



# **DISA Customer & Industry Forum 2011**

## **“Power to Connect ... Enterprise Within Reach”**

**Paul Maritz**  
CEO  
VMware

**vmware**

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## The Cloud?

All hype?

Fire rediscovered?

Something more profound?

## The Cloud

The next major round of interaction between enterprise IT and consumer-driven change

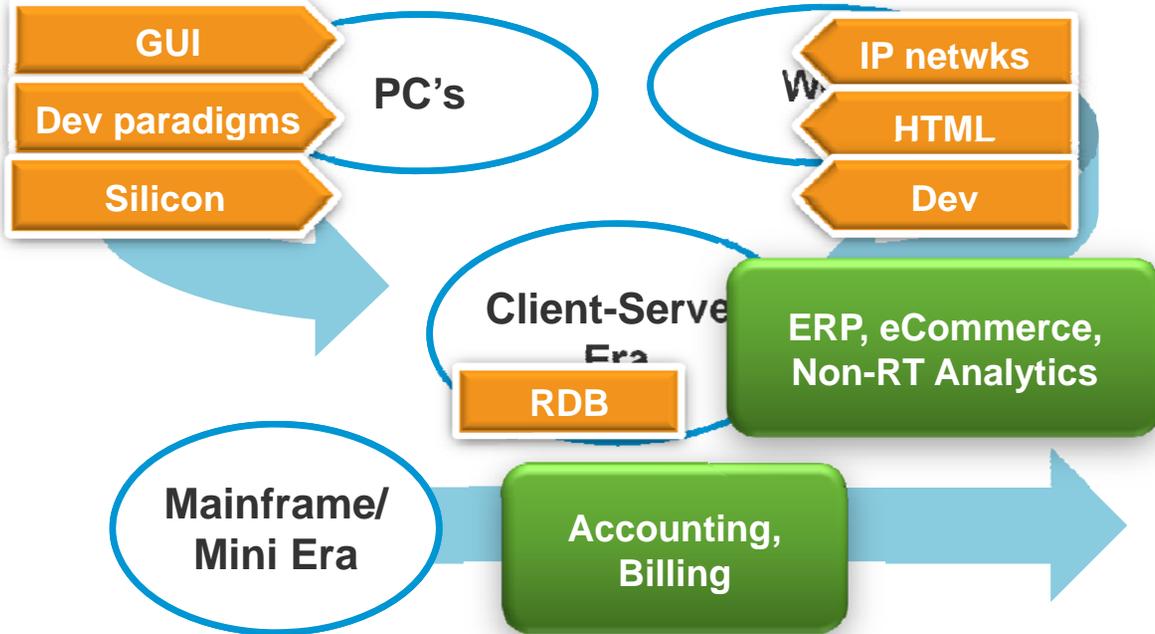
Many forces acting together,  
more about “How” than “Where”

Will re-define IT over  
the coming two decades

How to redeploy investment to the future  
in a smart and orderly way?

