Demystifying Private Cloud

- Practical Approaches

Name of the Presenter: Amit Pathak

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Agenda

- **Private Cloud**
  - Business Drivers
  - Unique Challenges
- **5 Step Plan**
  - Practical Approaches
- **Considerations for**
  - Automation
  - Security
  - Monitoring

Business Drivers

- **Reduce IT Cost**
  - Reduce Capital Expenses by server and datacenter consolidation
  - Reduce operational cost by standardization and automation

- **Increase IT Efficiency**
  - Improve service levels by implementing Service Automation
  - Enhance Reuse
  - Improve Business Continuity

- **Increase Business Agility**
  - Faster time to market
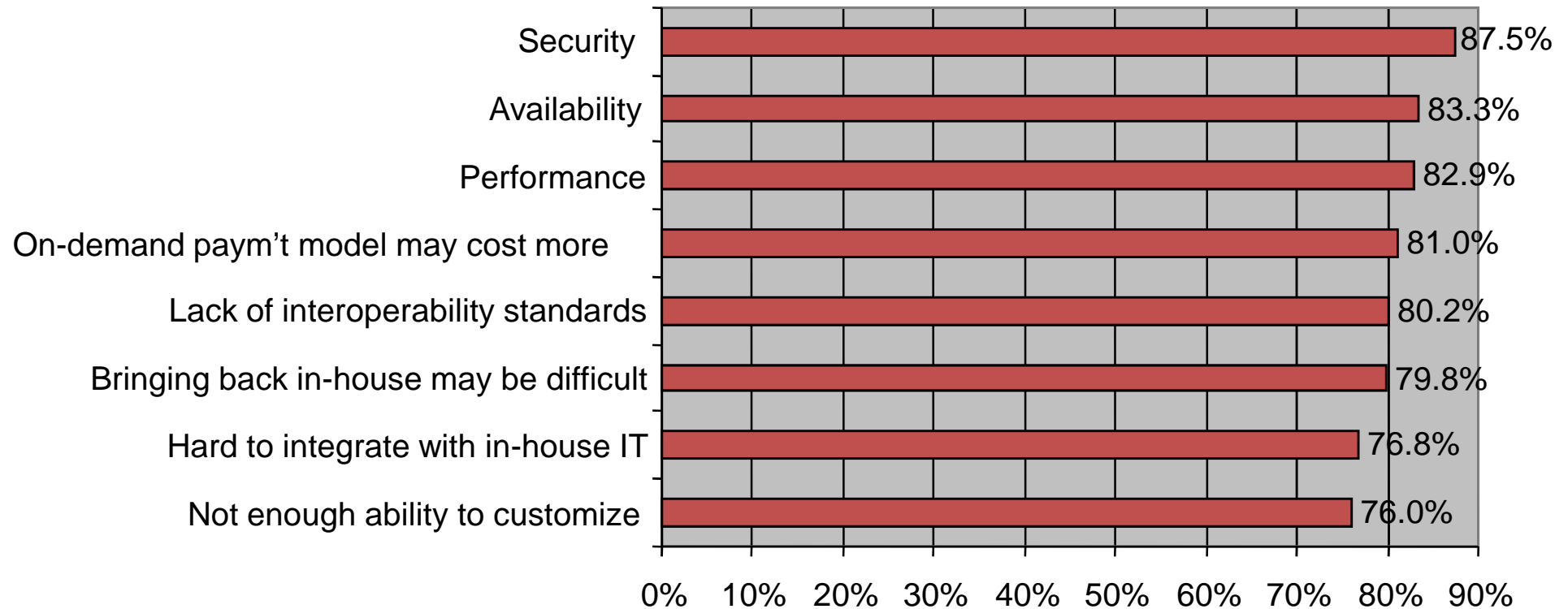 - Increase responsiveness to business changes
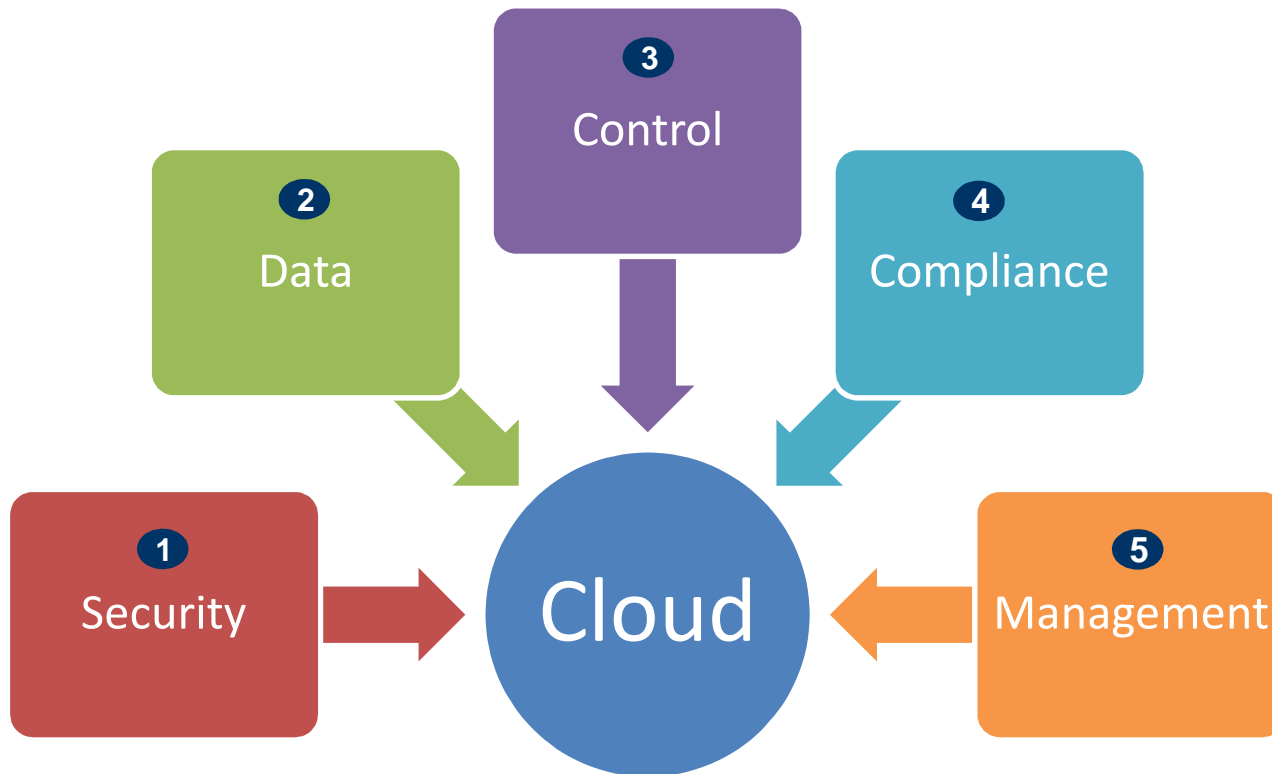
Security – Continues To Be A Major Issue

