# Lessons Learned: Cloud Computing and Cost Savings

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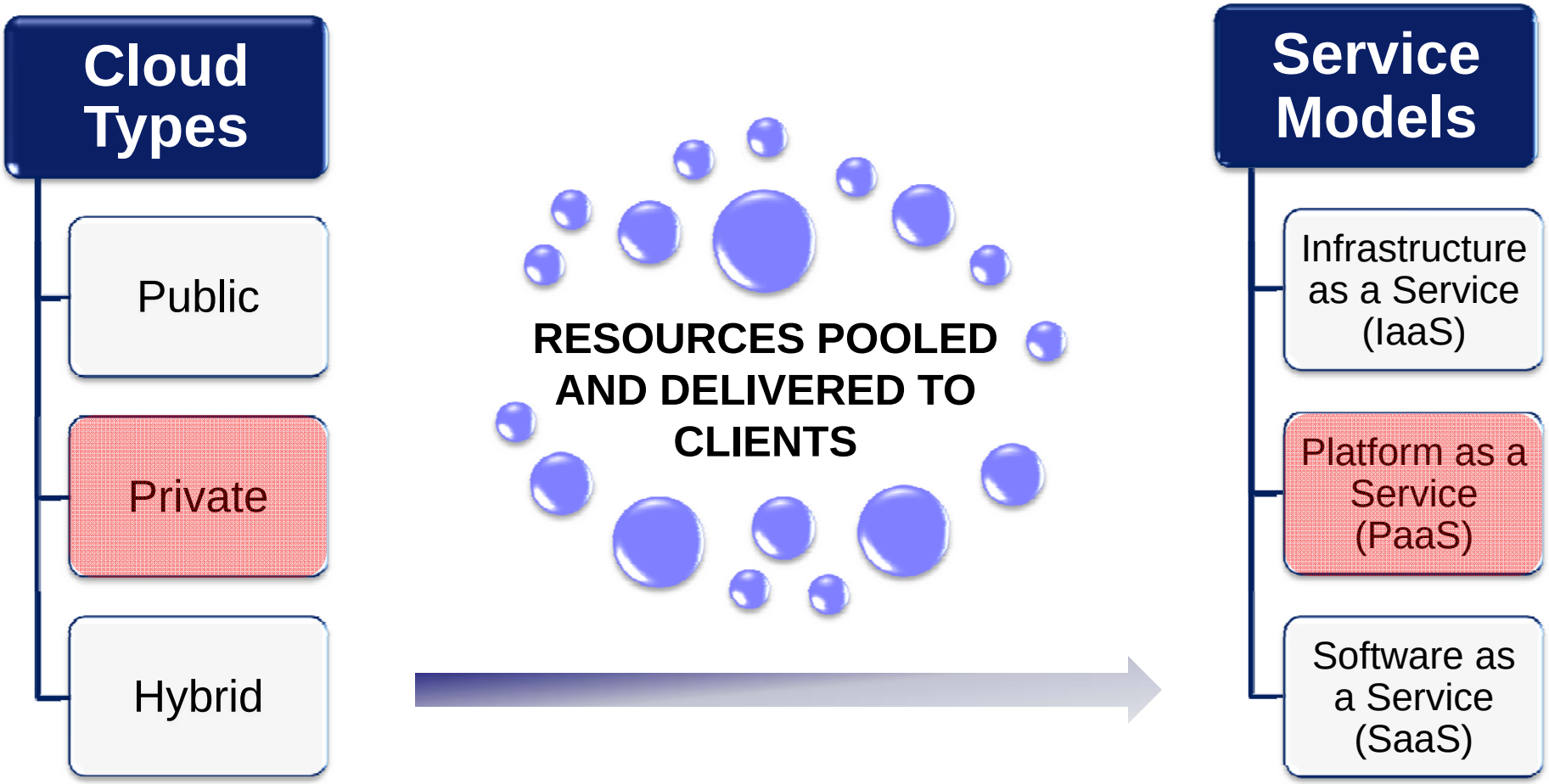
# Agenda