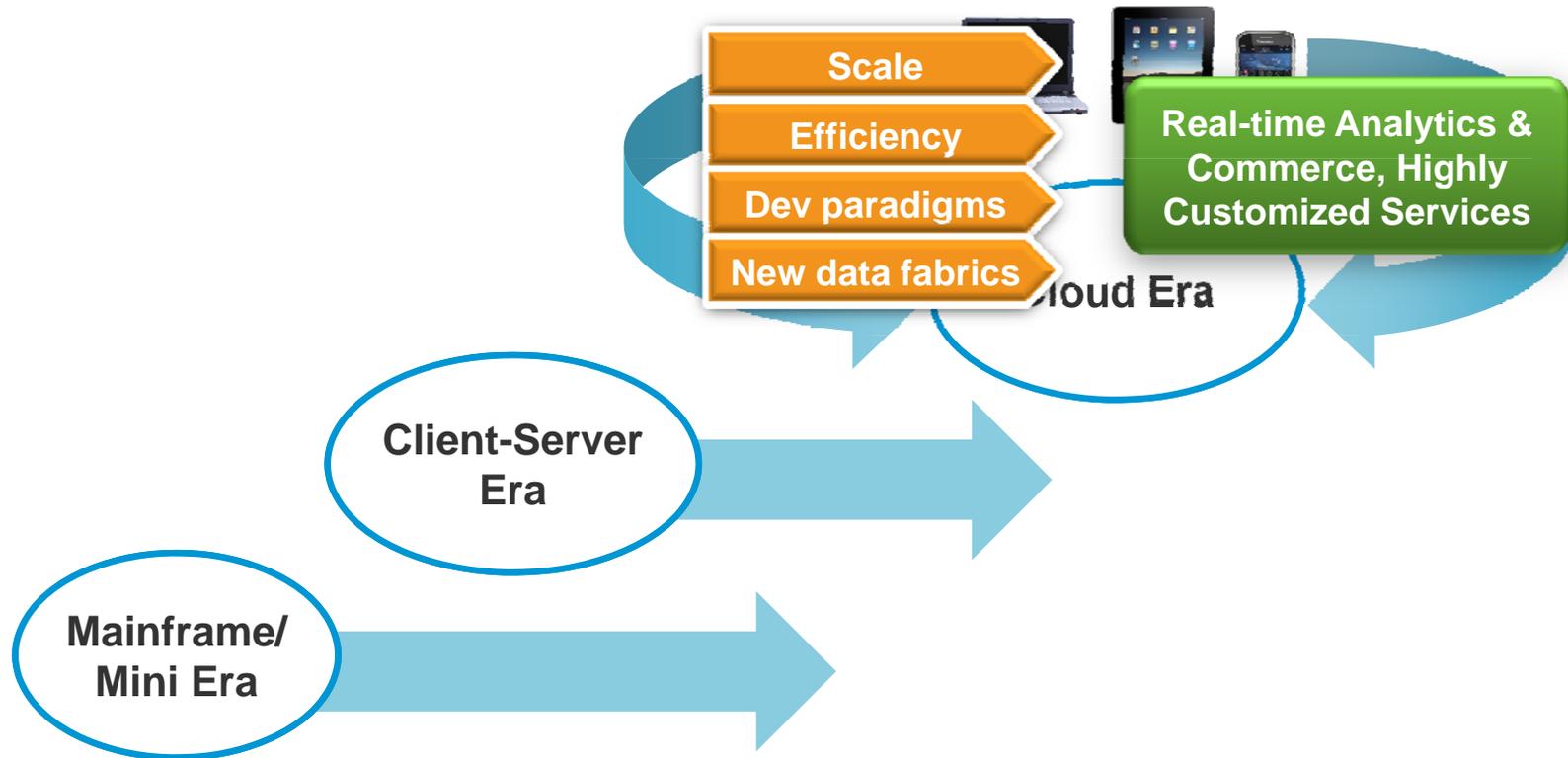
# Client-Server Era

100M's of users, mainly PCs



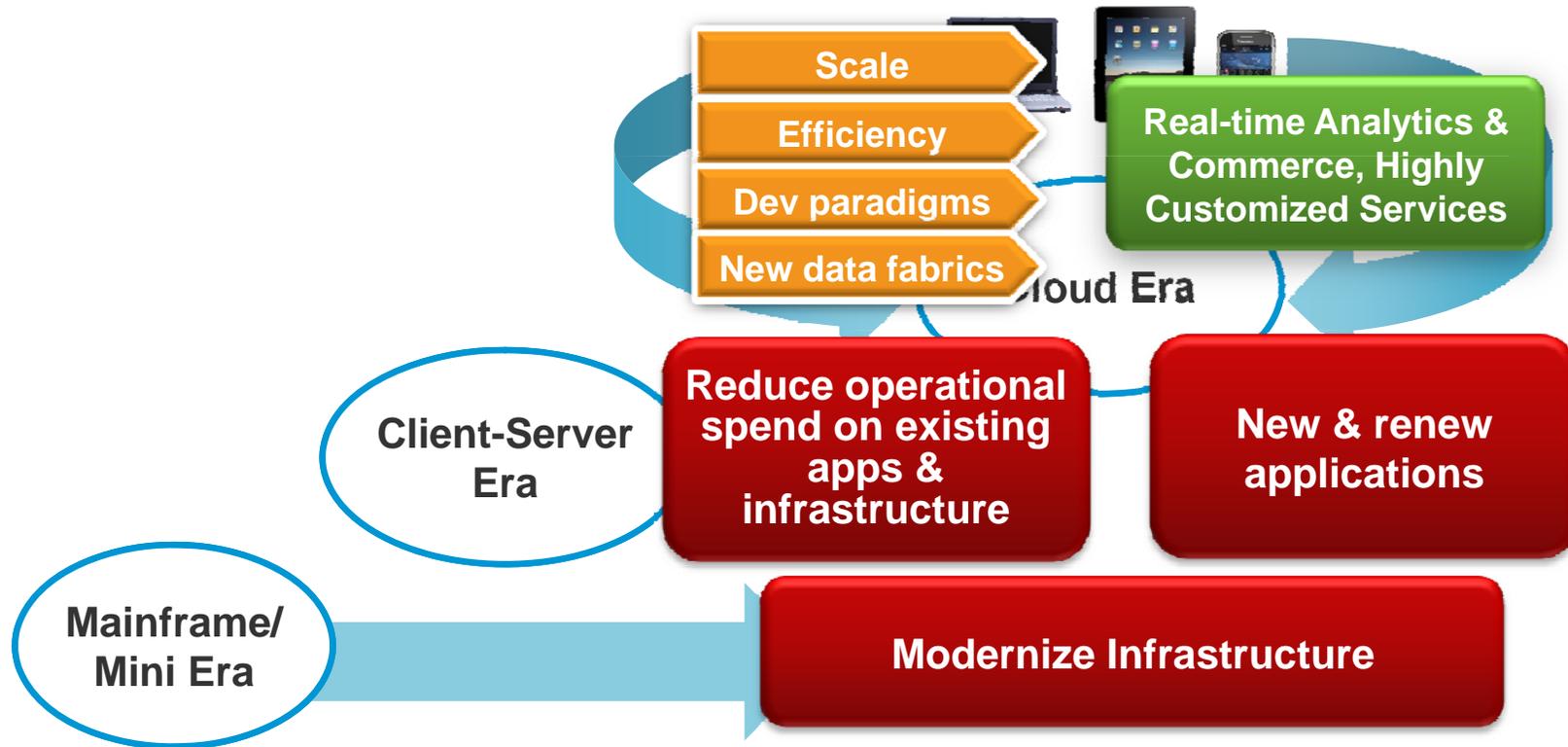
# Cloud Era

Billions of connected users & devices, mainly not PC's

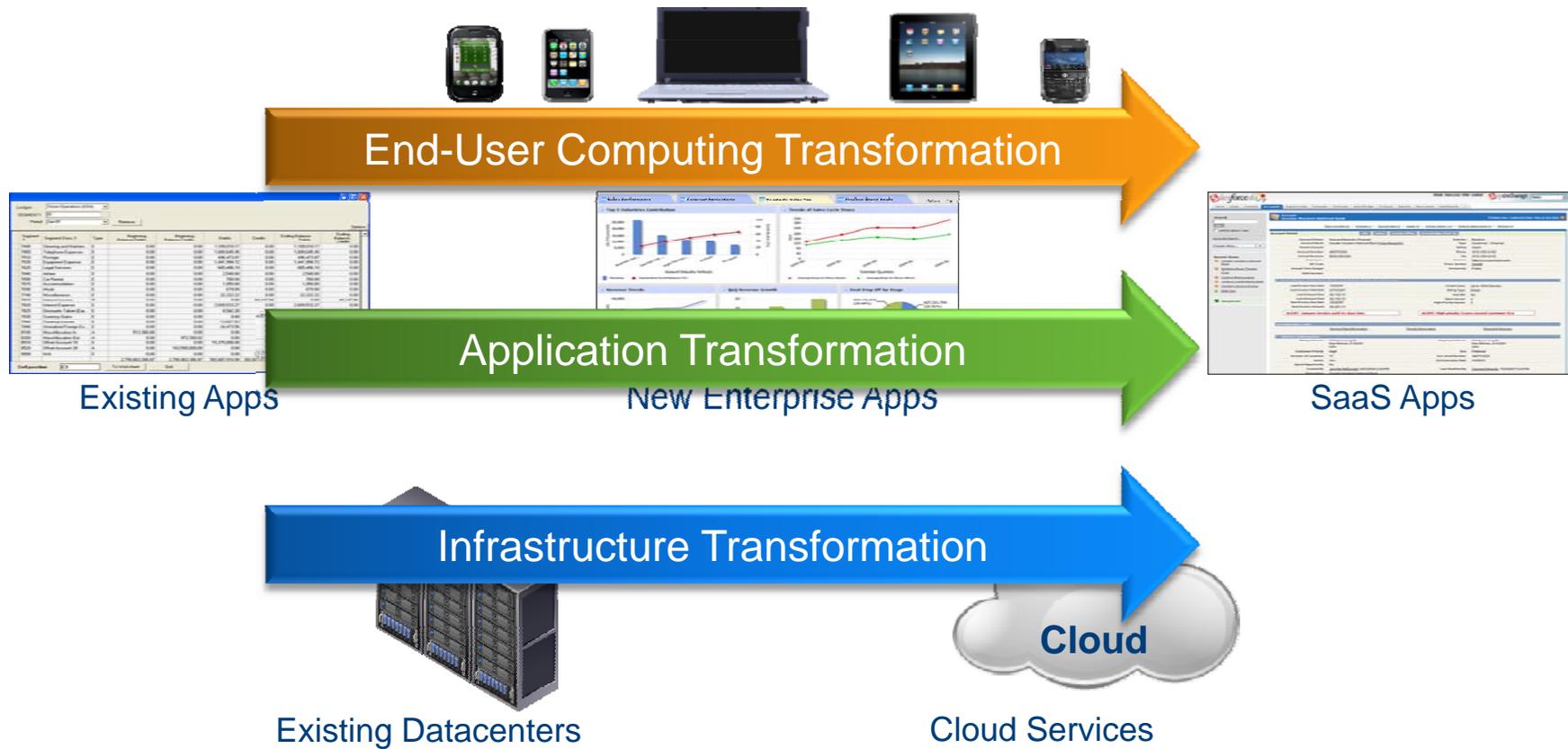


# The Challenge

Billions of connected users & devices, mainly not PC's