Q: Rate the challenges/issues of the 'cloud'/on-demand model

Challenge/Issue	Percentage
Security	87.5%
Availability	83.3%
Performance	82.9%
On-demand paym't model may cost more	81.0%
Lack of interoperability standards	80.2%
Bringing back in-house may be difficult	79.8%
Hard to integrate with in-house IT	76.8%
Not enough ability to customize	76.0%

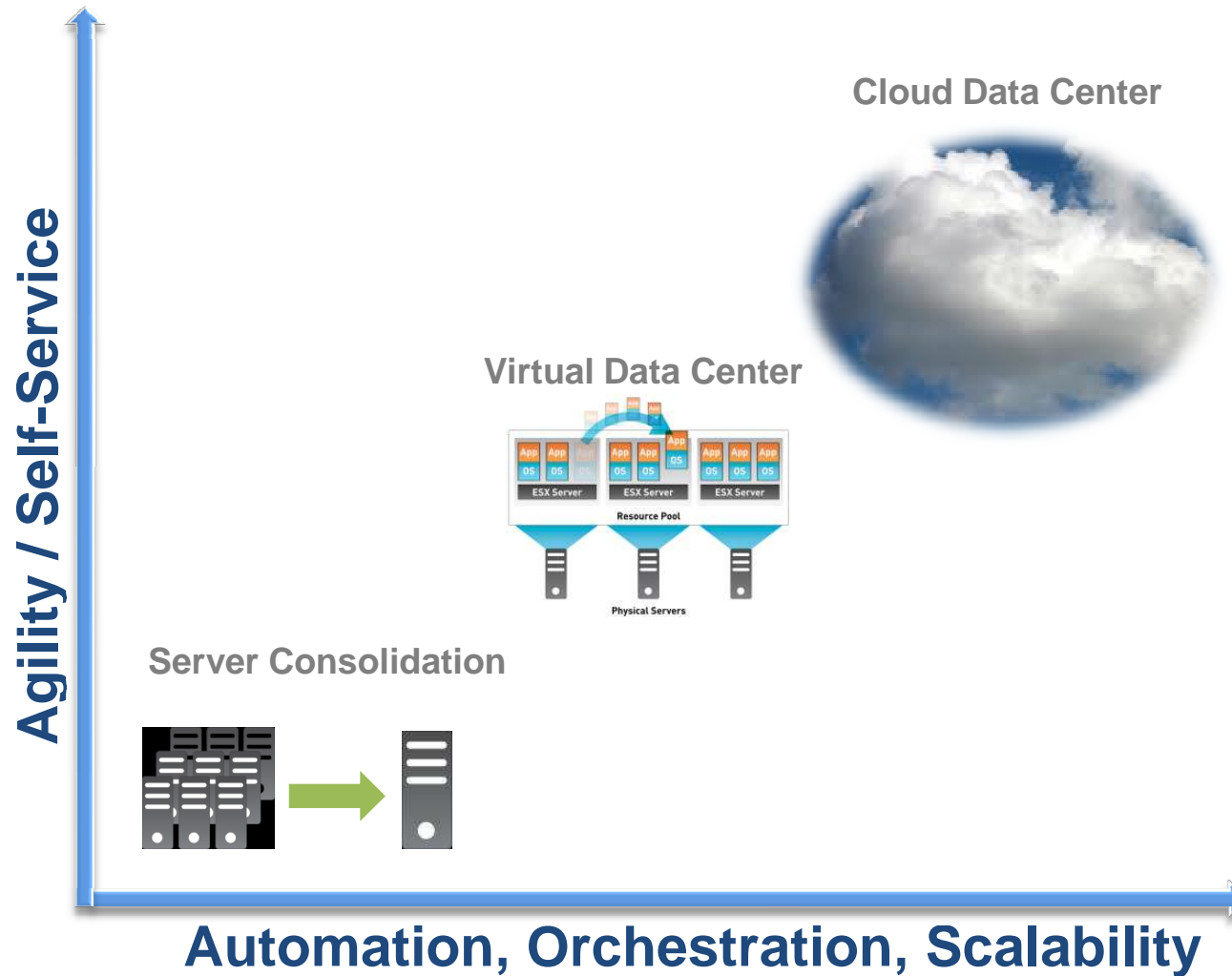0% 10% 20% 30% 40% 50% 60% 70% 80% 90%

(Scale: 1 = Not at all concerned 5 = Very concerned)

Source: IDC Enterprise Panel, 3Q09, n = 263, September 2009

- **Trusting vendor's security model**
- **Inability to respond to audit findings**
- **Obtaining support for investigations**
- **Indirect administrator accountability**
- **Data loss prevention**
- **End point security**
- **Loss of physical control**

Concerns of Application Owners

Private Cloud Is More Than a Set of VMs

Agility / Self-Service (vertical axis)

Automation, Orchestration, Scalability (horizontal axis)

