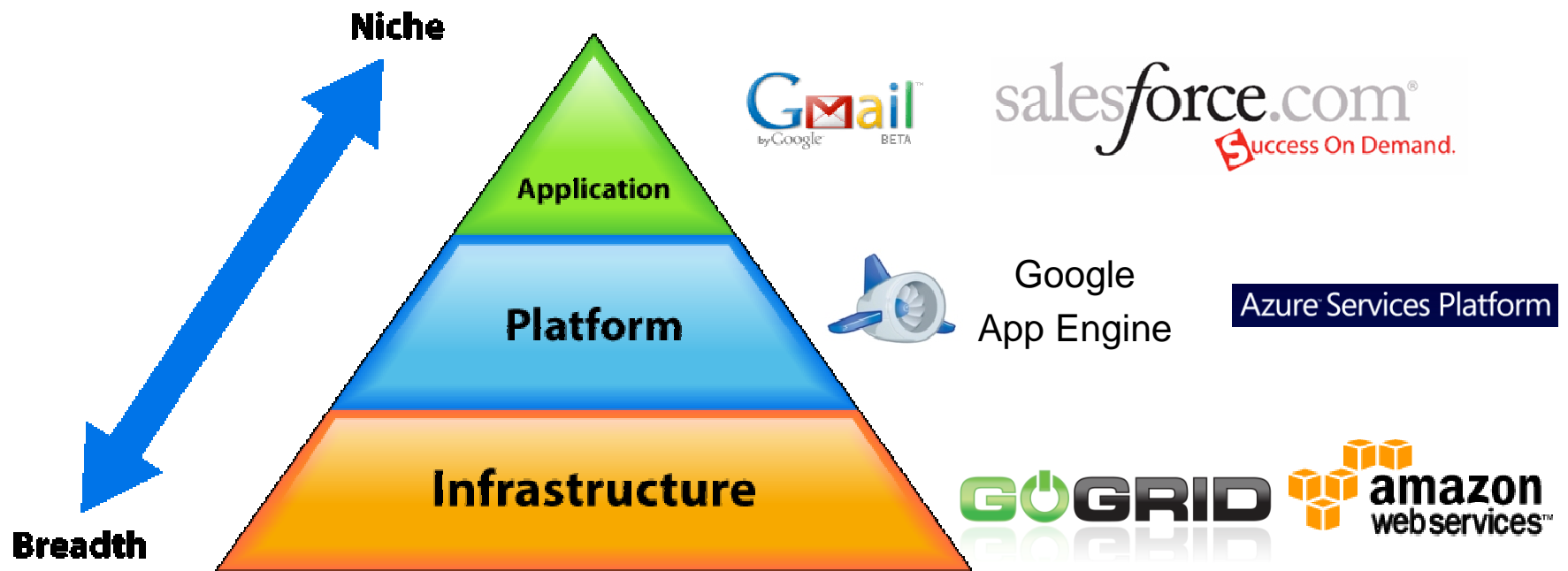
## Platform as a Service (PaaS)

*Developer platform that abstracts the infrastructure, OS and middleware to drive developer productivity*

## Infrastructure as a Service (IaaS)

*Deployment platform that abstracts the infrastructure*

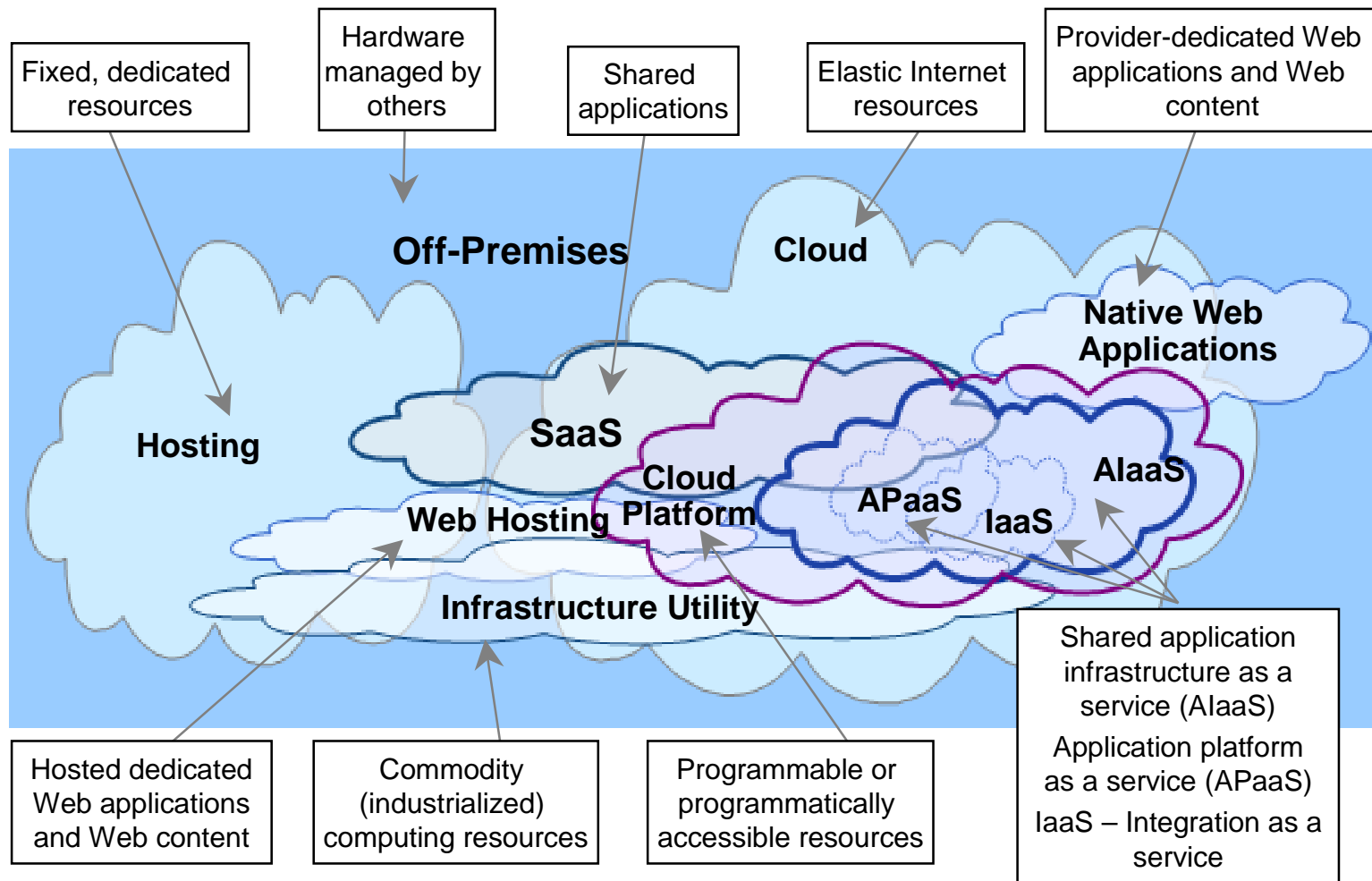
- Describes Cloud Services Economy
- Building blocks: IaaS -> PaaS -> SaaS