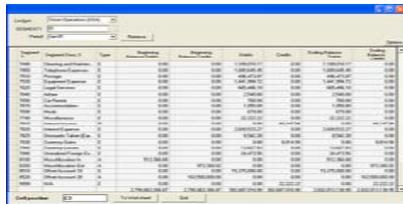


# IT Agenda for the Cloud Era



# Transforming Infrastructure

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Existing Apps

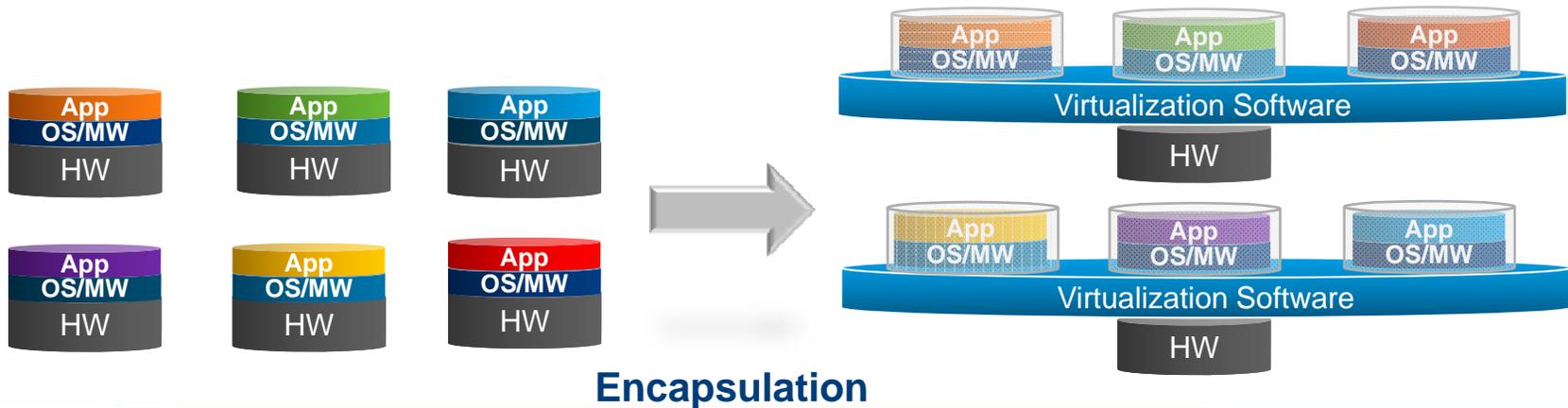
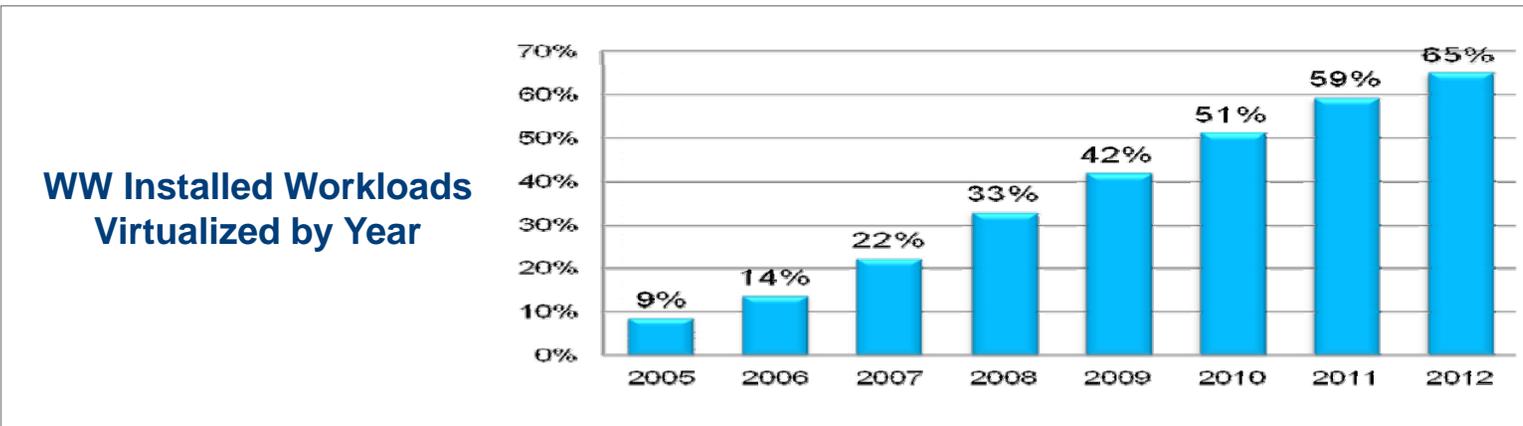