Cloud Data Center
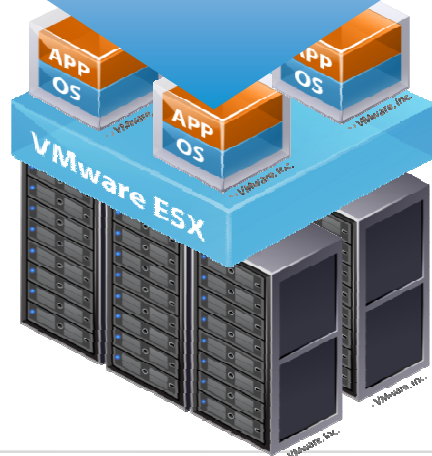
Virtual Data Center

Server Consolidation

FORRESTER

"It's not as easy as setting up a VMware environment and thinking you're done… Virtualization is a good step on the way, but isn't the whole enchilada." – James StatenAgility

Trust

Control

Reliable
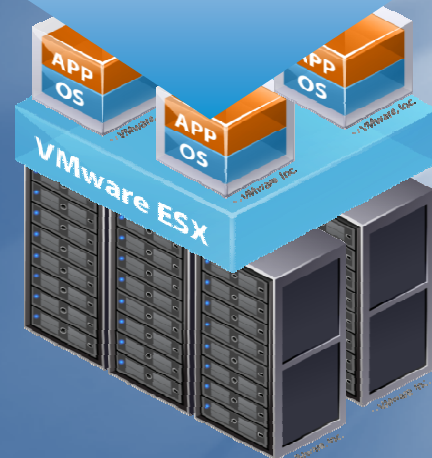
Secure

Cloud

Dynamic

Efficient

On-demand

Flexible

Cloud Computing

Proprietary and Confidential

5 Step Approach

Optimize

Manage & Standardize

Plan, Design & Expand
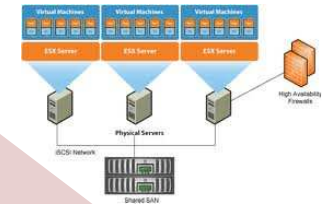
Initial Adoption

**IT Portfolio Assessment &
Operational Readiness**

Step 1 - IT Portfolio Assessment

Comprehensive IT portfolio analysis leading to clear recommendations on cloud-readiness of applications, infrastructure and other assets;

Application & Process Re-engineering to enable calibrated transition to cloud

- **Incident & problem management** - Processes to identify, isolate and resolve problems and quickly restore service

- **Capacity & availability management** - Effectively forecast, allocate, manage & monitor infrastructure capacity to meet changing business needs

- **Configuration management** - Configure virtual environment and manage configuration changes on an ongoing basis

Step 1 - IT Portfolio Assessment

- **Change management** - Manage changes within virtual infrastructure environment

- **Security management** - Processes to effectively manage & monitor the security of virtual infrastructure

- **Operations management** – Operationalize infrastructure

- **Consumption management** - Effective and efficient consumption or utilization of virtual resources

- **Provisioning Resources** - Provision virtual resources in a systematic, timely and adequate manner to meet infrastructure needs
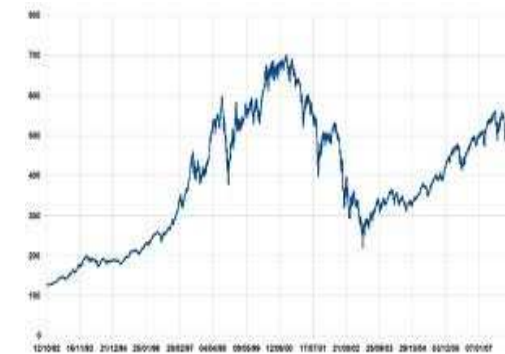
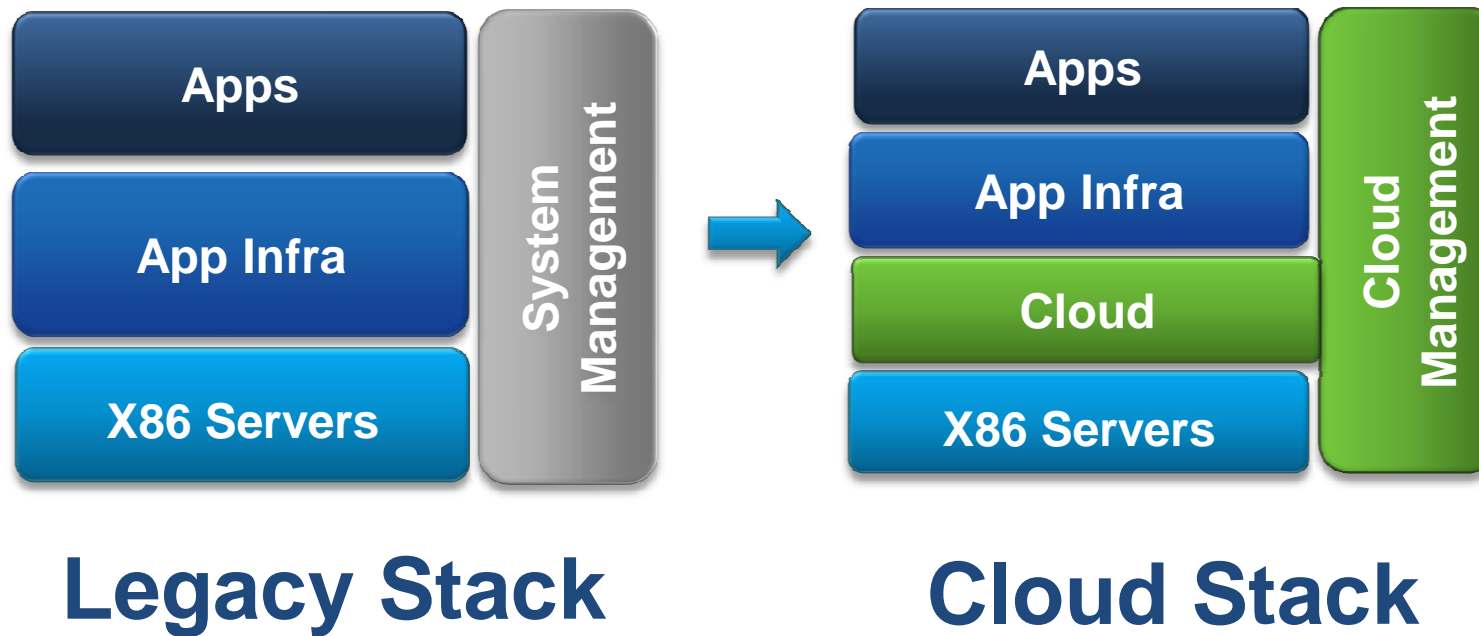**Output → Baseline assessment of overall IT Portfolio**
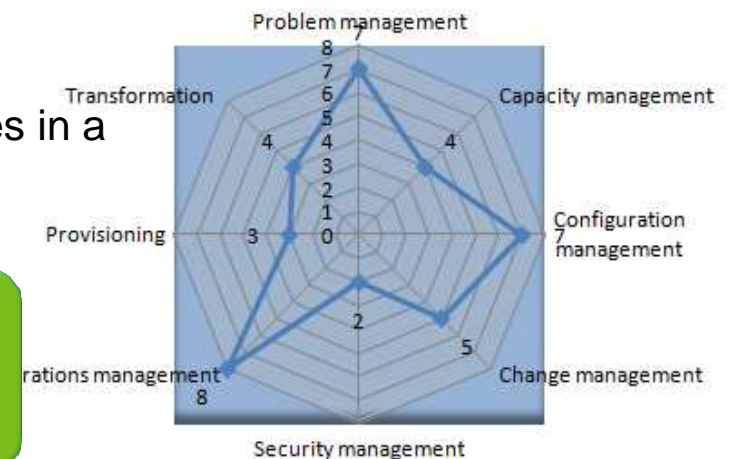
- **Capacity Utilization**