Source: GoGrid



# “the Cloud”?



Size of the cloudlets and overlap shown is not to scale

Source: Gartner Research

***For smaller hospitals  
and physician  
practices, in  
particular, cloud-  
based applications  
can be extremely  
cost-effective.***

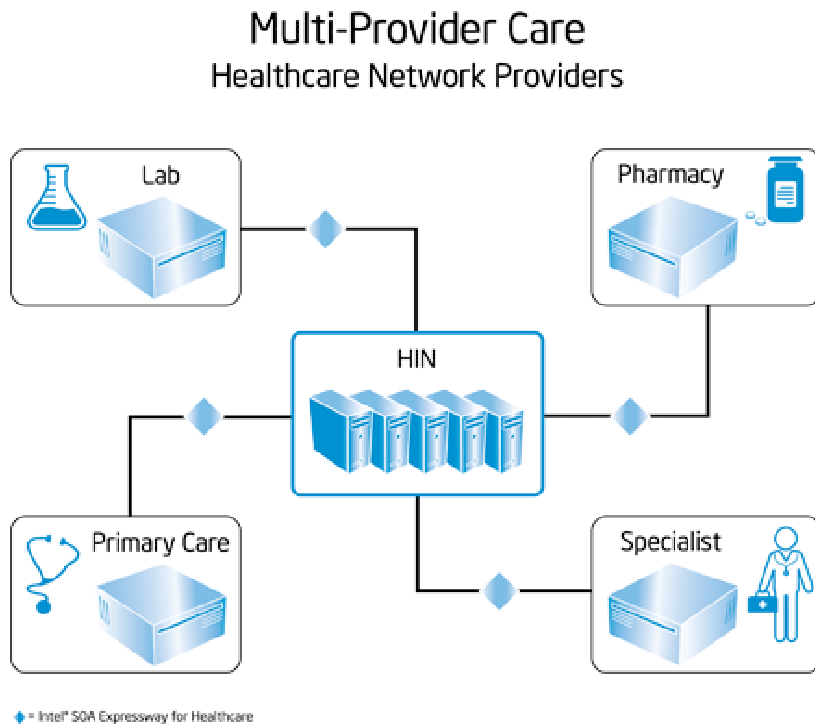


***Huge potential in  
sharing clinical  
outcomes in the  
cloud.***

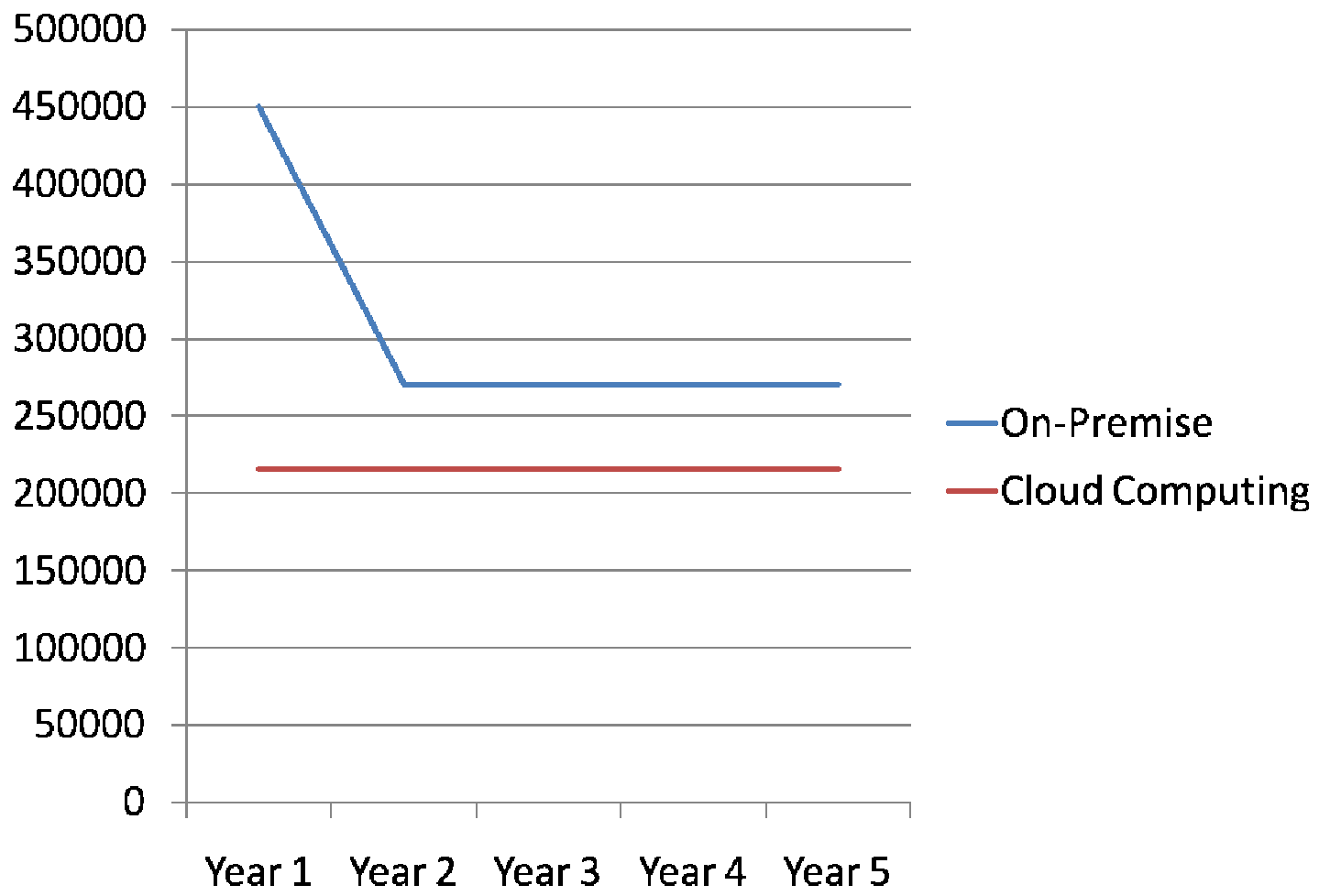


# Cloud and Healthcare

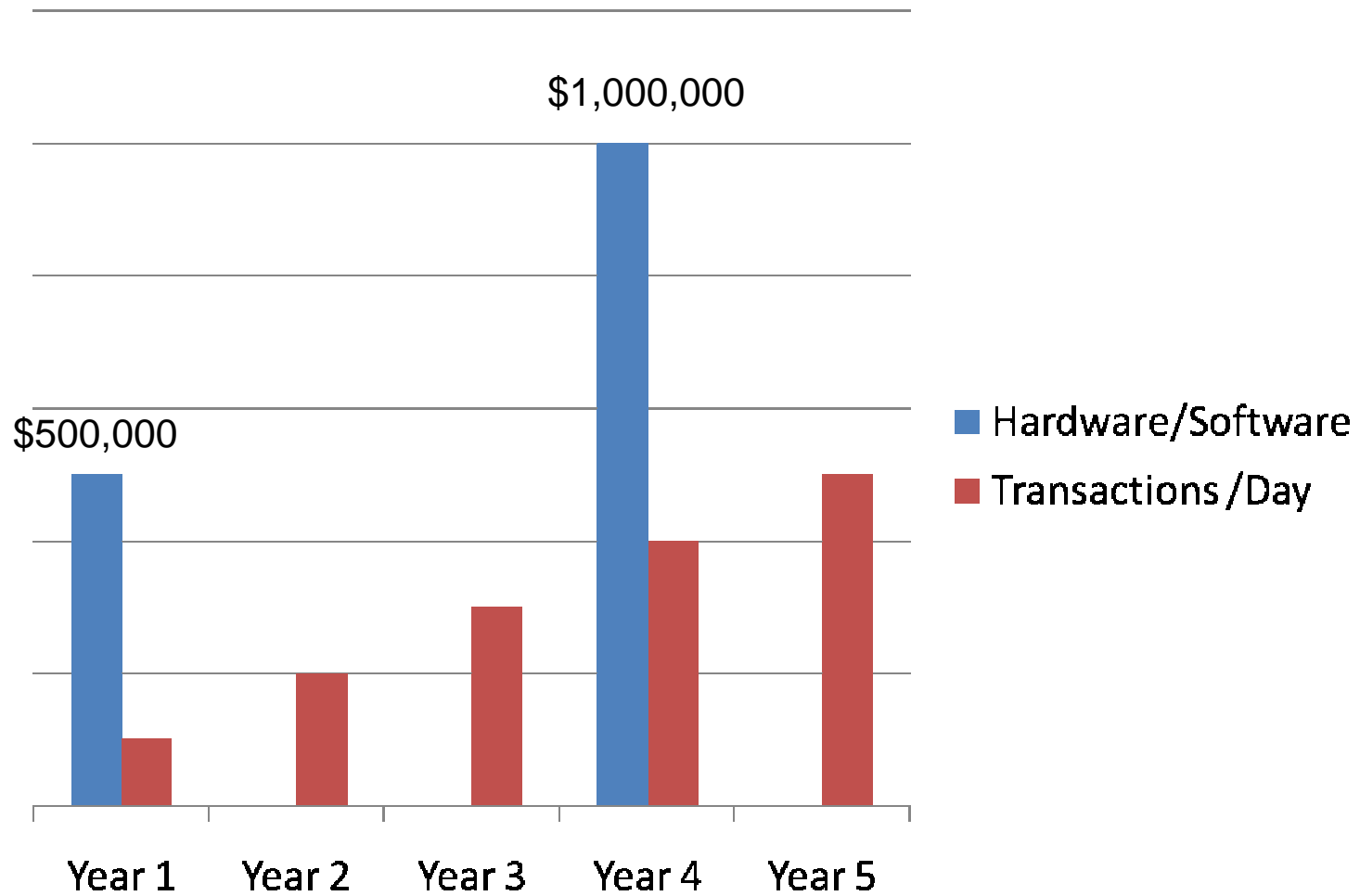
