Oracle OpenWorld
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Virtualization: Redefining the Data Center

John Manville
VP, IT-Network and Data Center Services

Agenda

- Data Center Challenges
- Virtualization: a Cisco Priority
- Data Center Transformation
- Validation of Cisco and Oracle Solutions
- UCS Unleashes Virtualization
- Our Internal Cloud Strategy: CITEIS

Cisco IT Data Center Challenges

Business Pressures

Continuity/Reg. (SOX, etc.)

Productivity

SLA Metrics

Global Availability

New Bus Models

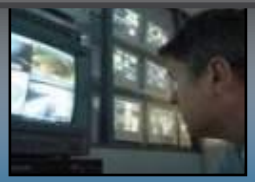
Power and Cooling

Asset Utilization

Provisioning

Threat Prevention

Green Pressures



Operational Limitations

Architectural Approach

Alignment to Architectures

Collaboration

Borderless Networks

Virtualization/ Data Center

Network as The Platform

Switching

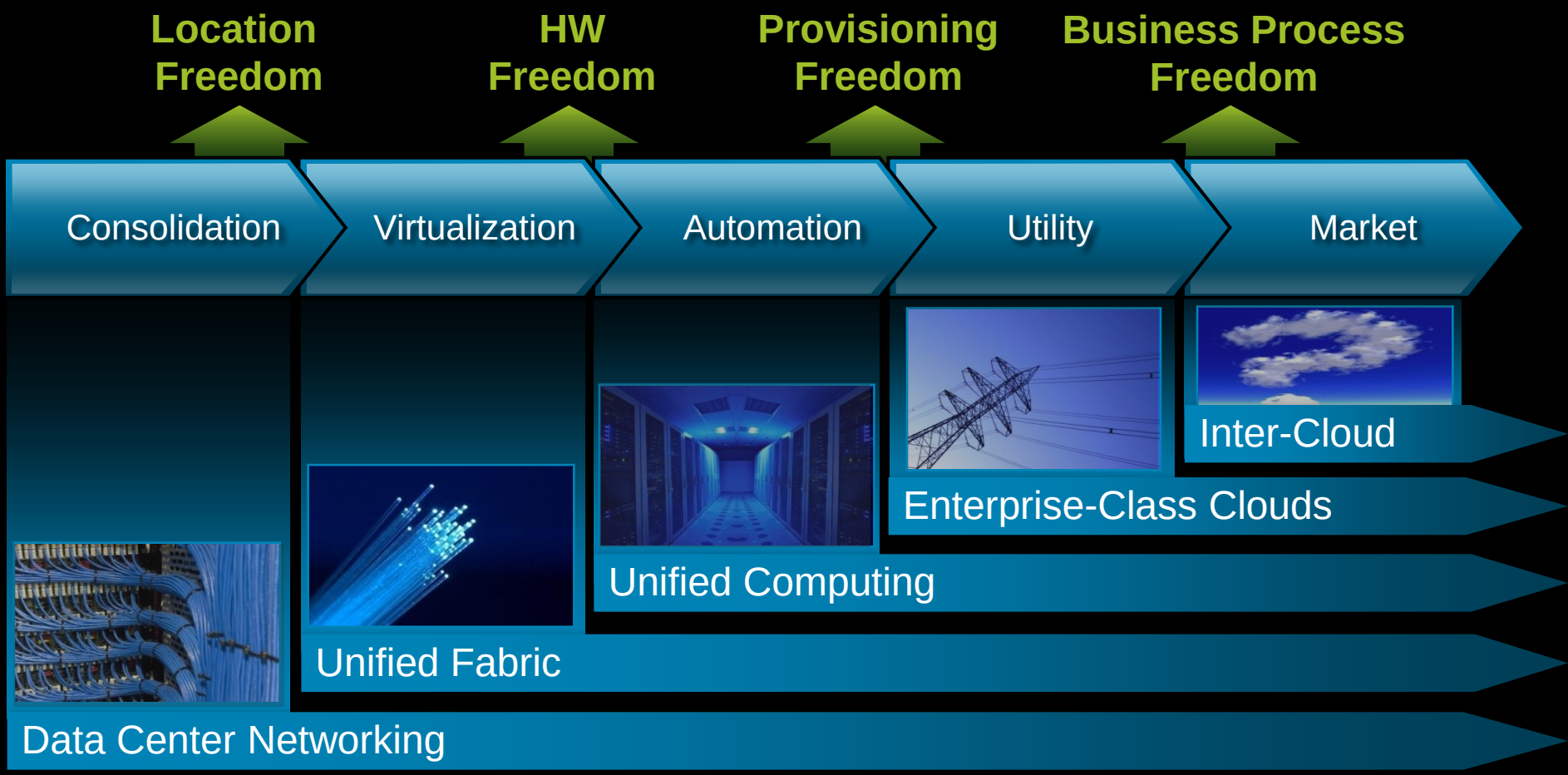
Routing

Wireless

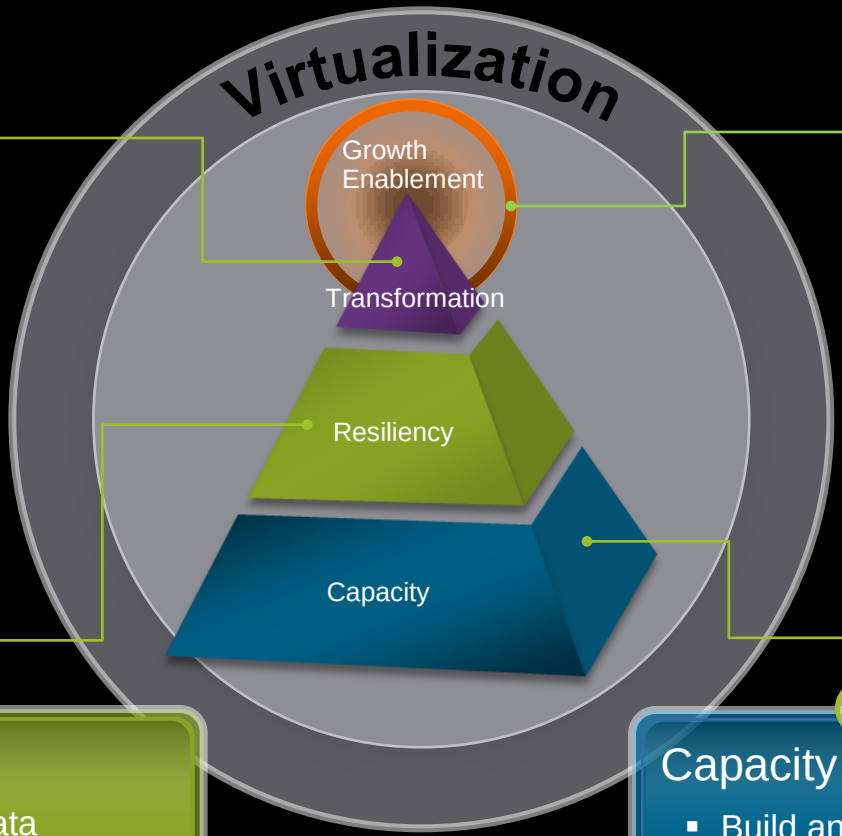
Security

WaaS/Performance

Cisco Data Center 3.0 Evolution Path



Cisco IT Global Data Center Strategy
Virtualization is Key



Transformation
- Run IT as a business
- Internal service provider model
- Service-oriented architecture

Growth Enablement
- New markets and business models
- Global expansion
- User experience