- **Conversion/Transformation**
  - From expensive silos to commodity general purpose shared cloud architecture
    - Servers running in silos
    - Underutilized
    - Non-standardized
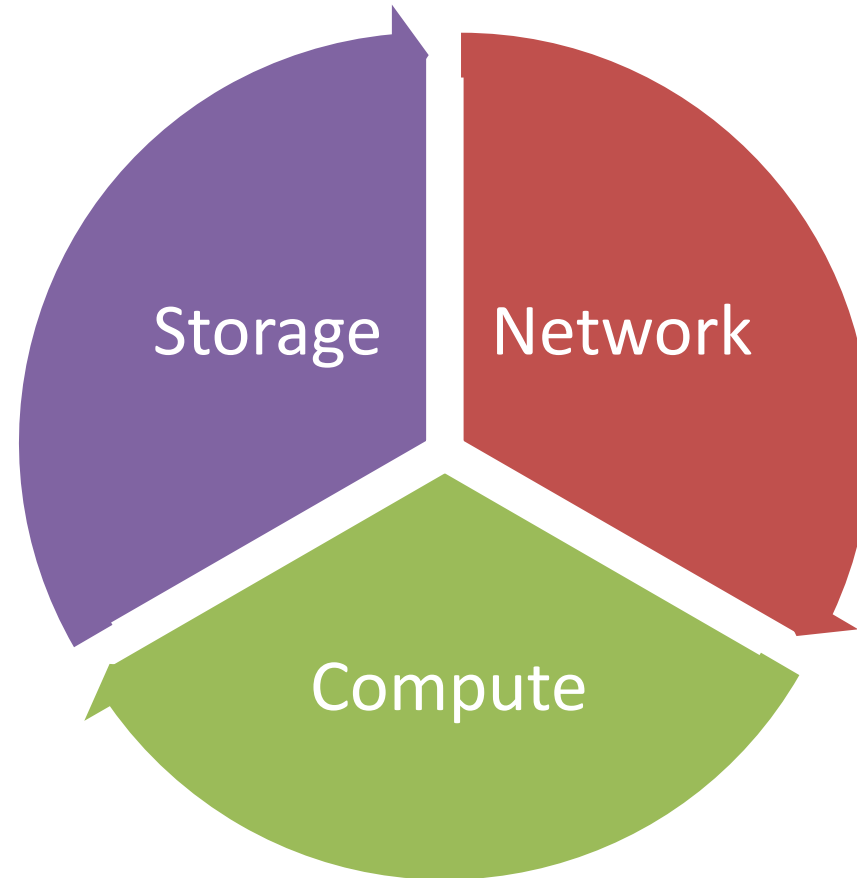   - High Maintenance Costs
    - Poor Performance

Legacy Stack

Cloud Stack

Step 3 – Plan, Design & Expand

- **Plan & Design Infrastructure**

- **Management**

- **Plan & Design ITSM**

- **Process Mapping**

Capacity

- **VMs need large storage. Storage arrays to give large scale and that can run into tens of TB**

- **Storage need to support large LUNs. E.g. VMware only allows a relatively small number of LUNs per server - 256. Need to have support for large LUNs**

- **The current limit for a single VMFS LUN is 64 TB**

- **And now within vSphere 5 we are talking about LUNs that can go larger than 2 TB**