- Accountable care organizations and patient-centered medical home models will need to easily share information as well as offer more elastic pricing models than traditional licensed based offerings.
- That means that as demand increases, hospitals and other healthcare providers don't need to ramp their infrastructures up and down.



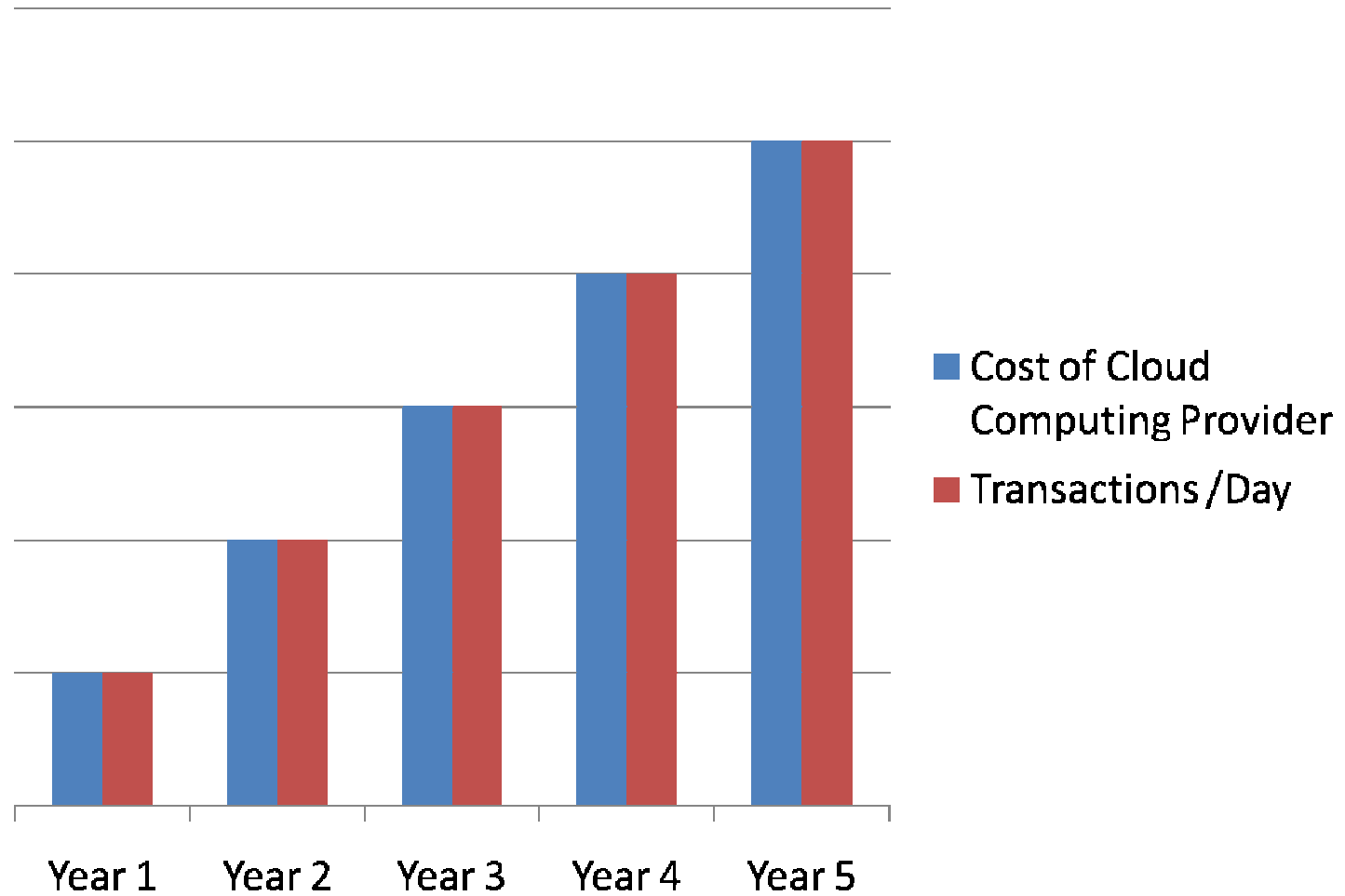
*The cloud also gives large provider networks the ability to strengthen relationships with their referring physicians and in turn, their patients.*