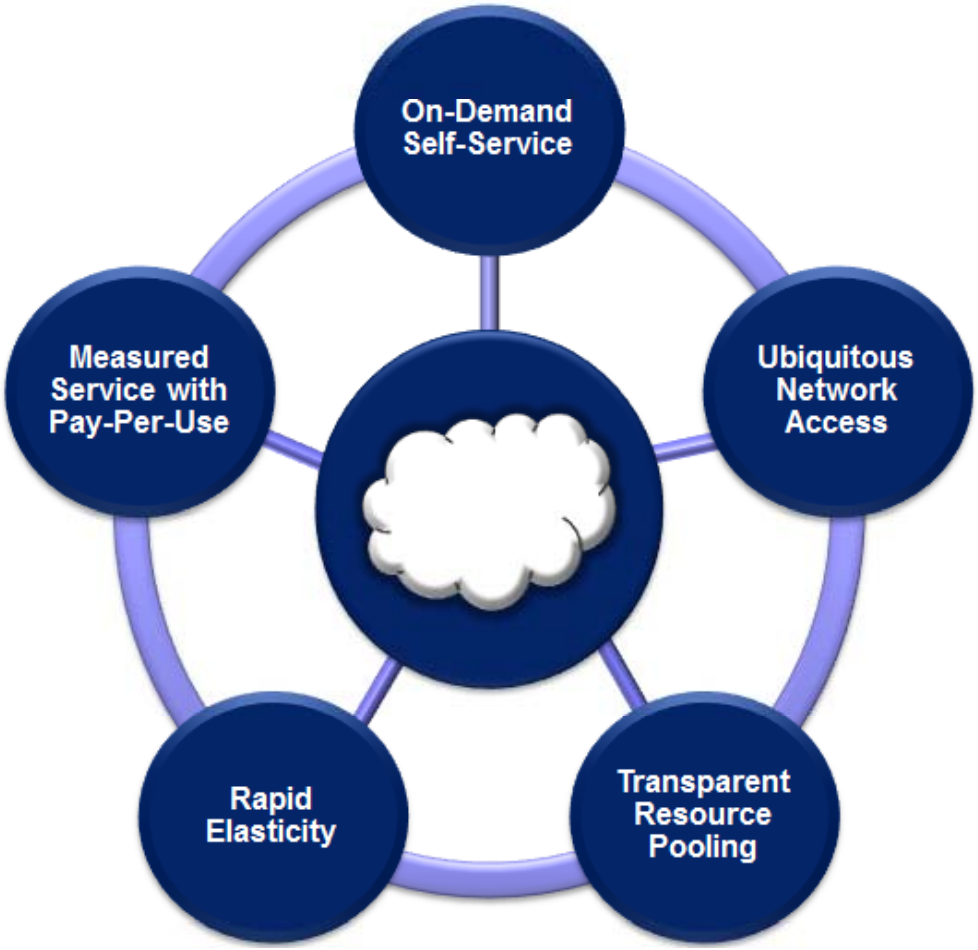
- Overview of Cloud Computing for Government Agencies
- Business Cases for Cloud
- Cost Analysis
- Charge Back Methods
- Questions