Virtual Machines / VMware ESX / VMFS — Shared Storage
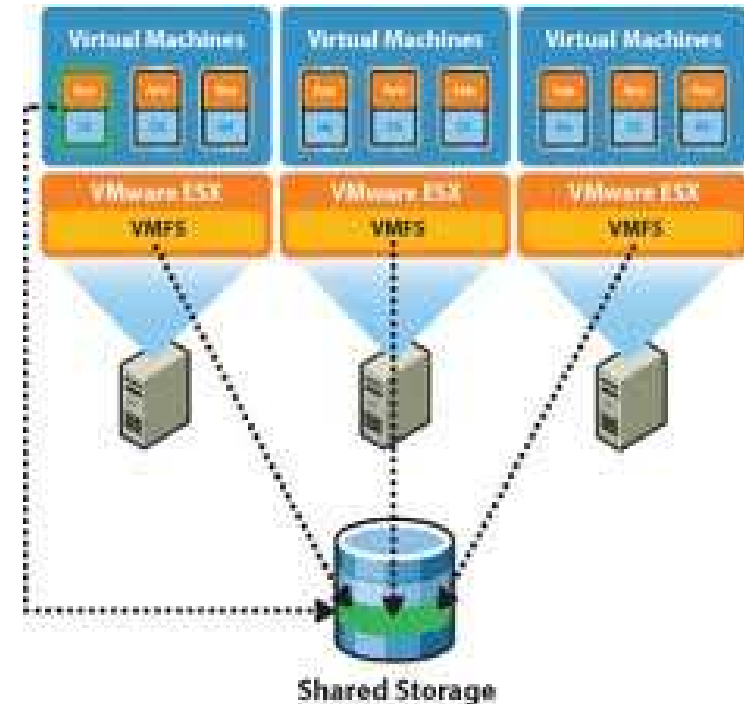
Step 3 – Design Considerations

Performance

- **Virtual environments generate much more random I/O workload. Need storage that can support that random I/O performance**