# On-Premise



# Cloud Delivered

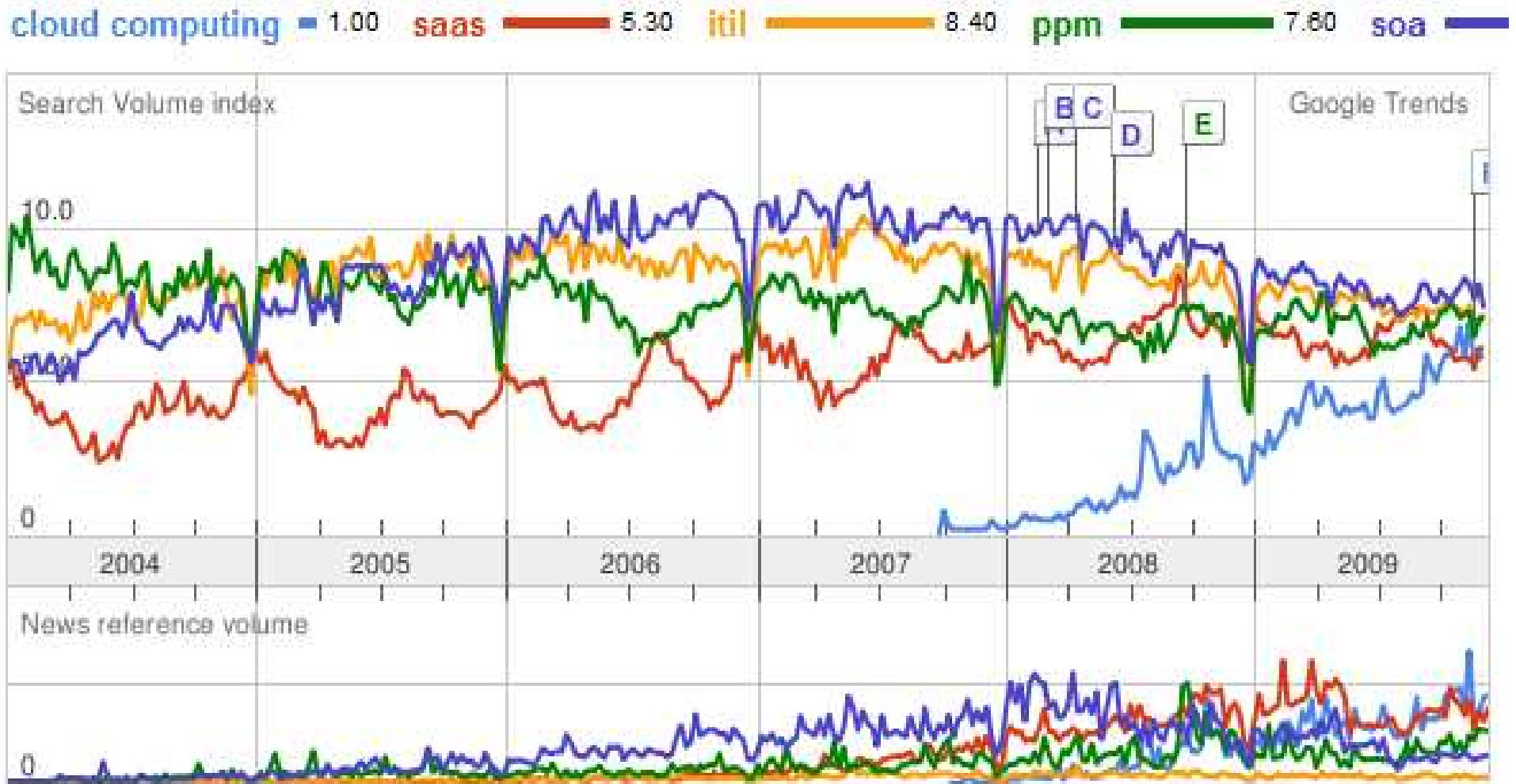






“For the cloud, we're all in.”

# Cloud Popularity=Hype



Source: CA

# Need a Job?



# Crazy Cloud Washing



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DAVID LINTHICUM

MAY 18, 2010

## The cloud's conflict of interest over interoperability

It's time for cloud customers to vote with their dollars to get the openness and portability they've been promised

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Interoperability is all the talk these days in the world of cloud computing. The PowerPoint presentations speak for themselves in their descriptions of the ability to move data, code, and even virtual machines and binary images among clouds, both private and public, with drag-and-drop ease.

Indeed, there is no real reason we can't move quickly in this direction. Many cloud providers use similar internal architectures and virtualization technology approaches, as well as similar API architectures. That provides the potential basis for interface and platform compatibility.

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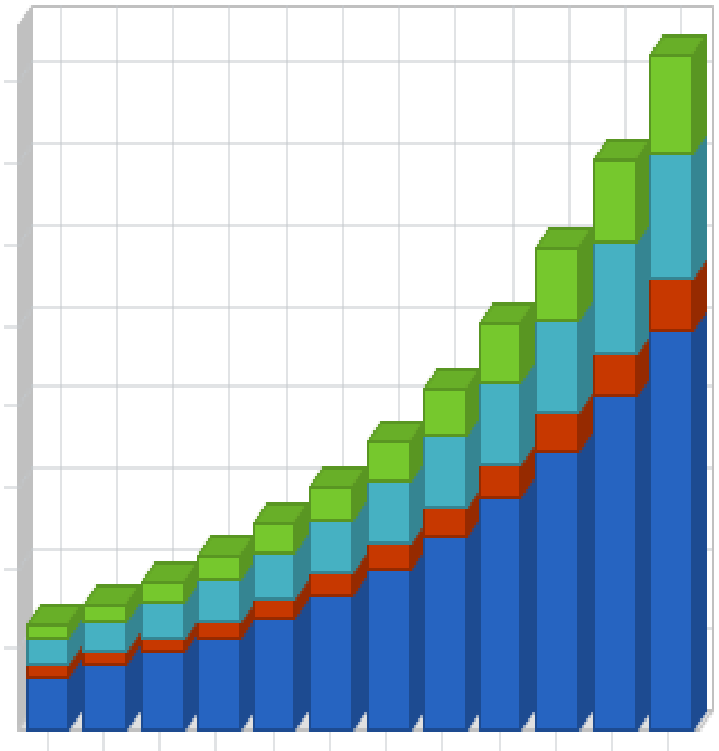
# Connectivity becomes more challenging than ever

## A “Connectivity Explosion”

- Applications, formats, APIs, protocols, standards, etc.
- Connected business partners