Existing Datacenters



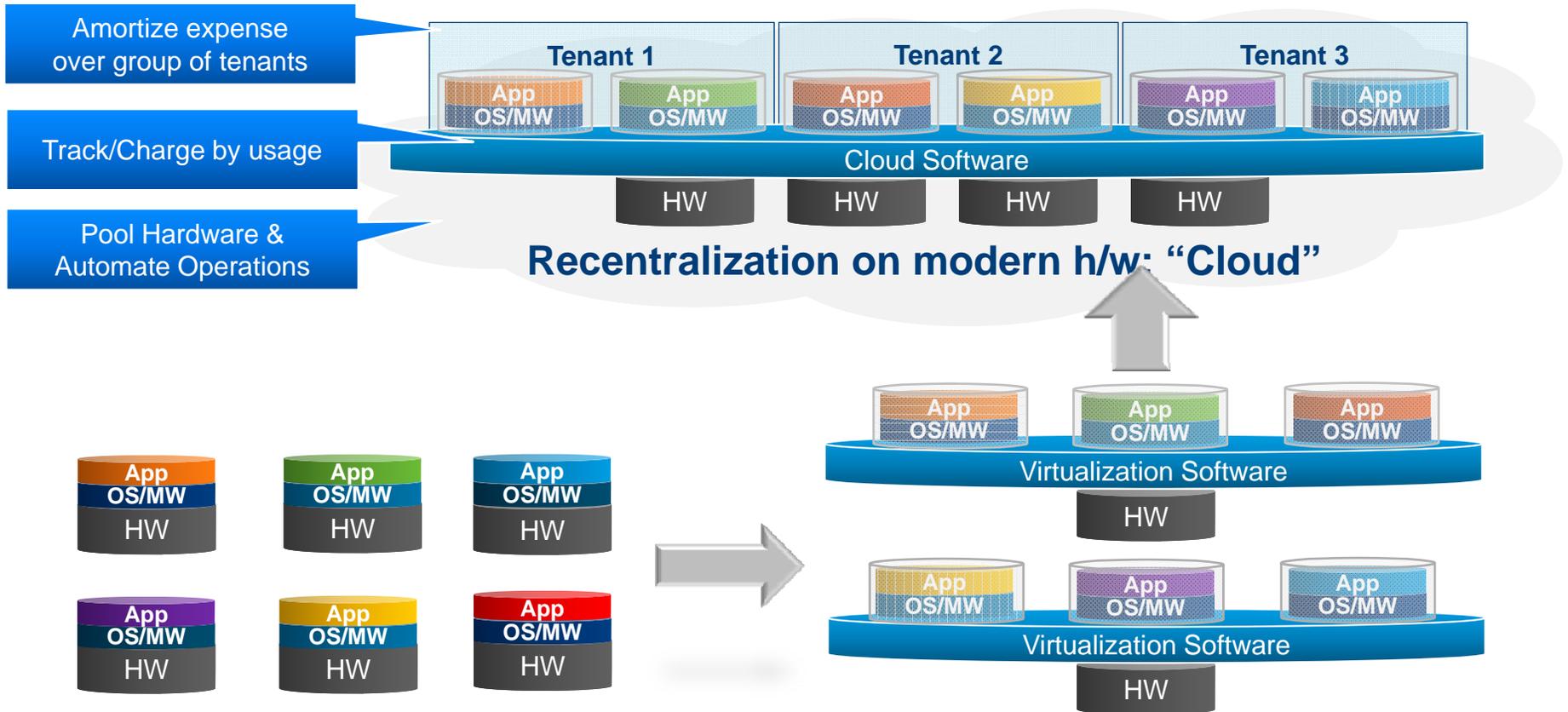
Cloud Services

# Modernizing Infrastructure: The Virtues of Virtualization...



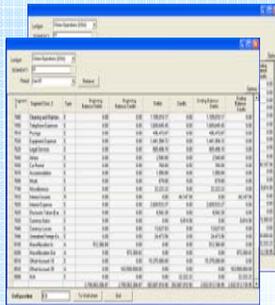
Source: IDC 2011, "Game Changing Virtual Technology"

# From Virtualization to Cloud: "The Modern Mainframe"



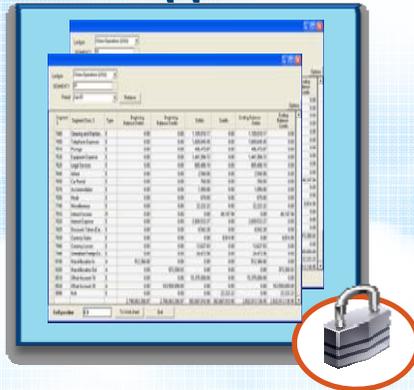
# Delivering Choice: Hybrid Cloud Model

Apps



| VM Name | IP Address  | OS      | VM Size | VM State | VM Power State | VM CPU Usage | VM Memory Usage | VM Disk Usage |
|---------|-------------|---------|---------|----------|----------------|--------------|-----------------|---------------|
| VM1     | 192.168.1.1 | Windows | 2GB     | Running  | Powered On     | 10%          | 50%             | 10%           |
| VM2     | 192.168.1.2 | Linux   | 1GB     | Running  | Powered On     | 5%           | 20%             | 5%            |
| VM3     | 192.168.1.3 | Windows | 4GB     | Running  | Powered On     | 15%          | 80%             | 20%           |
| VM4     | 192.168.1.4 | Linux   | 2GB     | Running  | Powered On     | 8%           | 30%             | 10%           |
| VM5     | 192.168.1.5 | Windows | 1GB     | Running  | Powered On     | 3%           | 10%             | 5%            |

Apps



| VM Name | IP Address  | OS      | VM Size | VM State | VM Power State | VM CPU Usage | VM Memory Usage | VM Disk Usage |
|---------|-------------|---------|---------|----------|----------------|--------------|-----------------|---------------|
| VM1     | 192.168.1.1 | Windows | 2GB     | Running  | Powered On     | 10%          | 50%             | 10%           |
| VM2     | 192.168.1.2 | Linux   | 1GB     | Running  | Powered On     | 5%           | 20%             | 5%            |
| VM3     | 192.168.1.3 | Windows | 4GB     | Running  | Powered On     | 15%          | 80%             | 20%           |
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| VM5     | 192.168.1.5 | Windows | 1GB     | Running  | Powered On     | 3%           | 10%             | 5%            |

Uses: migration, remote deployment, disaster recovery

Private Cloud

Cloud Infrastructure

Hybrid

“External Cloud”