- **Ability to achieve high volumes of I/O. Cloning or copying VMs or moving them around within an environment, make sure that array can support high performance.**
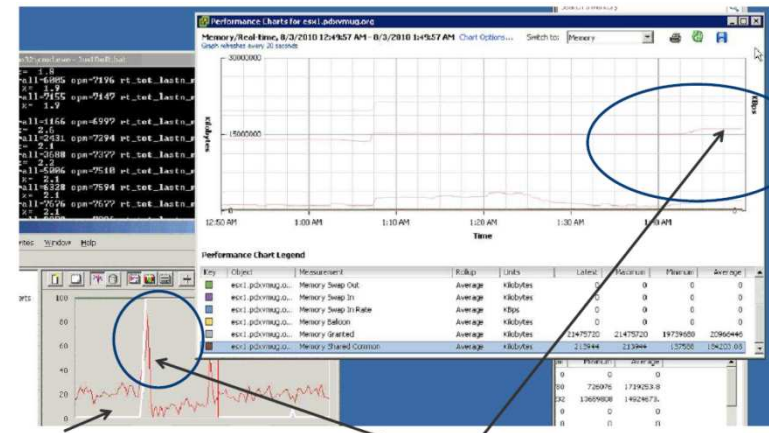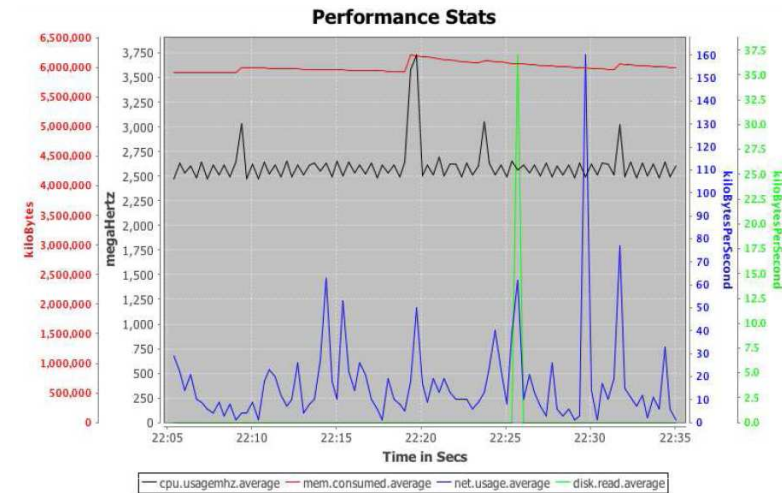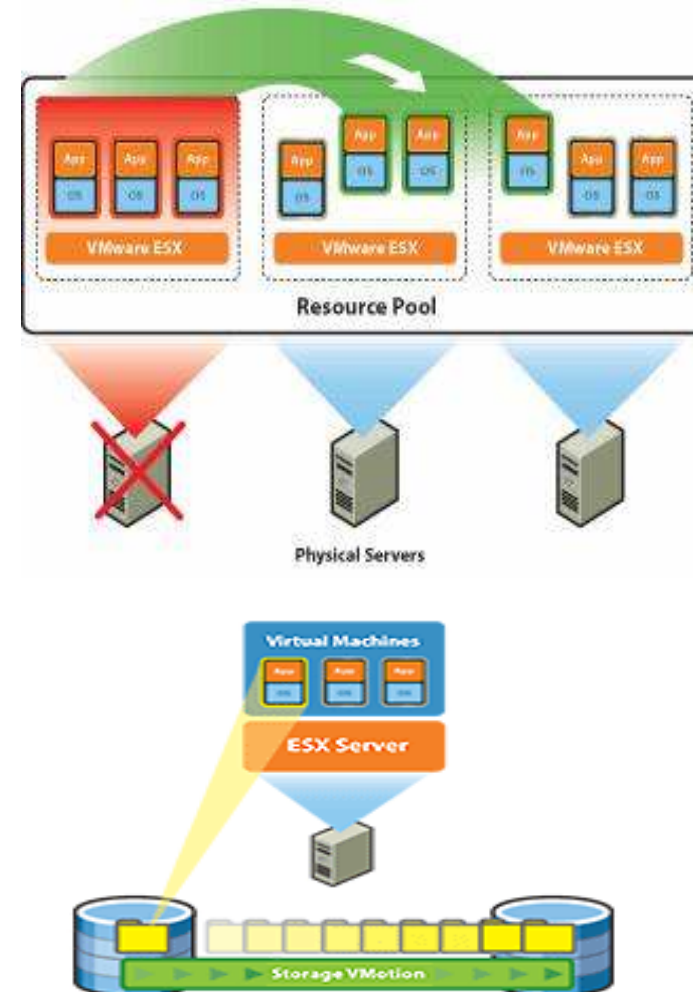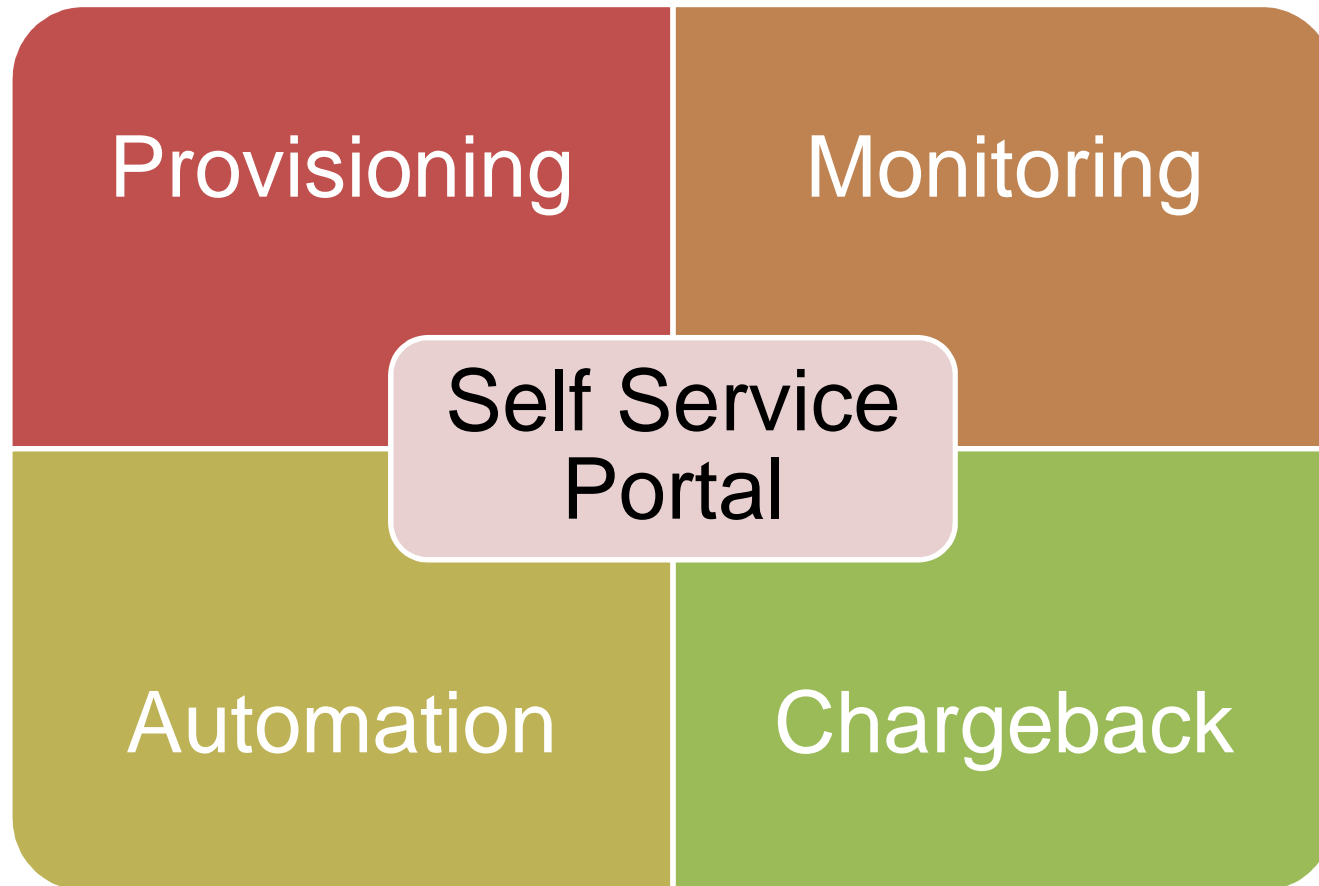