## Connectivity neither trivial nor static:

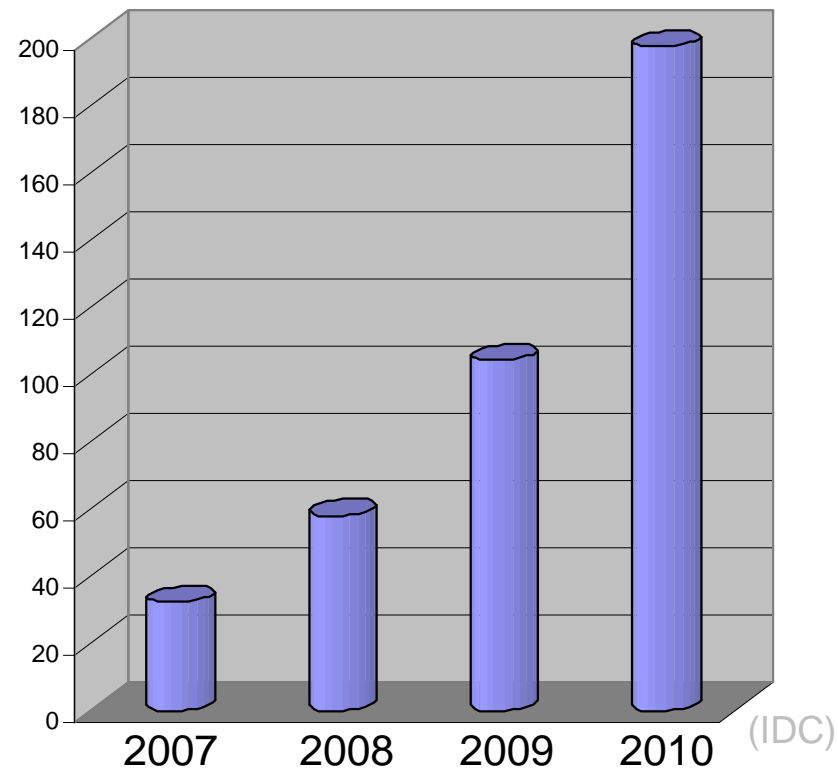
- Incompatible structures, semantics, business rules
- No mature standards
- Changes abound
- Not easy to create robust Web services interfaces



Source: Pervasive Software

## Data volumes increases at an explosive rate

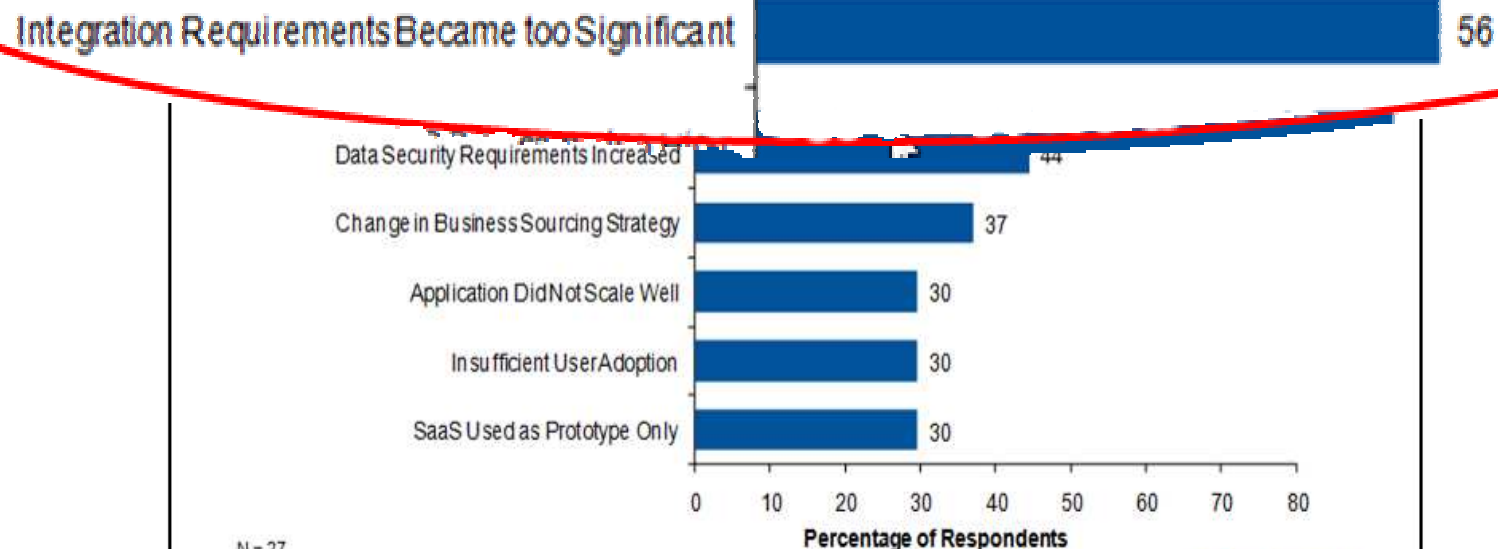
Data subject to Sarbanes-Oxley, Basel II  
or other governmental regulation



1 Exabyte = 1 quintillion bytes

## Rising TCO Joins Significant Integration Requirements as Top Criteria Promoting the Transition to On-Premises

**Survey question: Why is your organization currently transitioning from a SaaS solution to an on-premises solution?**



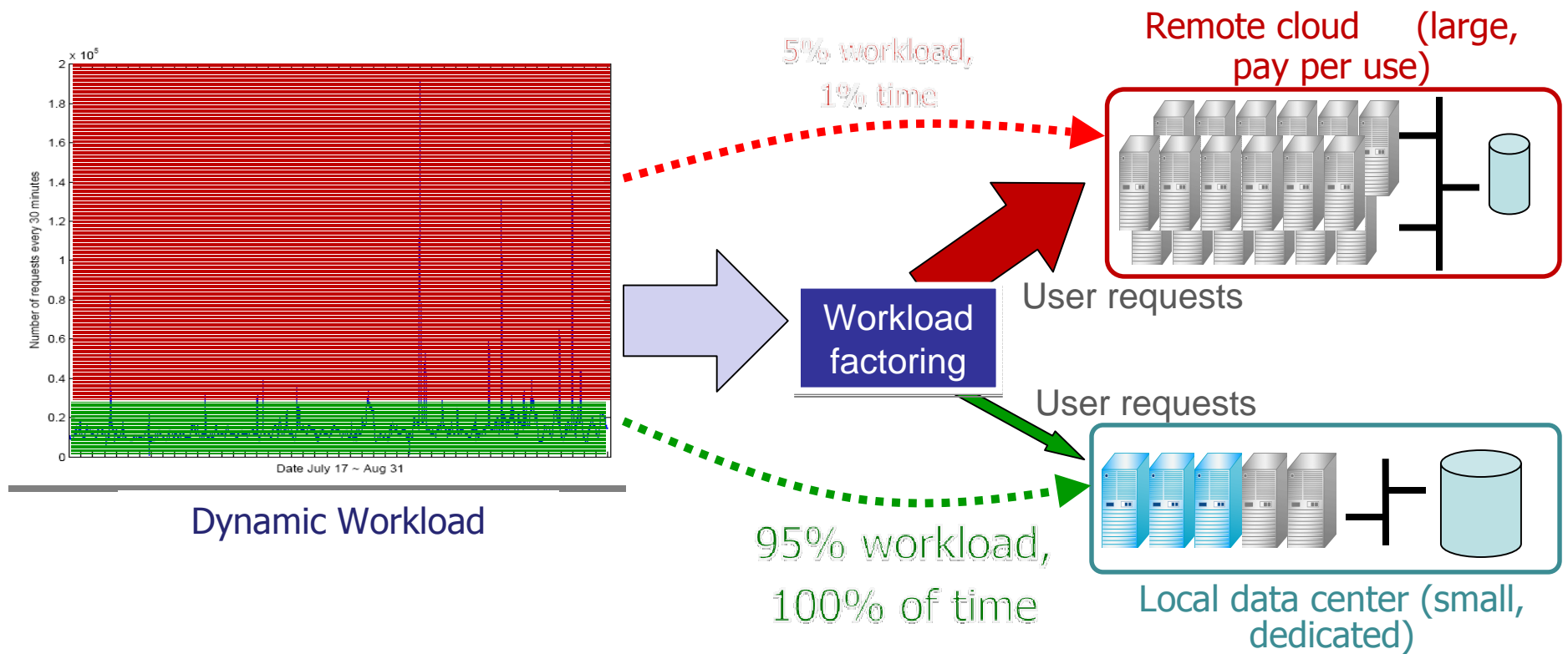
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Gartner