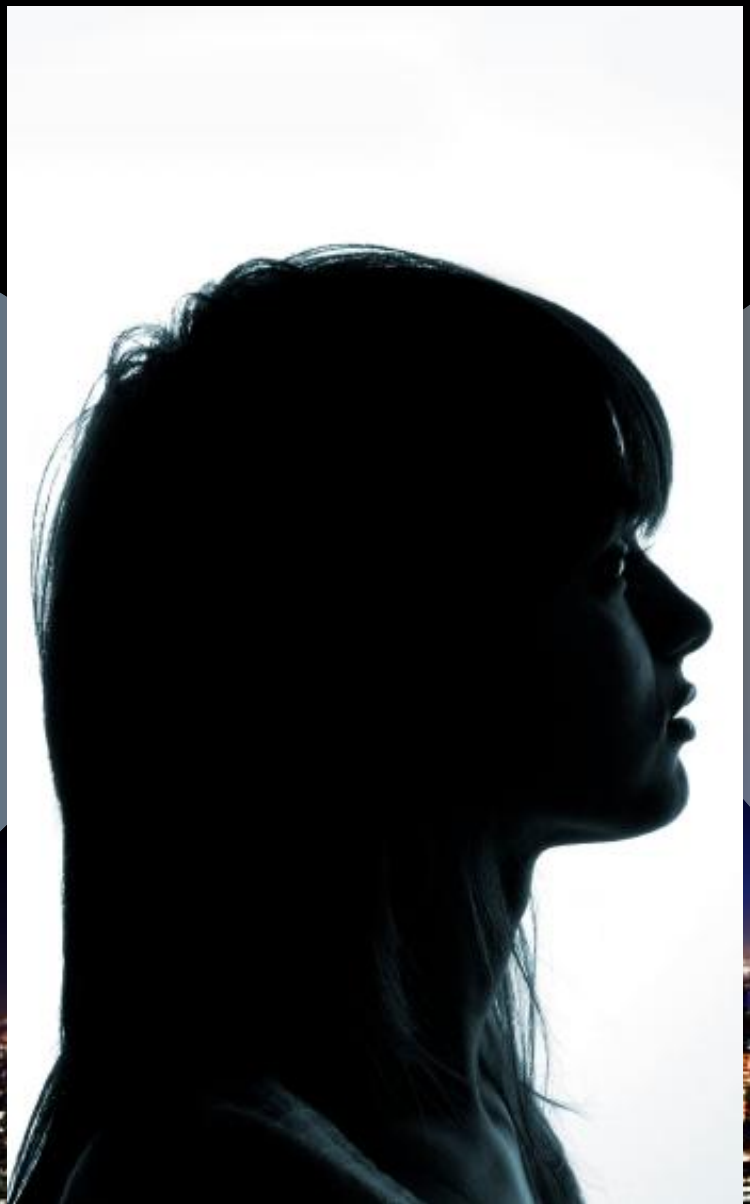
Resiliency
- Increase data center tiers
- Multi-site architecture
- Move out of high risk geographies

Capacity
- Build and occupy data centers
- Optimize demand
- Consolidate where appropriate