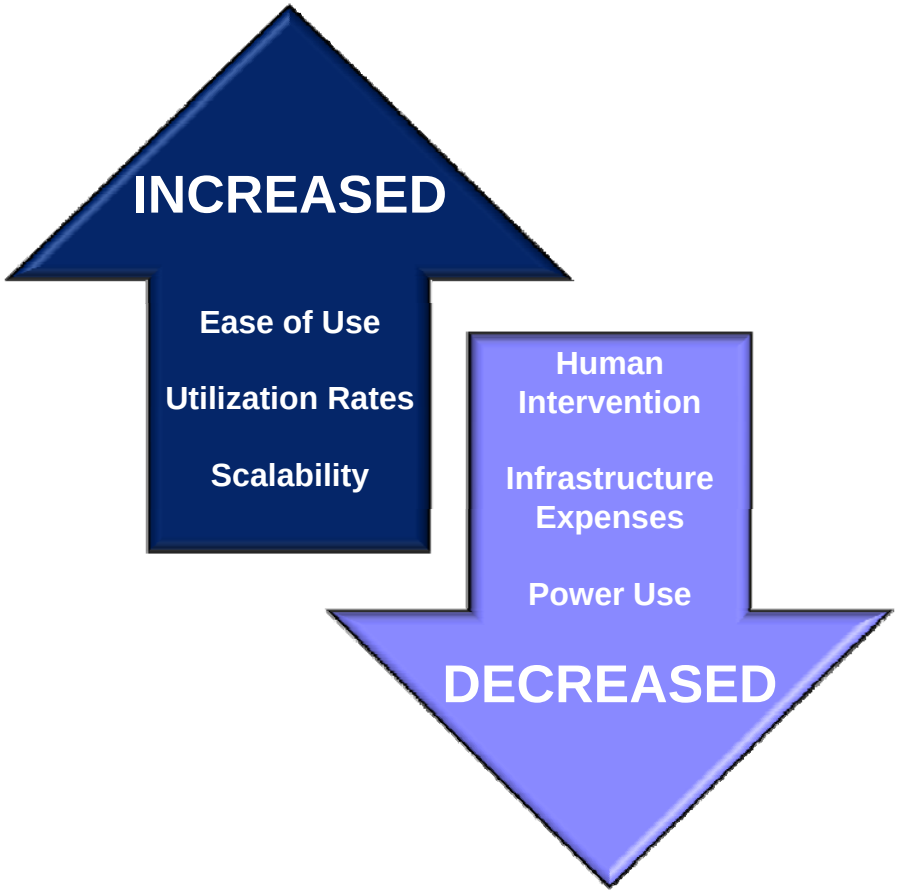
# Overview of Cloud Computing for Government Agencies

# Cloud Computing is a method of providing data services based on a centralized collection of hardware, software, storage and network