Source: NEC

# Here we go again?



“Cloud-computing will help to optimize the Federal data facility environment and create a platform to provide services to a broader audience of customers.”

President's Budget for FY 2010  
Section 9, Cross Cutting Programs

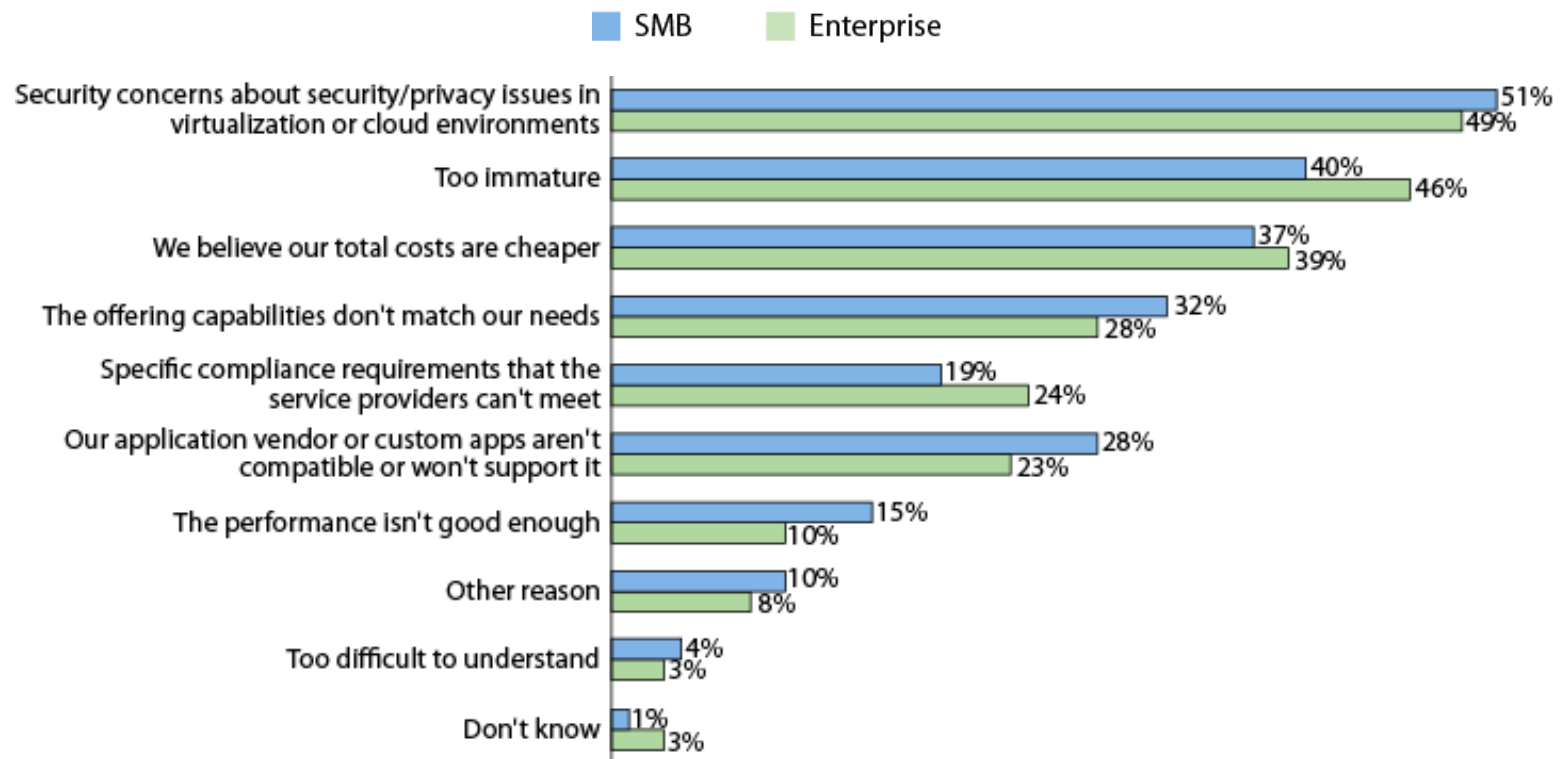
# IT IS SKEPTICAL



- IT is understandably skittish about cloud computing.
- However, many of the cloud computing resources out there will actually provide better service than on-premise.
- Security and performance are still issues.
- Also, control.