Source: VMware

Step 3 – Design Considerations

Resiliency

- **We intend to consolidate large number of VMs on a large number of physical servers and we need these arrays to be highly available.**

- **We need good uptime, and we need make sure we can run them 24 hours a day throughout the year.**

Source: VMware

Provisioning

Monitoring

Self Service Portal

Automation

Chargeback

Step 4 – Manage & Standardize

- **Purpose-built software to manage private cloud**
  - Applications & workload
  - Resources
- **Automation**
  - Matches IT demand with supply
- **Standardization**
  - Resource sharing without tradeoffs
  - Policy-driven, governance, compliance & security
  - Open standards

Demand

Cloud Management

Supply

VMs	Servers	Data Center Systems
Storage	Network	

Step 4 – Manage & Standardize

iGATE patni
iTOPS for Business Outcomes

Management Layer

Health Check	Provisioning	Workload
Configuration Management	Security Management	Alerts/Events

Governance

SLA	Security	User Management
Chargeback	Admin Dashboard	Reports
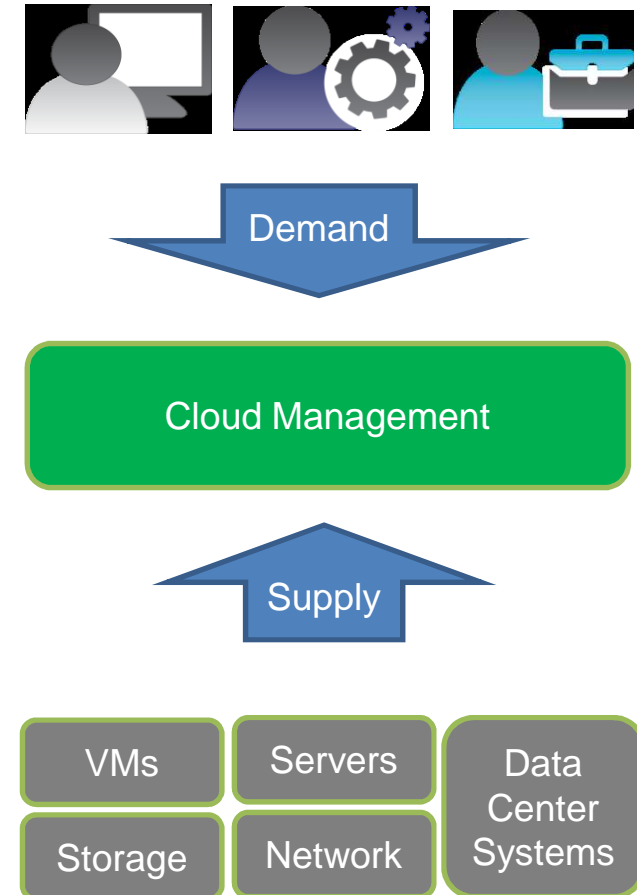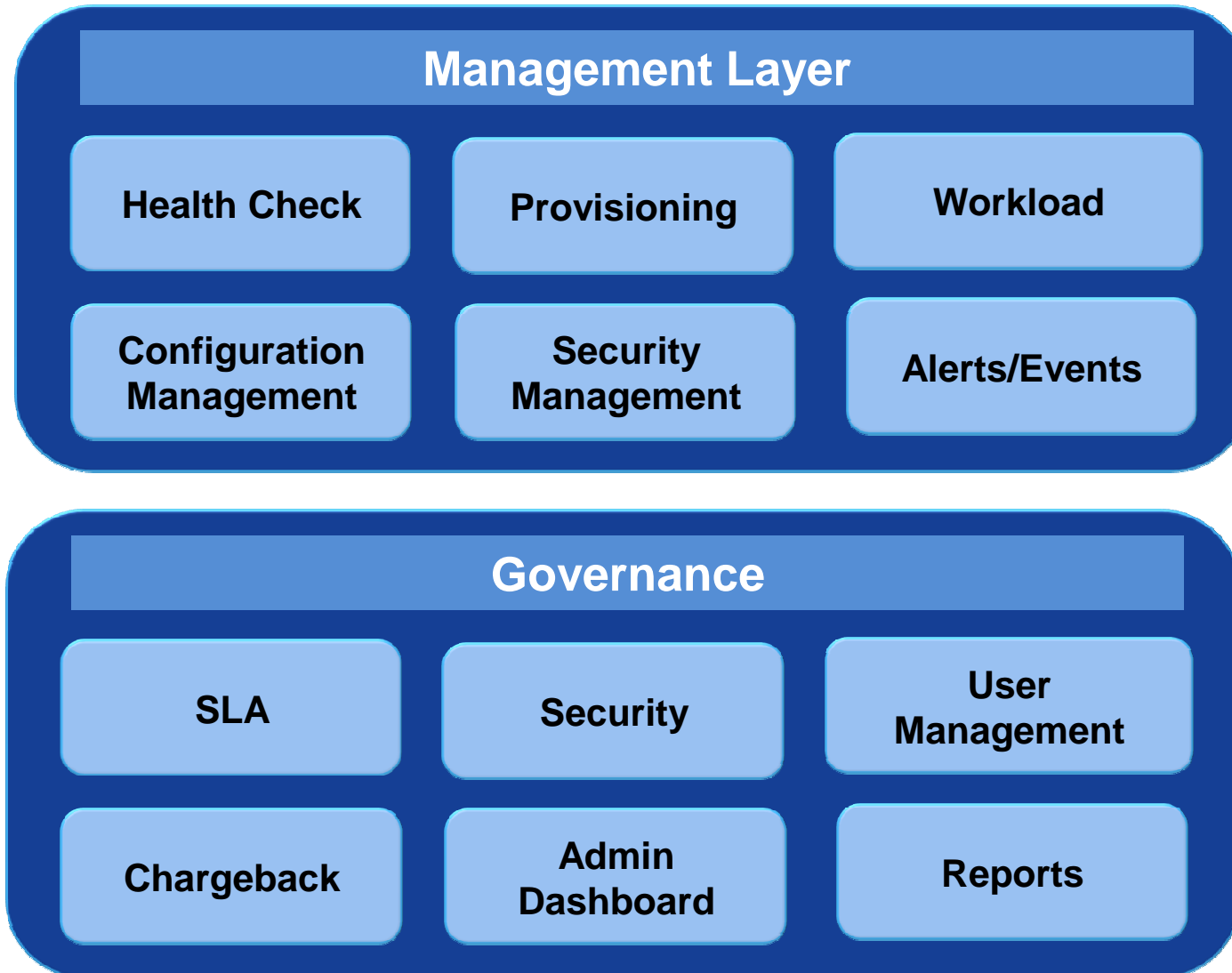
Monitoring

- Efficient Scalability

- Massive Scale

- Cost effectiveness

- Monitoring QoS

  - Multi-tenancy environment
  - Minimize resource contention between monitoring tasks

- Continuous violation detection

  - Dynamically add/remove servers

    based on performance
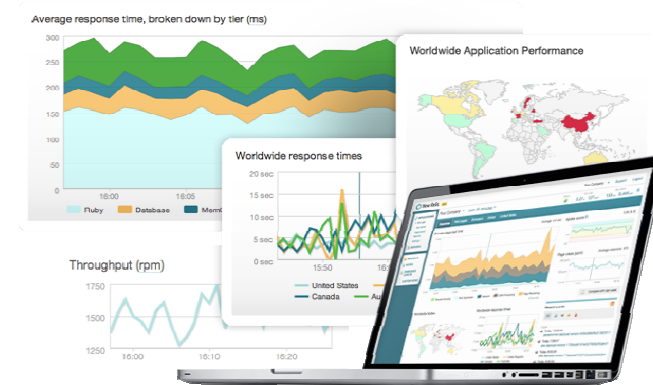
***Cloud monitoring –
Fundamentally new architecture***
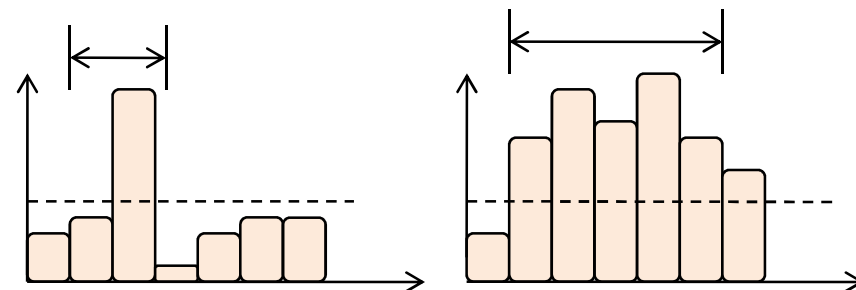
Short-term burst   Persistent violation