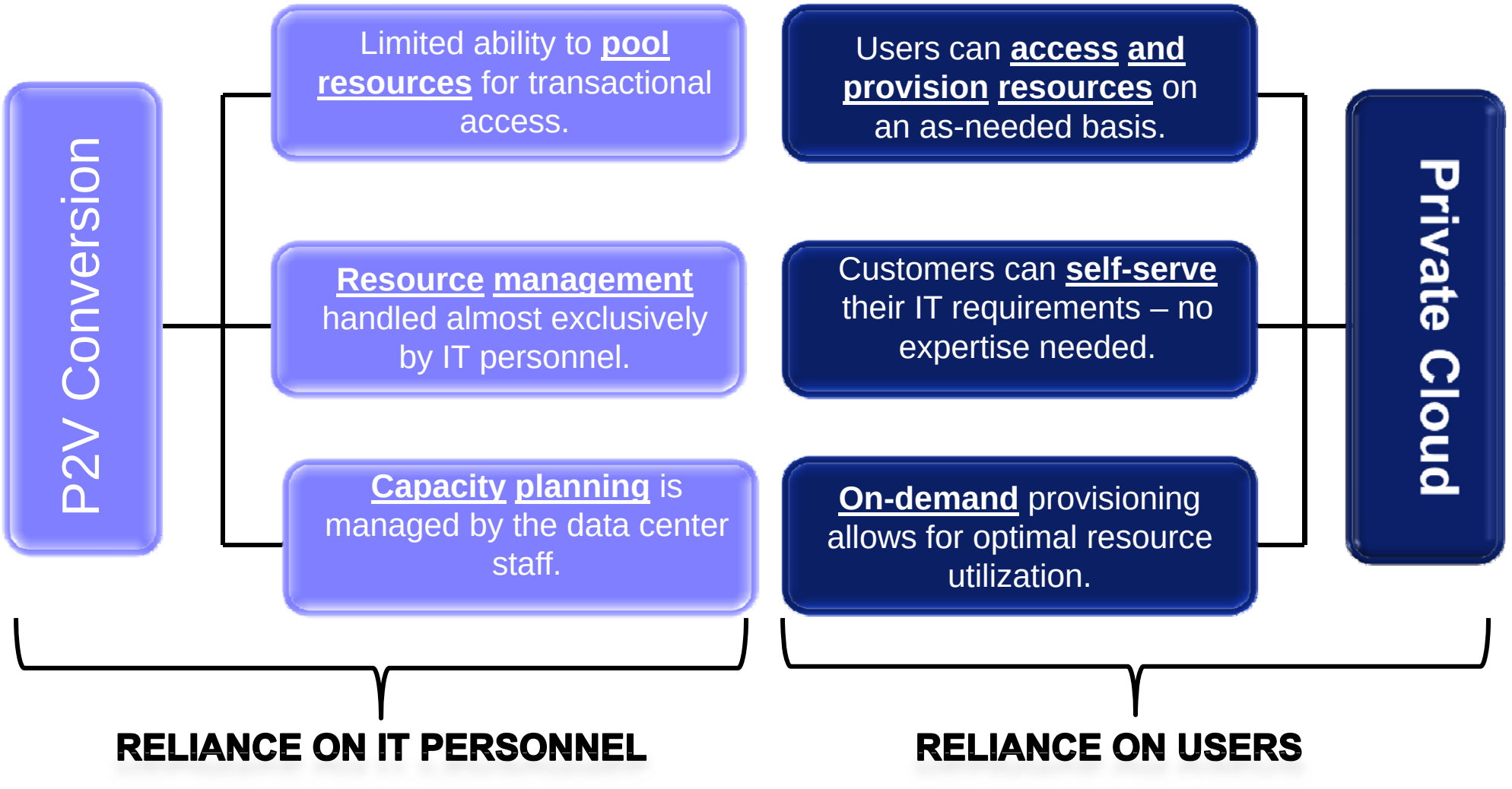


# Data centers can benefit from embracing Private Cloud's key attributes



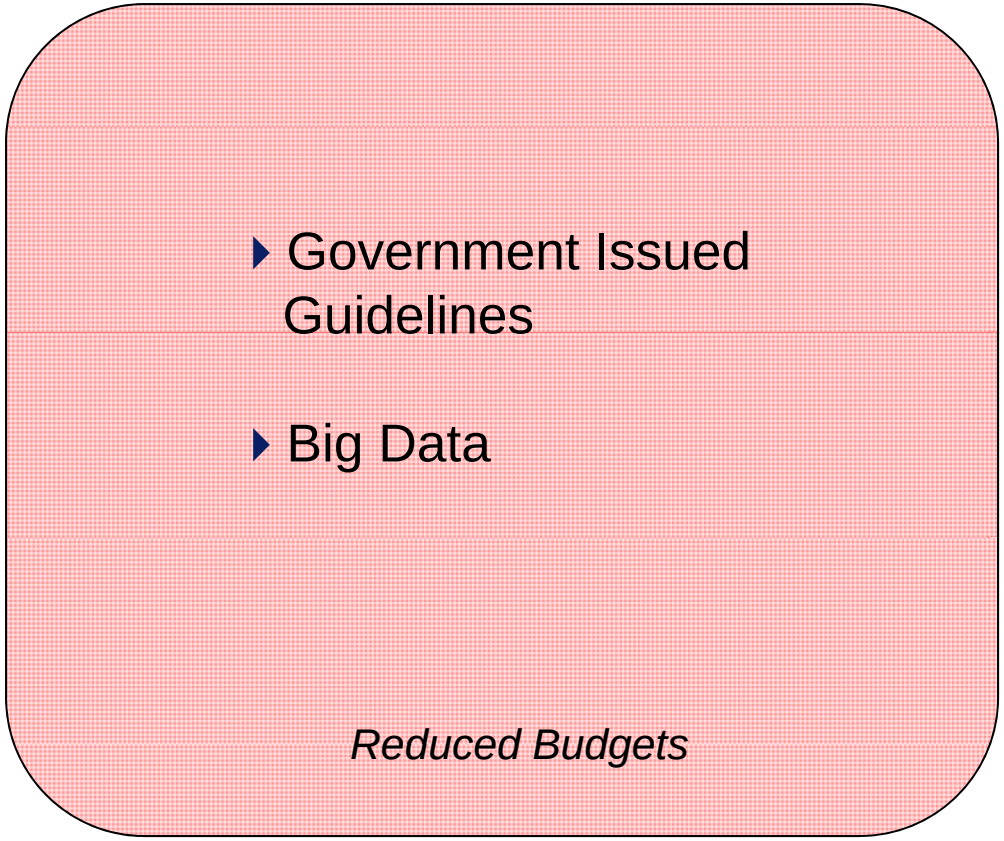



# A Physical to Virtual server conversion is different from Cloud Computing



# Business Cases for Cloud Adoption

# Environmental Forces Impacting IT Managers to Adopt Cloud Computing



# Private Clouds assist agencies in staying compliant with Government issued guidelines

- Government efficiency studies have yielded the following two directives
  - November 2010 – Cloud First policy
    - ✓ Federal agencies to default to cloud based solutions
    - ✓ Example: GSA Cloud implementation
  - February 2011 - Federal Cloud Computing Strategy