## SECURITY AND MATURITY TOP LIST OF CONCERNS FOR CLOUD SERVICES

**“Why isn't your firm interested in pay-per-use hosting of virtual servers  
(also known as cloud computing)?”**



Base: 267 SMB and 275 enterprise hardware decision-makers

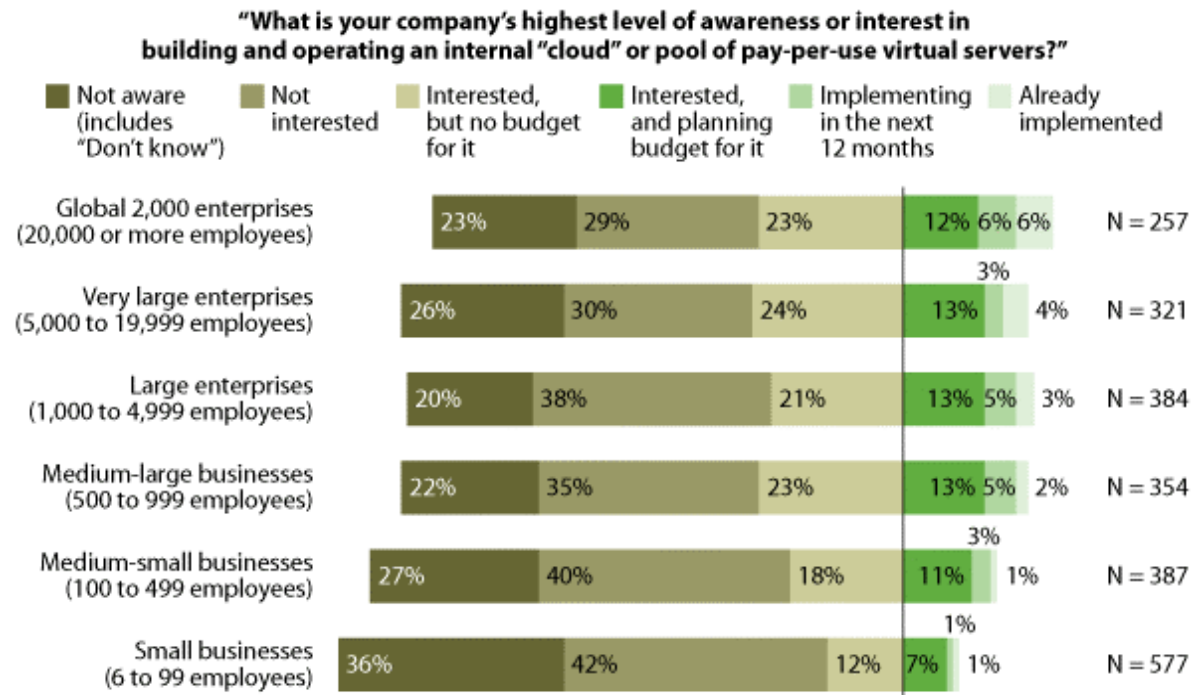
Source: Enterprise and SMB North America and European Hardware Survey, Q4 2009

# Consider Private Clouds

**“Private Cloud Computing is Real – Get Over It”**

*- Tom Bittman -*

*Gartner*



Base: hardware decision-makers at North American and European enterprises, midmarket companies, and small businesses

Source: Enterprise And SMB Hardware Survey, North America And Europe, Q3 2008

# Considering clouds

However, not so fast.

- Not all computing resources should exist in the clouds, private or public.
- Cloud computing is not always cost effective.
- Do your homework before making the move.



# Cloud, SOA, and HIPAA

- HIPAA regulations remain barriers to full cloud adoption
  - Concerns about data security and HIPAA regulations remain deterrents to wide-spread cloud adoption in our industry.
  - The notion of moving most or all of a healthcare providers' IT resources , including patient data storage, to a cloud service still is cause for concern among providers large and small.
  - When providers were given a choice between a public- or private-cloud model, there is still a strong preference toward private clouds.



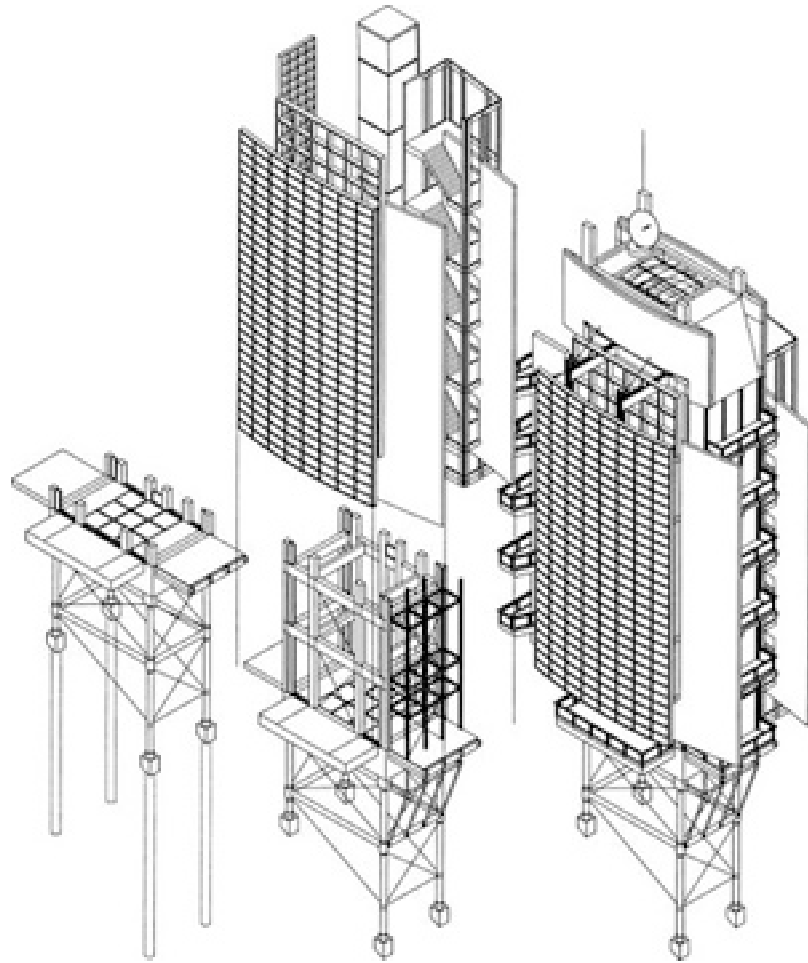
## **Clouds are a fit when:**

1. Processes, applications, and data are largely independent
2. Points of integration are well defined
3. Lower level of security is fine
4. Core internal enterprise architecture is healthy
5. Web is the desired platform
6. Cost is an issue
7. Applications are new