Cloud Infrastructure

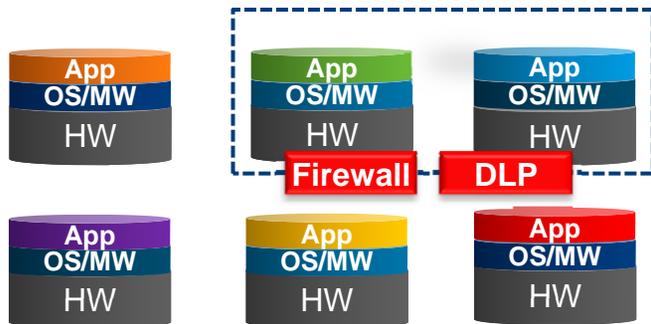
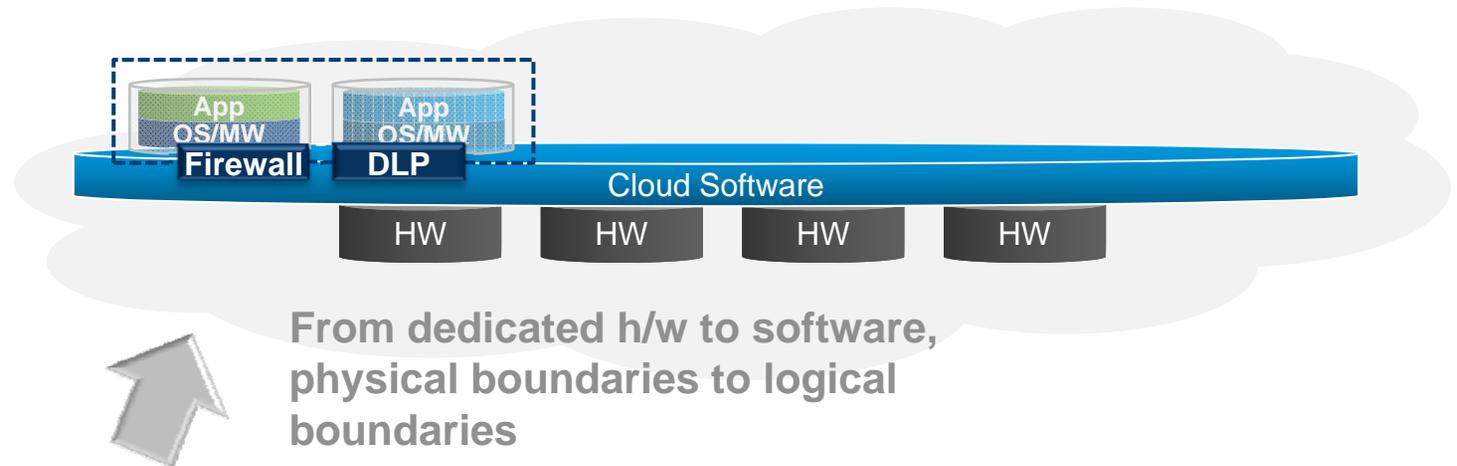
## VMware Technology in Action



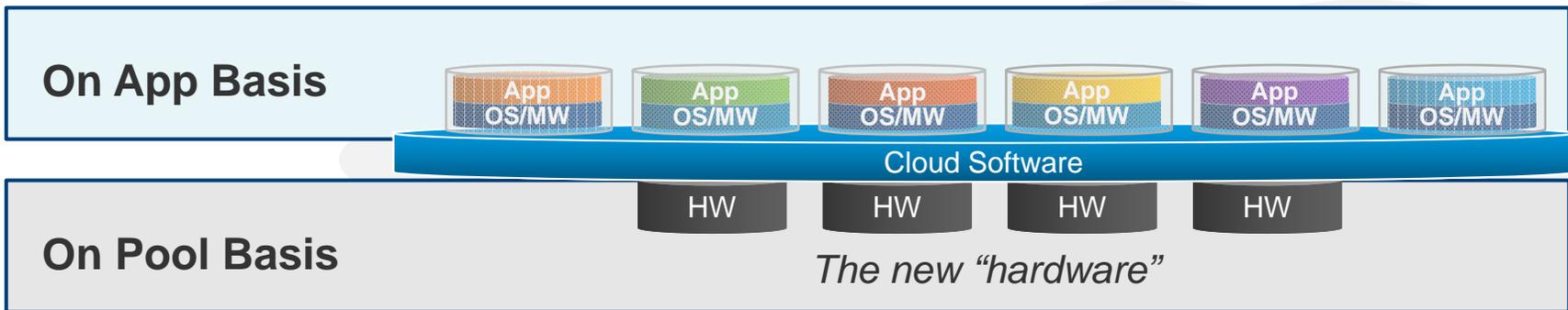
- VMware Site Recovery Manager
- Disaster recovery plan implemented amidst rolling blackouts and quake-induced power outages
- Now a test-case for expanded virtualization across the enterprise