    - ✓ Significant IT improvements realized through cloud
    - ✓ Example: NASA Nebula Project
- Government IT is moving in the direction of the Private Cloud
- Given constrained budgets Private Cloud represents way forward for our customer

# From an agency perspective, the presence of Big Data signifies a need for the adroit analysis of large data sets

- Big Data are data sets whose size is beyond the ability of commonly used software tools to capture, manage, and process the data within a tolerable elapsed time
- This trend unlikely to be reversed - working with huge datasets allows the spotting of trends – e.g. business, diseases, crime
- Characteristics of properly managed Big Data
  - Rapid retrieval of meaningful information
  - Uncover relationships between unstructured data
  - Use of open source tools, such as Hadoop to enable applications to work with thousands of nodes and petabytes of data
- Given constrained budget Private Cloud represents way forward for our customer

# Costs Associated with Running a Private Cloud

# Migration from Virtualization to Private Cloud

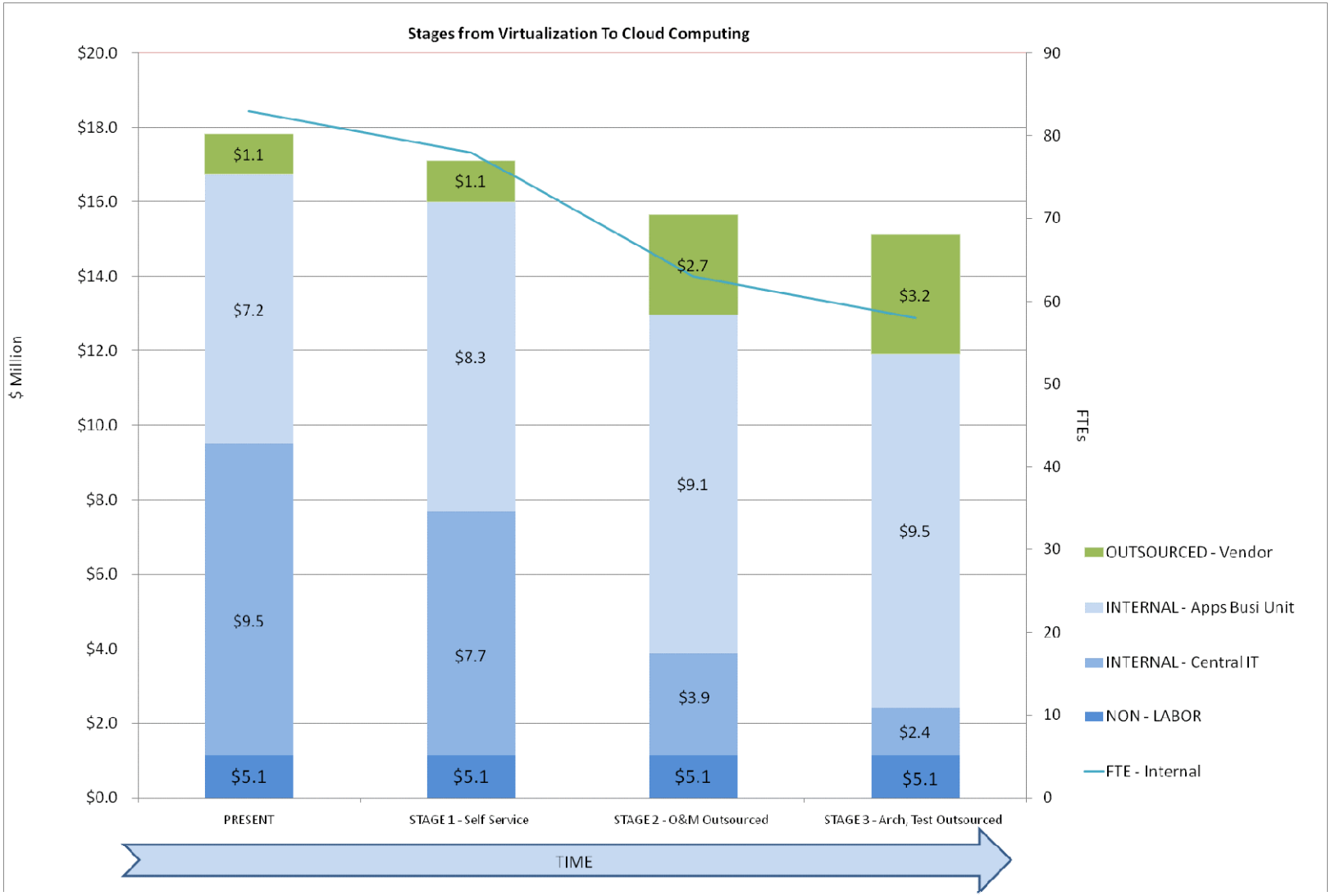
- Cost savings a function of substitution of software for labor from Virtualization to Private Cloud
- Savings realized in stages as various roles replaced by vendor software tools
- Shifting of roles within agency reflect process changes, but are not necessarily labor savings
- Depending on nature of agency different paths to cloud computing may be taken