Virtualization Brings a New Mindset

From

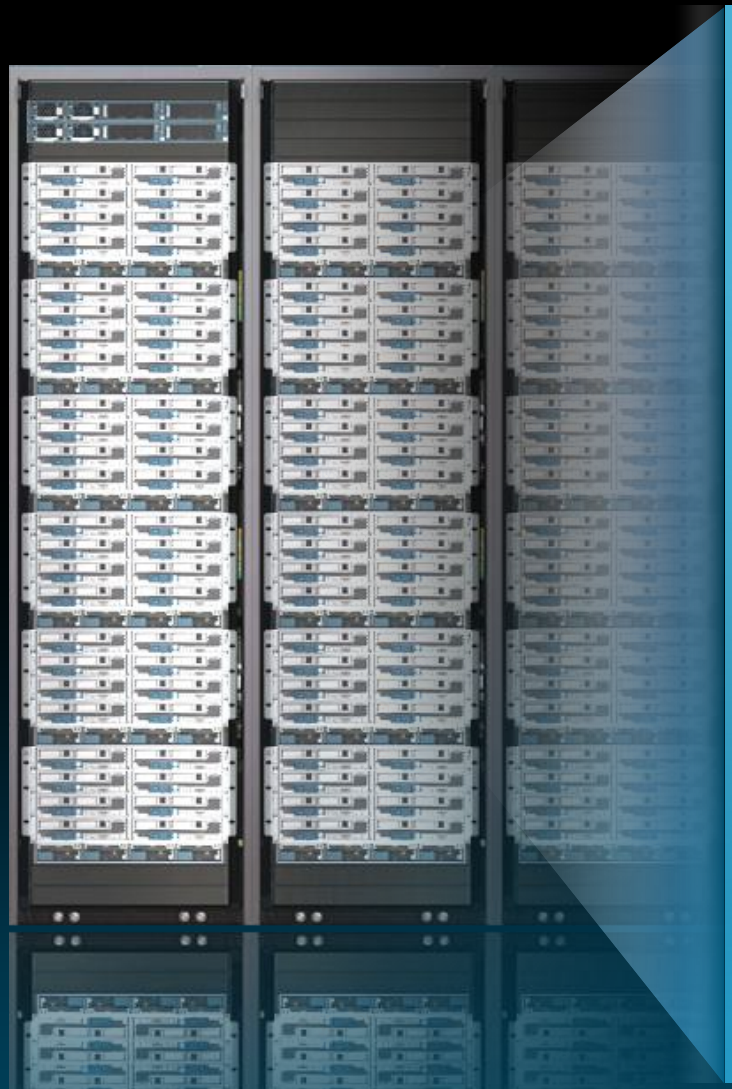
- Team Silos
- Technology Silos
- Manual Provisioning
- Dedicated Technology
- Long Depreciation Cycle
- Fixed Costs
- Lower Inherent Resiliency
- Brown



To

- Collaboration
- Systems Approach
- Automatic Provisioning
- Virtual Technology
- Easy Scalability
- Lower Variable Costs
- Higher Inherent Resiliency
- Green

Cisco Unified Computing System



A Single System That Unifies

- Compute: Industry standard x86
- Network: Wire once for SAN, NAS, iSCSI
- Virtualization: Control, scale, performance