# Things That Must Change in a Cloud-Oriented Approach...

## Edge Security Functions



# Things That Must Change in a Cloud-Oriented Approach...



## On a Per "Silo" Basis



## Management and Monitoring

# Why the “Cloud” Matters...

**“If you can’t measure it, you can’t manage it” – Andy Grove**

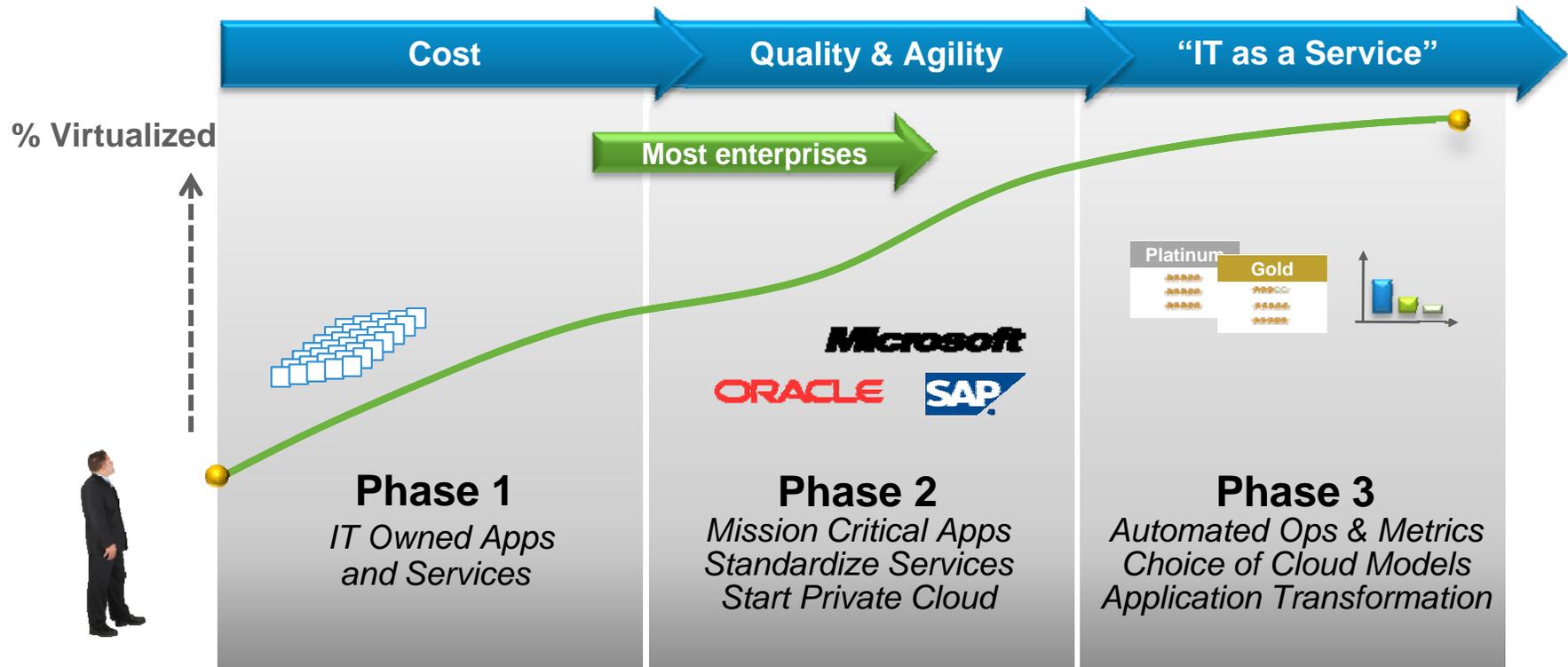
- **The Cloud Era (Virtualization, Cloud, SaaS) enable standardized IT metrics, e.g.:**
  - Cost to provision per VM
  - Cost per GB of storage
  - Time to provision
  - Cost to provision an email box, ...
- **To be compared, shopped for**
  - Public Cloud Providers are establishing a “rate card” for IT
- **Will lead to better informed consumption and production of IT**



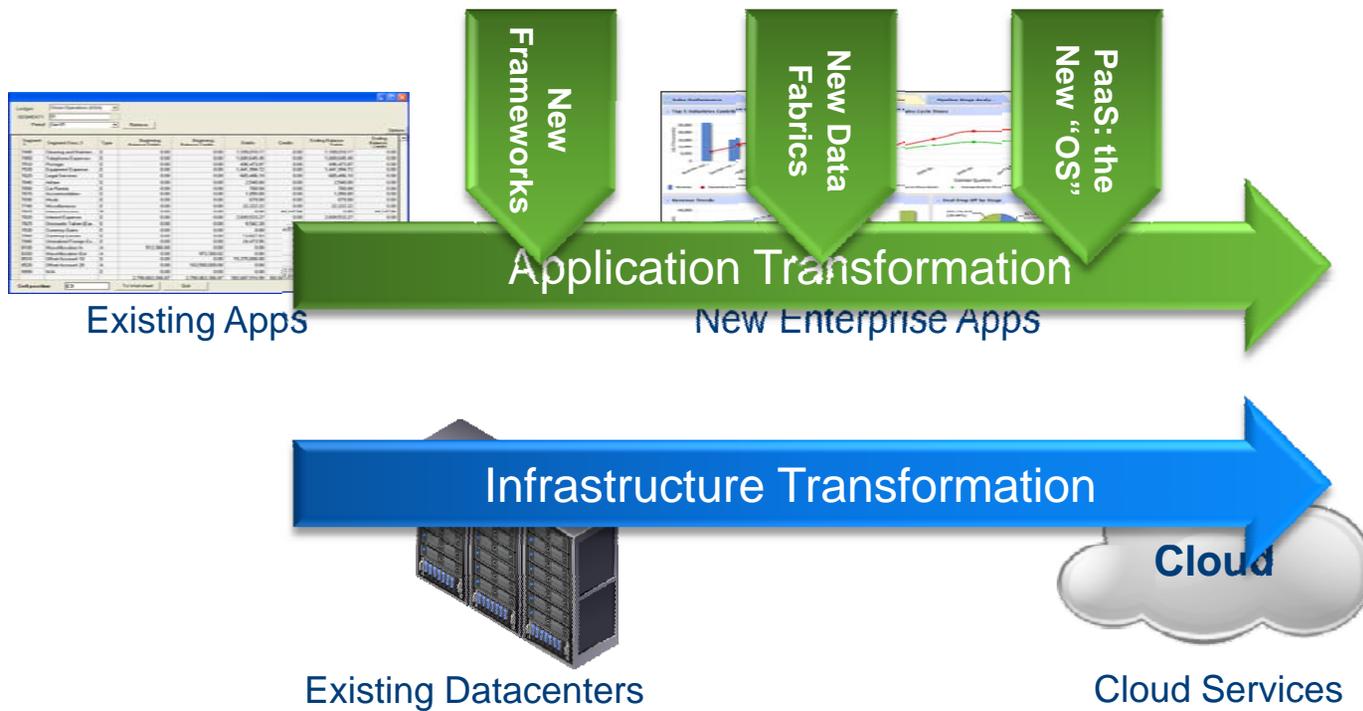
vCloud Express Pricing Overview  
The following table shows the billing resources available for vCloud Express.

| Resource              | Price  |
|-----------------------|--|
| Servers               | * See server pricing matrix below                    |
| System Storage        | \$0.25/month per GB (included with virtual machines) |
| Additional Storage    | \$0.25/month per GB                                  |
| Public IP Addresses   | \$0.01/hour per IP                                   |
| Internet Services     | \$0.01/hour per service                              |
| Internet Bandwidth    | \$0.17 per transferred GB                            |
| Software Subscription | * See software subscription matrix below             |
| Priority Support      | Greater of \$500 or 20% of usage fees                |