Step 5 – Optimize

- **Optimize provisioning**

- **Optimize utilization**

- **Ability to understand trends**

- **Predict bottlenecks & future needs**

Summary

Virtual Infrastructure Operations Framework

Operational Capability (vertical axis: Automate, Manage, Consolidate)

- ☑ Service Level Mgt
- ☑ Availability Mgt
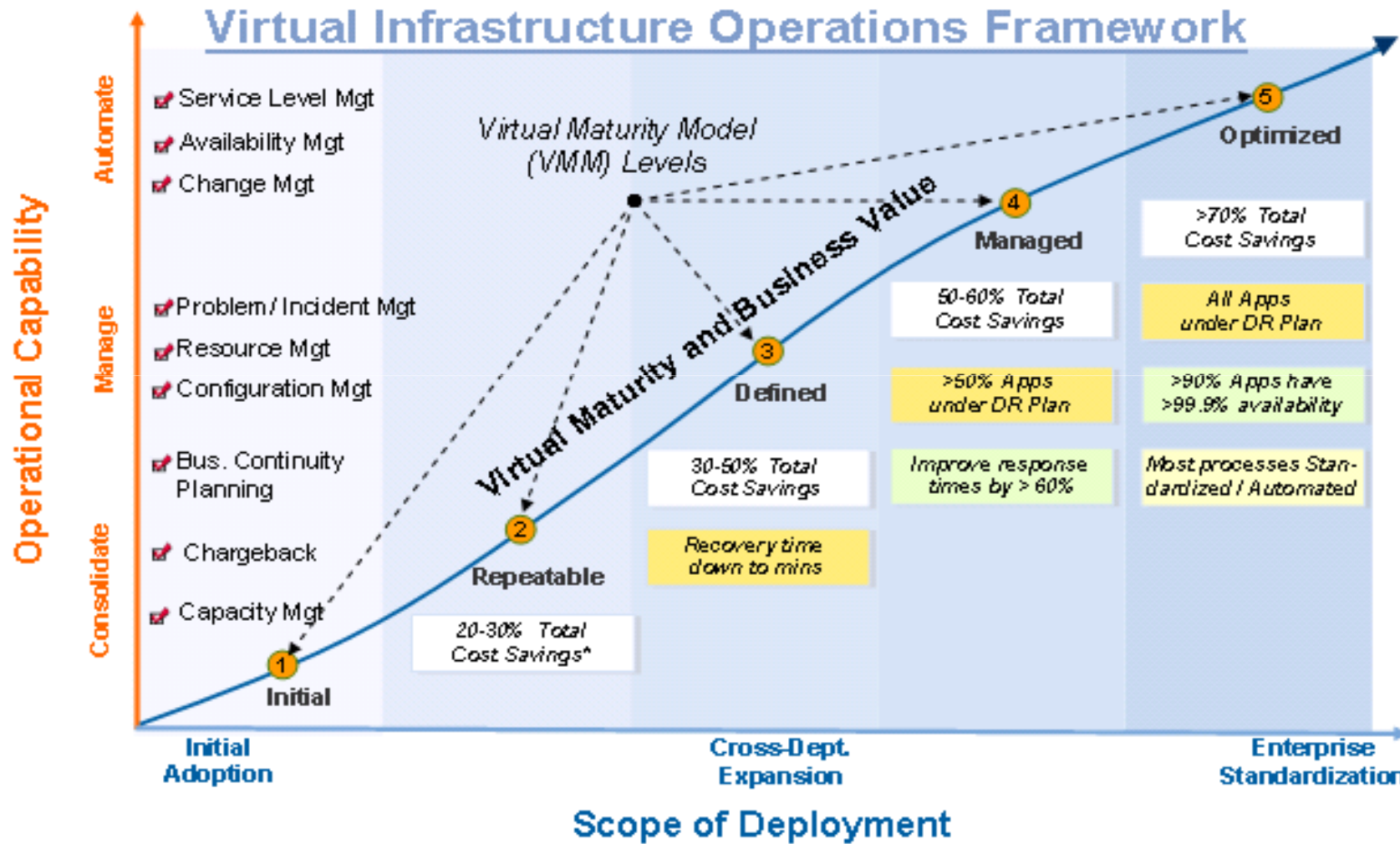- ☑ Change Mgt

- ☑ Problem / Incident Mgt
- ☑ Resource Mgt
- ☑ Configuration Mgt

- ☑ Bus. Continuity Planning

- ☑ Chargeback

- ☑ Capacity Mgt

Virtual Maturity Model (VMM) Levels

Virtual Maturity and Business Value

1 — Initial
2 — Repeatable
3 — Defined
4 — Managed
5 — Optimized

20-30% Total Cost Savings^

Recovery time down to mins

30-50% Total Cost Savings

>50% Apps under DR Plan

Improve response times by > 60%

50-60% Total Cost Savings

>70% Total Cost Savings

All Apps under DR Plan

>90% Apps have >99.9% availability

Most processes Standardized / Automated

Scope of Deployment (horizontal axis): Initial Adoption — Cross-Dept. Expansion — Enterprise Standardization

Source: VMware

Summary

- **Focus on customer requirement. Include customer in the process**

- **Start with pilot; expand over the period of time**

- **Standardize your IT processes, policies & procedures**

- **SLA driven design considerations**

- **Optimization – a process at each level**

Amit.SPathak@iGATEPatni.com