

BALANCE VANCE

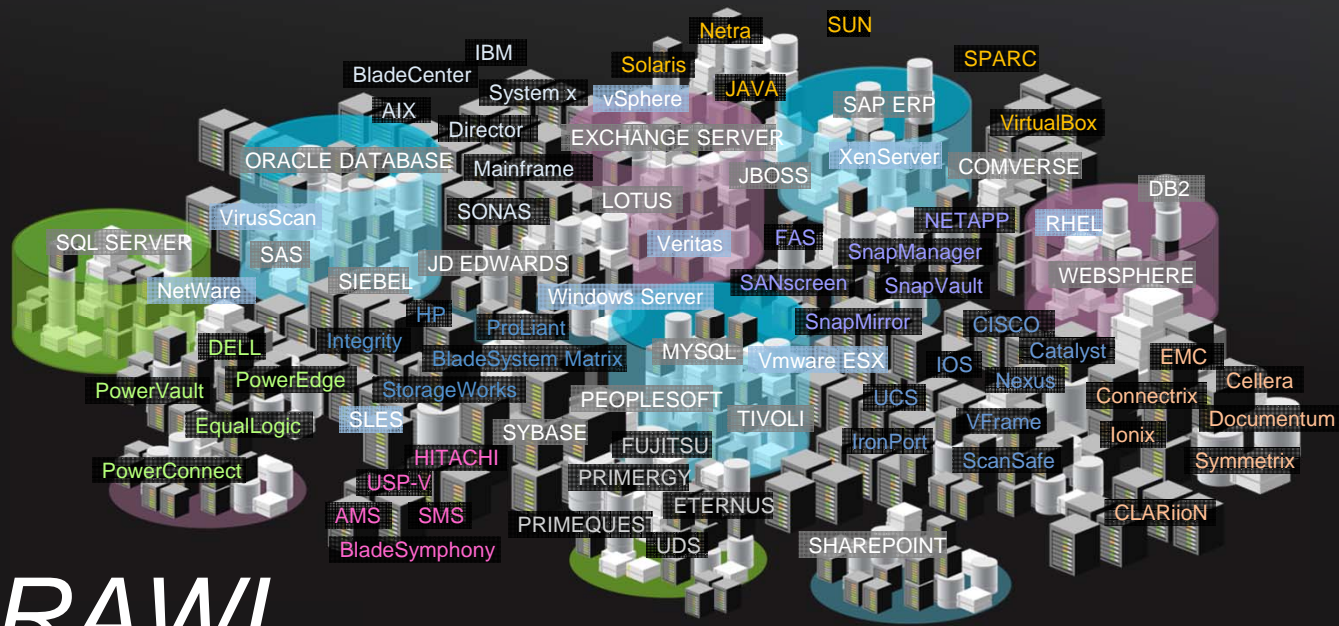
HP Converged Infrastructure for the Data Center of the Future

Tariq Khan
Master Solution Architect
Business Critical Systems, HP Enterprise Business



70% Captive in operations and maintenance

Business innovation throttled to 30%



IT SPRAWL

Two complementary approaches to converged infrastructure

Find the balance between modernization and transformation

Transformation

Transformation of the IT organization infrastructure and data center to a service-centric, next-generation model.



Technology Modernization

Incremental technology implementation of specific technologies and shared services to address key pain-points.



Infrastructure Balancing Act

Finding the balance between risk and cost while meeting business needs

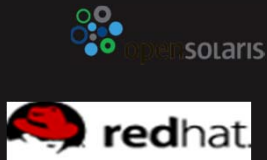
Infrastructure Aligned with
Business Objectives