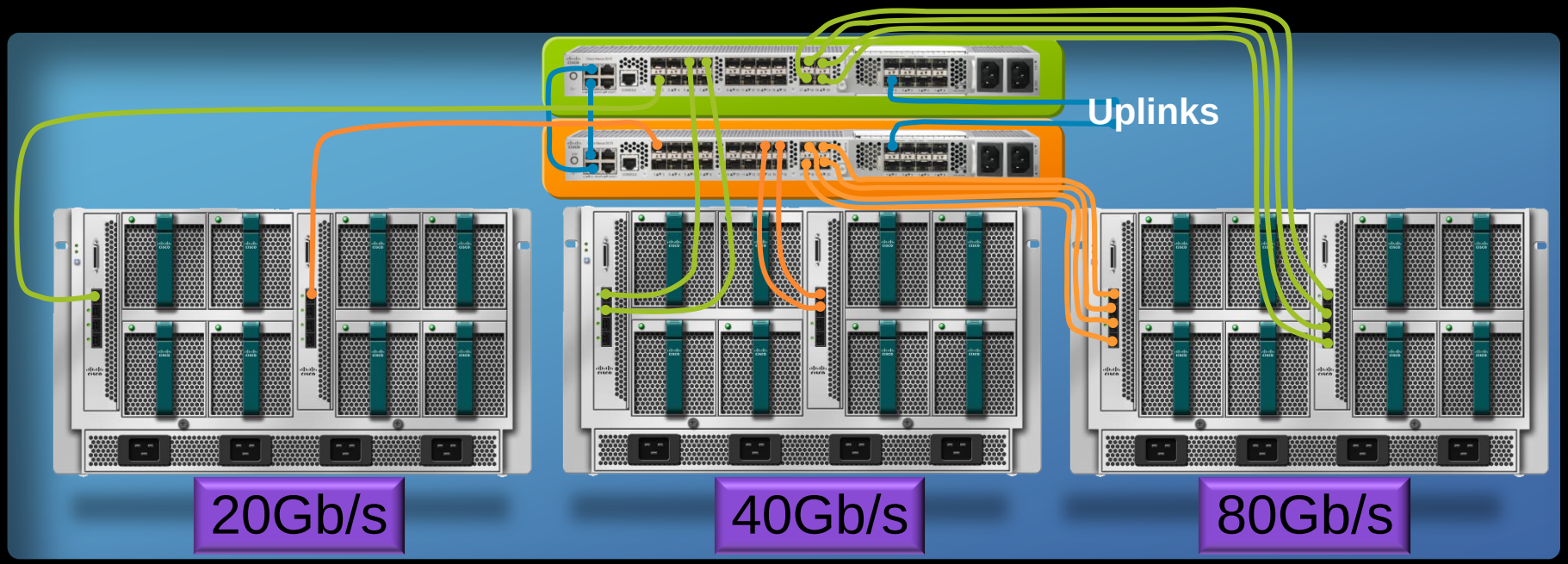
Embedded Management

- Increase scalability without added complexity
- Dynamic resource provisioning
- Ability to integrate with broad partner ecosystem

Energy Efficient

- Fewer servers, switches, adapters, cables
- Lower power and cooling requirements
- Increase compute efficiency by removing I/O and memory bottlenecks

Wire Once Architecture



- Wire once for bandwidth, not connectivity
- All links can be active all the time

Cabling Simplified

UCS Uses Significantly Fewer Cables

Traditional Blade Server

Cisco Unified Computing

Validating Cisco and Oracle Solutions

- Together Cisco and Oracle have validated a broad set of solutions for the UCS platform, including:
  - Oracle Applications
  - Oracle Real Application Clusters (RAC)
  - Oracle Databases, 10g and 11g
  - Oracle VM
  - Oracle Enterprise Linux

77%

"…of CIOs plan to buy/evaluate the Cisco Unified Computing System over the next 18 months…"

- Source: UBS CIO Survey, July, 2009

Applications Deployed on…

Unified Computing System **NOW!**

Office of the Chairman

News@Cisco

Legal Applications

Finance Applications

Cisco IT Test Results of Oracle on UCS

Oracle RAC Scalability Increases

CPU performance of an 8-way 2-socket UCS server on par or better than 24-way, 4-socket traditional blade server

6 Months of Oracle on UCS

Over 1 Year of Oracle on FCoE

IT Projections from DC Designs

1 MW, 10,000 sq ft CoLo Facility

Cost & Operational Efficiencies:

40% savings in cabling, fiber, patch cords and labor

Overall DC Utilization:

Up to 4Xs as many virtual machines
30% more power available to servers
Power reduction benefits of UCS

Agility & Happier Application Developers:

Major reduction in provisioning time
UCS Manager

Server Failover Recovery via UCS

Using Server Profiles

Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (eg, networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

(6-1-09 NIST; Peter Mell and Tim Grance)

Characteristics

- On-demand self-service
- Ubiquitous network access
- Location independent resource pooling
- Rapid expansion
- Measured Service

Delivery Models

- Software as a Service – SaaS
- Platform as a Service – PaaS
- Infrastructure as a Service - IaaS