# The Journey



# Transforming Applications



## New Programming Frameworks

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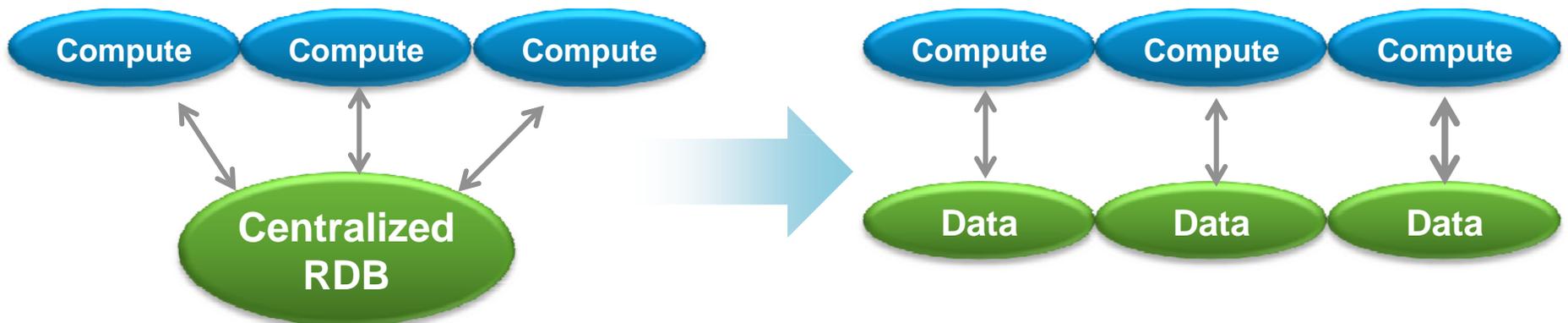
Etc.

- Emphasize human productivity vs. machine efficiency
- Hide complexity, emphasize flexibility
- Will be important for security in the future

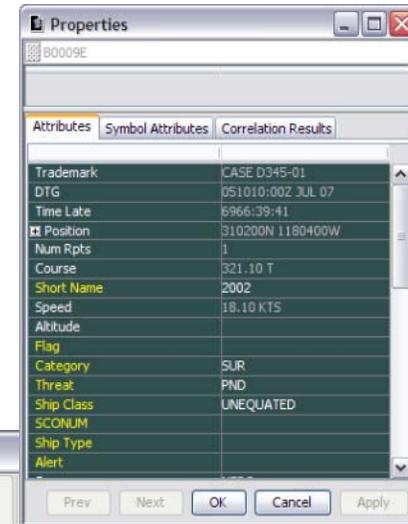
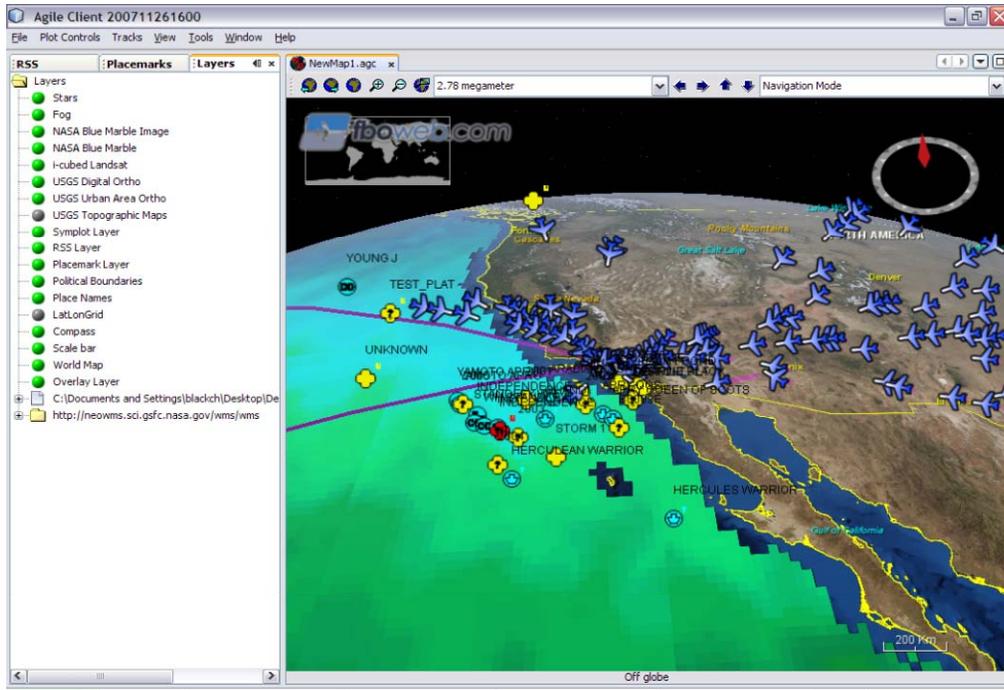
## New Data Fabrics

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- Scale handled at data-tier
- Flexible schema
- Do things “in memory”
- GemFire, Cassandra, RIAK, Hadoop/HBASE, etc.