# In a typical IT data center FTEs are distributed over a variety of roles

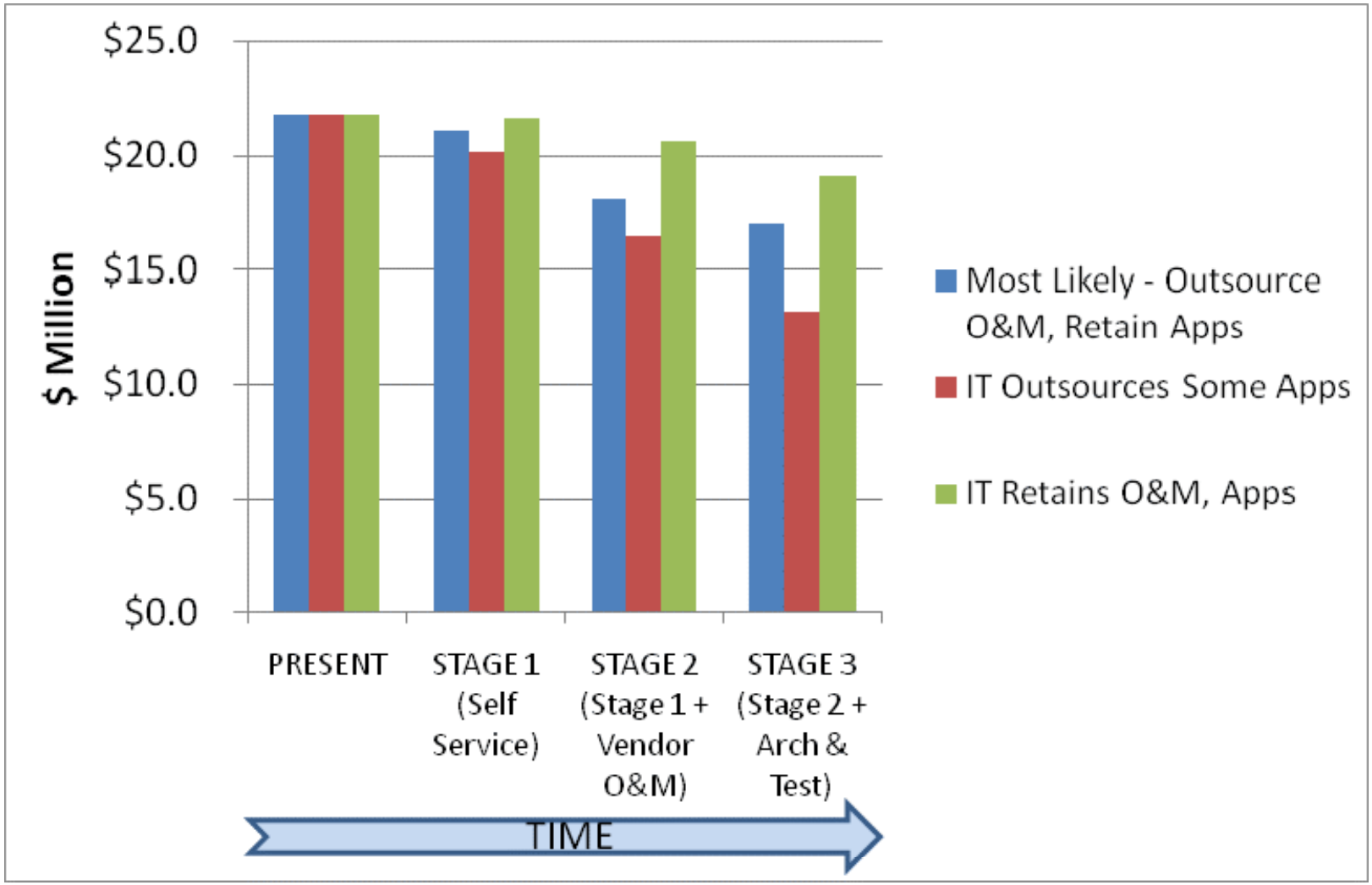
| ($ Million) | | INTERNAL | | | | EXTERNAL |
|---|---|---|---|---|---|---|
| Most Likely - Outsource O&M, Retain Apps | Skill Level (1=lowest, 3=highest) | Enterprise IT | | Apps Business Unit | | Vendor Software, Maint Contr, SLAs |
| LABOR | | FTEs | COST | FTEs | COST | Total Cost |
| Apps | 3 | 0 | $0.0 | 33 | $7.2 | |
| Infrastructure | 3 | 13 | $2.8 | 0 | $0.0 | |
| End User | 1 | 9 | $1.3 | 0 | $0.0 | |
| Vendor Management | 1 | 1 | $0.1 | 0 | $0.0 | |
| Test & QA | 3 | 3 | $0.7 | 0 | $0.0 | |
| PMO | 3 | 4 | $0.9 | 0 | $0.0 | |
| Business Liaison | 1 | 3 | $0.4 | 0 | $0.0 | |
| DBA | 3 | 3 | $0.7 | 0 | $0.0 | |
| IT Finance | 2 | 1 | $0.2 | 0 | $0.0 | |
| Enterprise Architecture | 3 | 2 | $0.4 | 0 | $0.0 | |
| IT Strategy | 3 | 1 | $0.2 | 0 | $0.0 | |
| Other | 2 | 10 | $1.8 | 0 | $0.0 | |
| Outsourced | | | | | | $1.1 |
| SUBTOTAL | | 50 | $9.5 | 33 | $7.2 | $1.1 |
| NON-LABOR | | | $5.1 | | | |
| TOTAL | | 50 | $14.6 | 33 | $7.2 | $1.1 |
| Total FTEs: | 83 | | Total Cost: | $22.9 | Total Servers: | 1,000 |

Source: Based on "The Future of Corporate IT", Corporate Executive Board Company, 2010 (Labor only)

# As an agency moves from Virtualization to Cloud Computing IT FTE roles are redistributed, outsourced, reducing costs



# Agencies may choose different paths for FTEs in moving from Virtualization to Cloud Computing



# Chargeback Methods

# Charge back should be on discrete service levels over time

| Service Level | CPU | RAM (GB) | Virtualization ⟷ Cloud | | |
|---|---|---|---|---|---|
| | | | Ownership | per Month | per Busi Day |
| Small | 1.0 | 2.0 | $1,107 | $92 | $4 |
| Medium | 2.0 | 4.0 | $2,214 | $184 | $9 |
| Large | 4.0 | 8.0 | $4,427 | $369 | $17 |
| Extra Large | 8.0 | 16.0 | $8,854 | $738 | $34 |
| High CPU Medium | 5.0 | 4.0 | $2,534 | $211 | $10 |
| High CPU Large | 20.0 | 16.0 | $10,136 | $845 | $39 |
| Burst | 2.0 | 0.0 | $214 | $18 | $1 |

- Ownership charge back often found with virtualization
- Per Month approach encourages returning idle resources to pool
- Per Business Day represents pricing on demand, utility based model

# Questions and/or Comments

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