Deployment Models

- **Internal**/Private Cloud
- Public Cloud
- **Hybrid Cloud**

CITEIS: Cisco IT Elastic Infrastructure Services

CITEIS Integrates many products and features to provide a complete service…

CITEIS

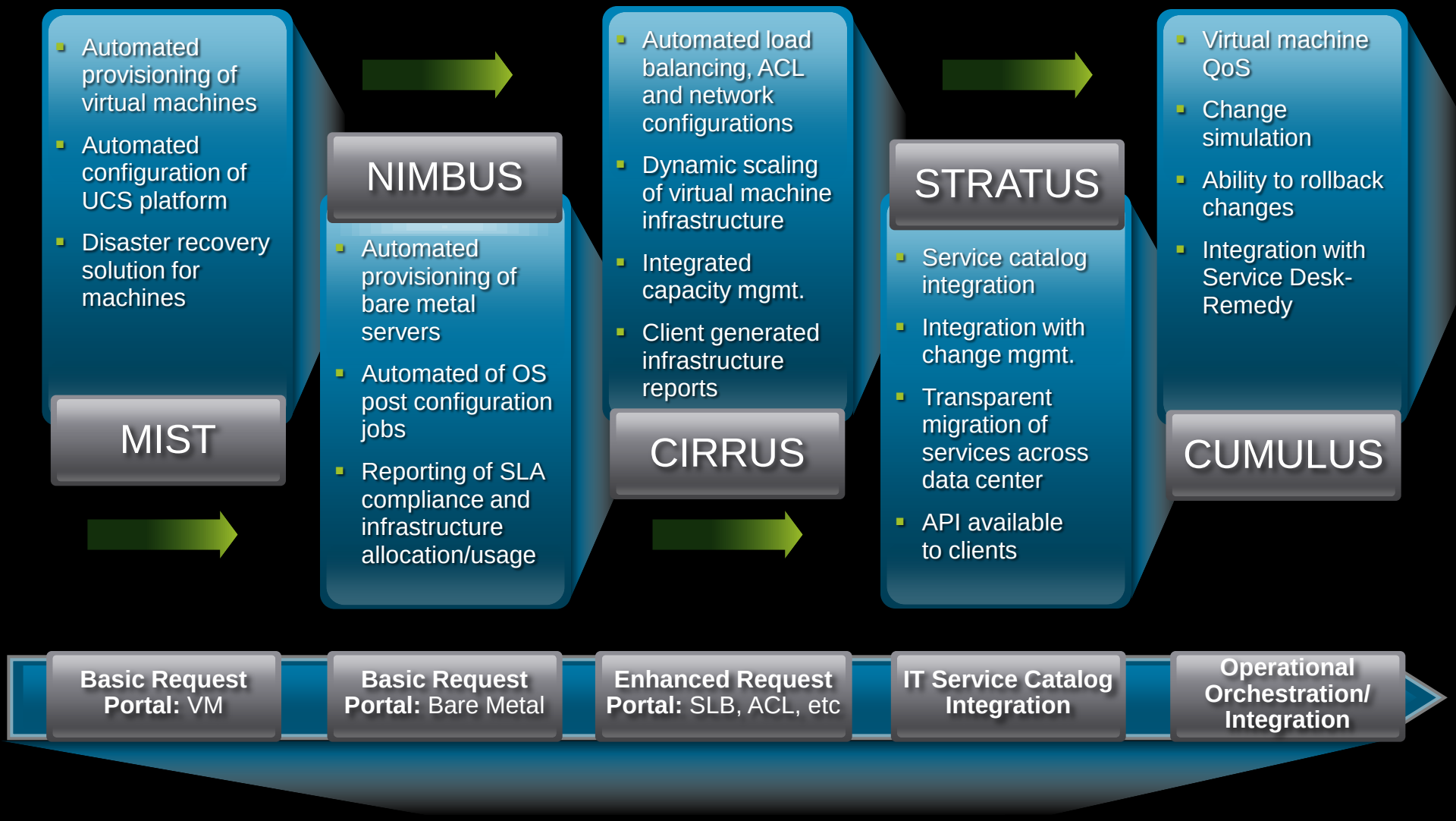
HW	SW	Process
• UCS • UCS Manager • Nexus 1000v • Nexus 5000 • Nexus 7000 • ACE • GSS • MDS • Catalyst 6500	• iCloud • Service Catalog • EMAN • Server Virtualization SW • Windows Server • Linux Distribution	• Provisioning • Management • Deactivation • Usage records

CITEIS Extension

Overflow to a Public Cloud forming a Hybrid Cloud

Cisco IT Elastic Infrastructure Services (CITEIS)

Platform to the Clouds



Key Advantages

- Automatic resiliency
- Quicker provisioning
- Faster resource scalability
- Lower and more granular service costs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To Learn More…

- Visit the Cisco Booth (#2301)
- Join us for additional Cisco Unified Computing System sessions:

  Cisco Unified Computing Management
  October 12th, 5:30pm in Moscone South #306

  Oracle Database Deployment on UCS
  A Case Study by Cisco IT: October 15th,
  1:30pm in Moscone South #200