# GemFire: High Performance Data Management



# Platform-as-a-Service



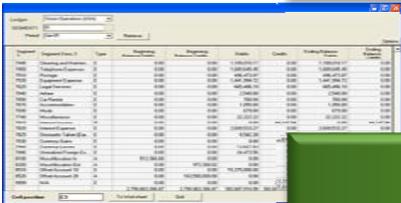
# Transforming End-User Computing

Beyond the desktop

Beyond Documents



End-User Computing Transformation



Existing Apps



New Enterprise Apps

Application Transformation



SaaS Apps

Infrastructure Transformation



Existing Datacenters



Cloud Services

# Beyond the Desktop, Beyond Documents

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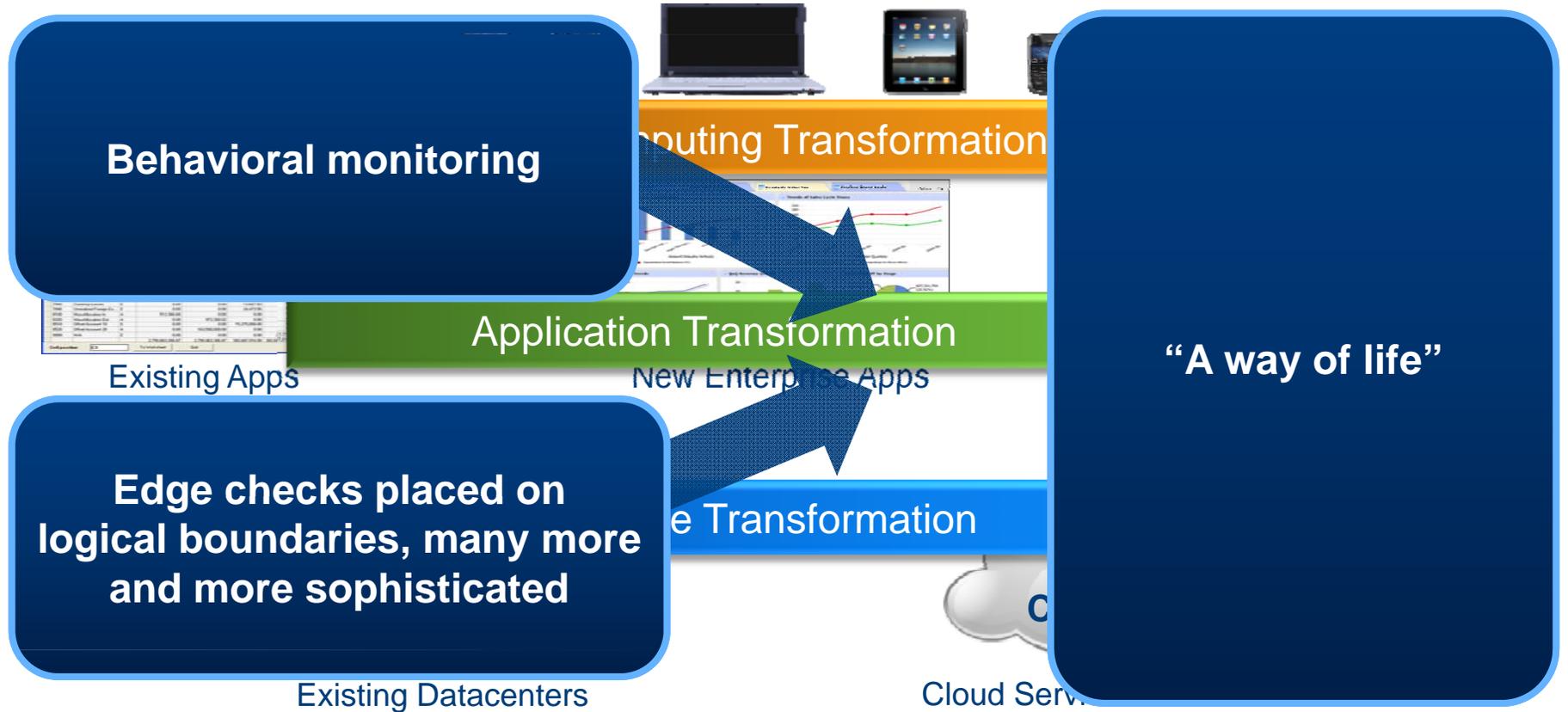
## **A new “desktop” for provisioning and security:**

- Belongs to the user, not a particular device
- Deal with legacy (Windows) and future Apps (HTML5)

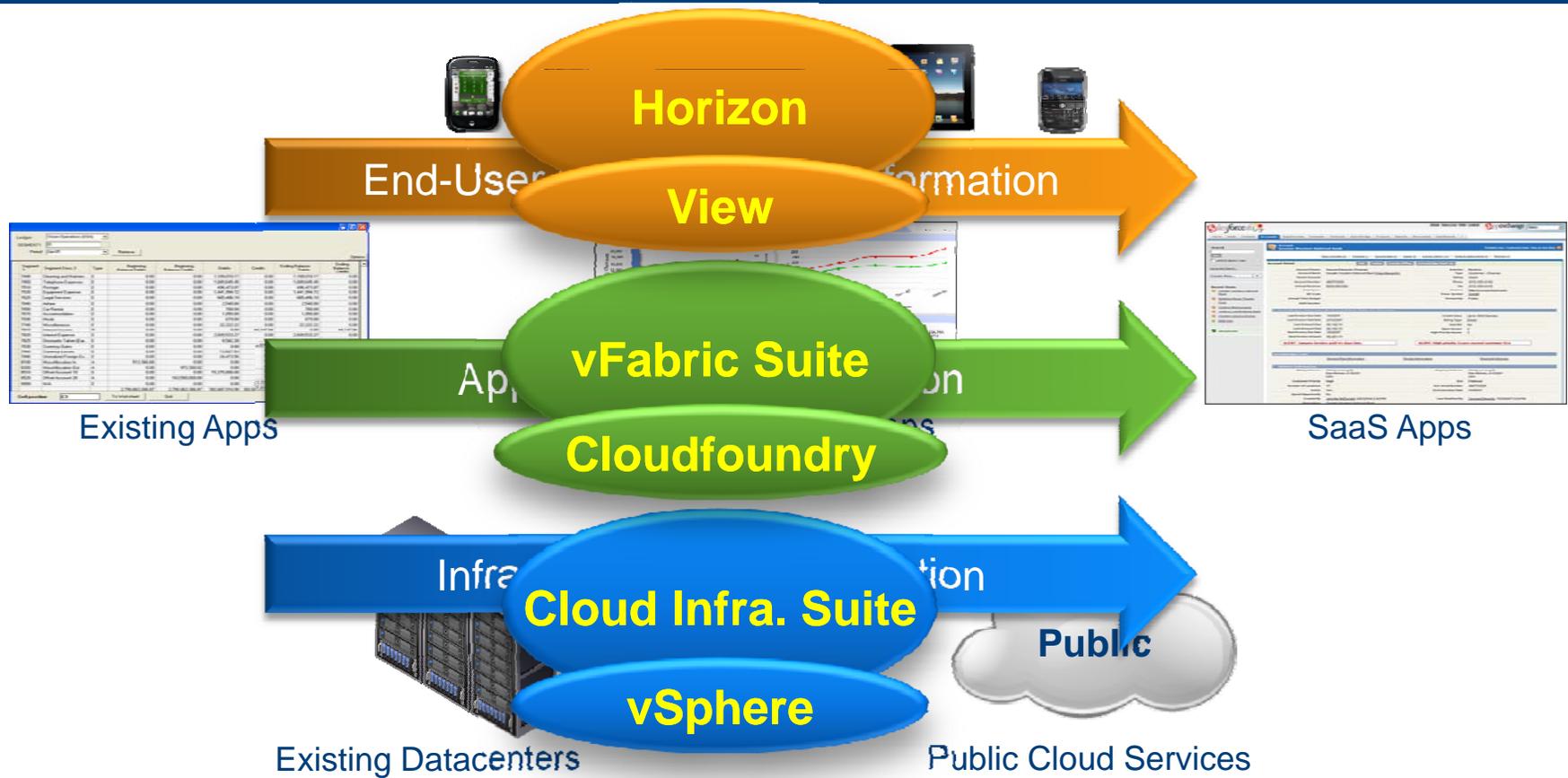
## **A new generation of collaboration tools:**

- Stream, not document, oriented
- Context and location aware

# Security in the Cloud Era



# IT Challenges: VMware Responses



# VMware: Serving Those Serving the USA

- The US DoD and all branches of military, including joint commands
- The Executive Branch
  - All Cabinet-level agencies
- The Legislative Branch
- The Judicial Branch
- Many independent and quasi-governmental agencies and NGOs



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# Thank You!



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