# Path to the clouds

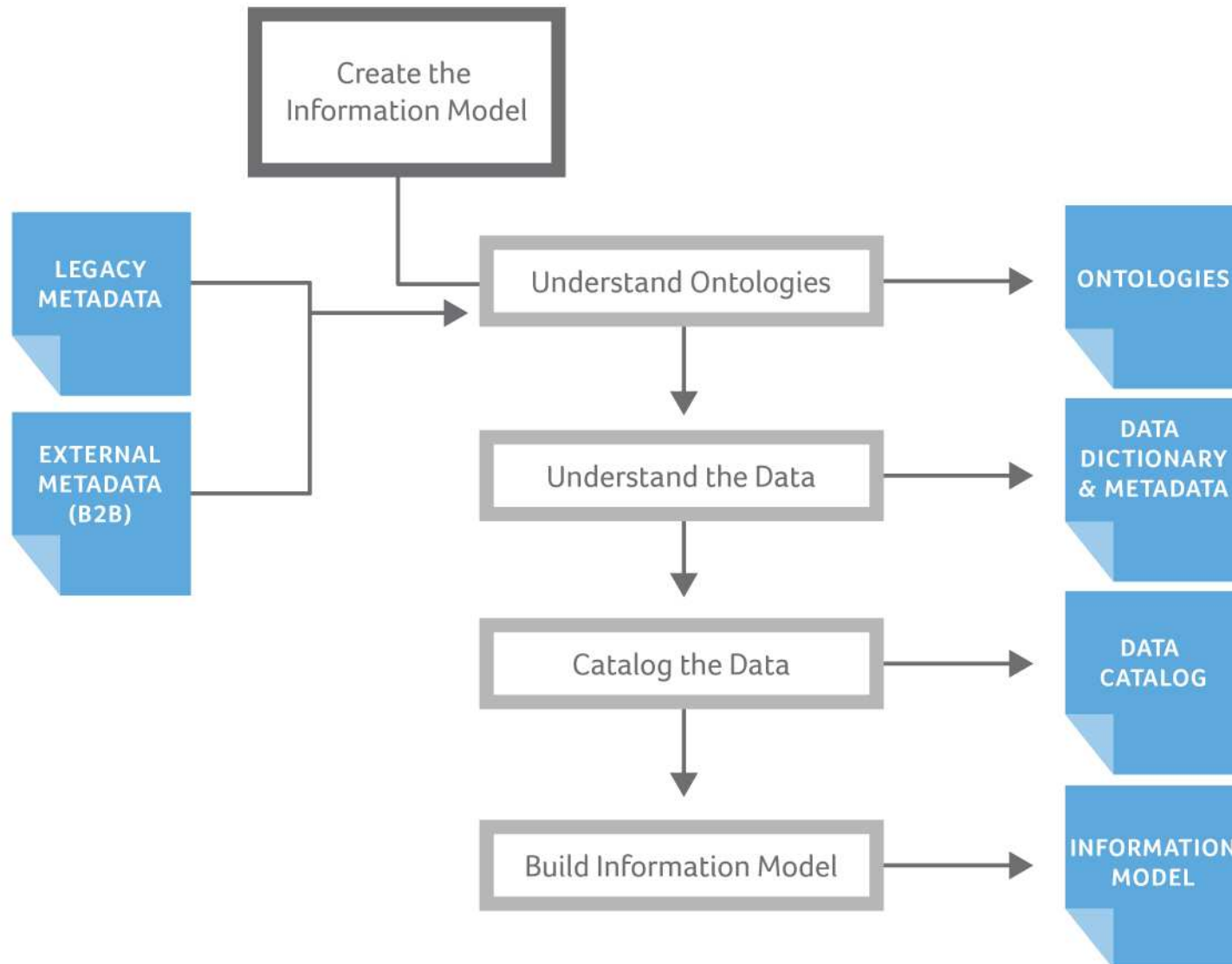
Path to clouds: start with the architecture



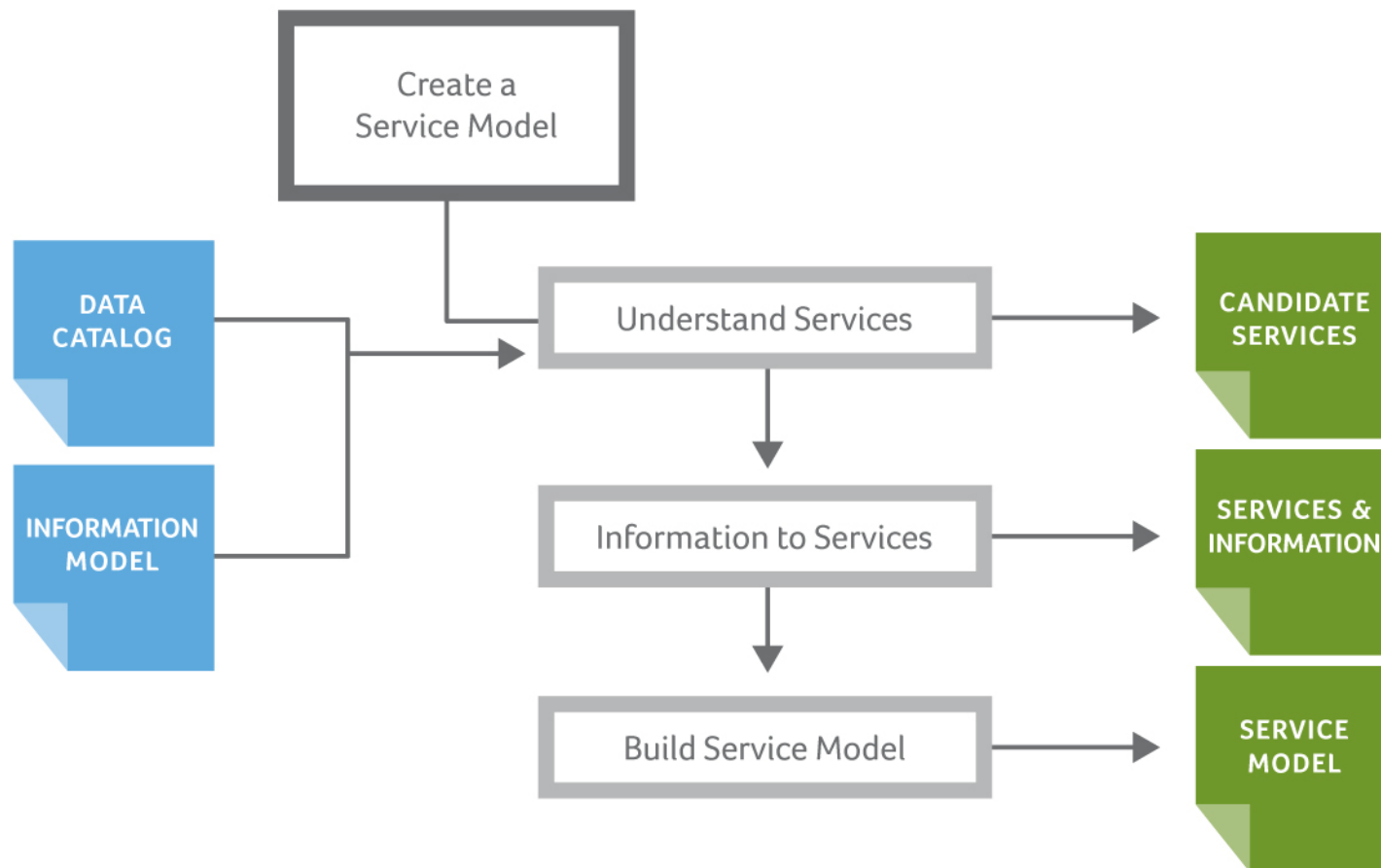
Understand:

- Mission drivers
- Information under management
- Existing services under management
- Core business processes

# information model



# service model



# stepping to the clouds

1. Access the mission.
2. Access the culture.
3. Access the value.
4. Understand your data.
5. Understand your services.
6. Understand your processes.
7. Understand the cloud resources.
8. Identify candidate data.
9. Identify candidate services
10. Identify candidate processes.
11. Create a governance strategy.
12. Create a security strategy.
13. Bind candidate services to data and processes.
14. Relocate services, processes, and information.
15. Implement security.
16. Implement governance.
17. Implement operations.

**Don't Forget**



**Cloud Computing  
PODCAST**

Episode 105 Last Week!

# thanks!

David S. Linthicum

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