Achieve IT Balance

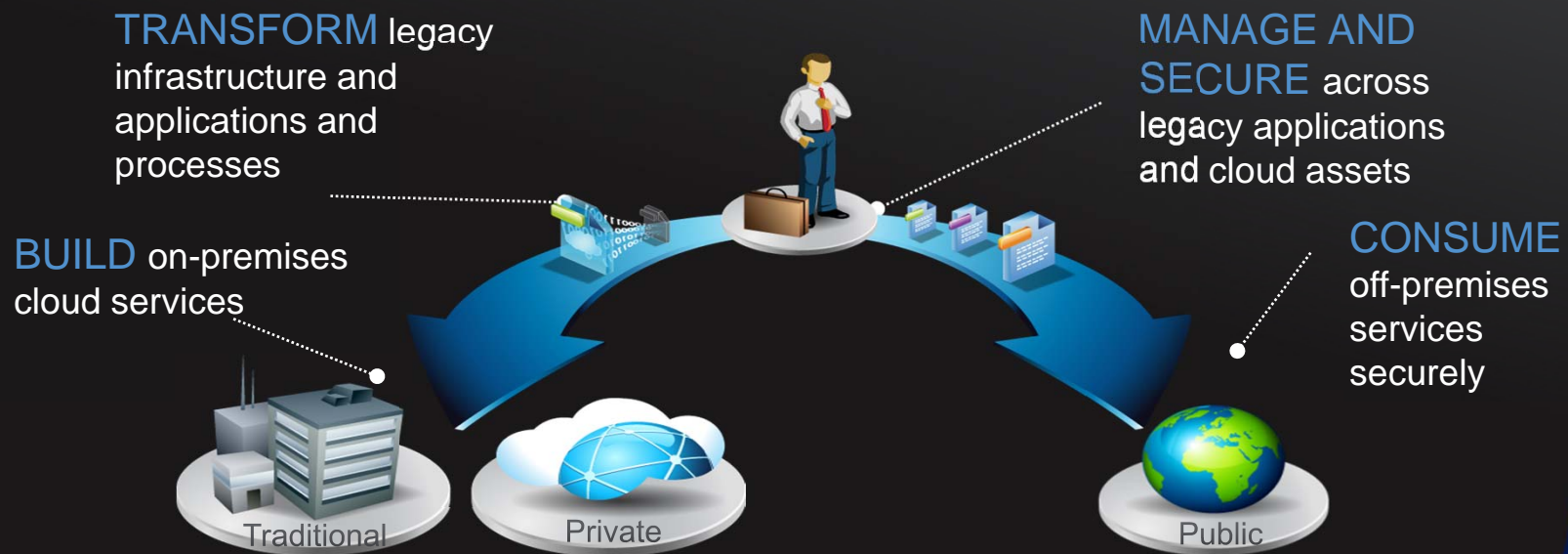


Tiered-Computing Availability Continuum



STRATEGIC ROLE OF CIO CHANGING

CIO becomes the builder and broker of services




WHAT IS CLOUD COMPUTING?

DEPLOYMENT MODELS

 Public

 Private

 Hybrid/Federated

SERVICE MODELS

IaaS



PaaS



SaaS



The Different Flavors of Cloud Computing

Cloud housing and accessibility

Public



- Minimal up-front investment
- Pay-as-you-go
- Risky for secure data
- Ease-of-use challenges

Private



- Behind corporate firewall
- Highly available/flexible
- Requires infrastructure and ongoing maintenance

Hybrid/Federated



- Future model with sharing between private/public
- Immature but promising

Computing model

Examples/Enablers

Software as a Service (SaaS)

- Typically offered in a public model
- Focused on end-user applications



Platform as a Service (PaaS)

- Application development platforms
- Offered as a public and private clouds



Infrastructure as a Service (IaaS)

- Full range of IT service delivery
- Elastic infrastructure for the enterprise



Cloud: Not If, but When

MASSIVE
Potential market
Cloud Services Market
\$59B in 2009,
\$149B in 2014⁽¹⁾

POTENTIALLY
DISRUPTIVE
20% of business will no longer
own IT assets in 2012⁽¹⁾

Lead Your Organization to the Cloud



Barriers to cloud adoption

SECURITY AND COMPLIANCE

70% CIOs HAVE SECURITY TOP OF MIND¹

SERVICE LEVEL AGREEMENTS FOR AVAILABILITY AND PERFORMANCE

75% CIOs DEMAND HIGH SLA GUARANTEES FOR PERFORMANCE AND AVAILABILITY²

INTEGRATION ACROSS ENVIRONMENTS

63% REQUIRE INTEGRATION OF INTERNAL & EXTERNAL SERVICES²

OPEN AND FLEXIBLE DELIVERY

79% CONCERNED ABOUT LOCK-IN²



What's Driving the Move to Private Cloud...



Promise of
Public Cloud

- Accelerate service delivery
- Enhance operational efficiency
- Align IT spend to business consumption



Very real
concerns

- Security
- Control
- Governance

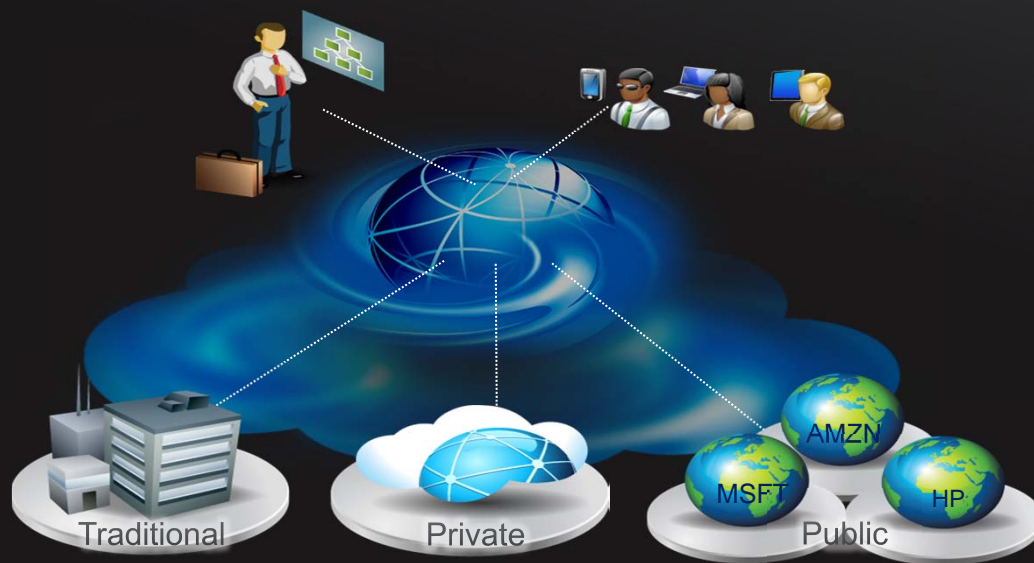


In two years, control, security issues will drive
>70% Clients to deploy or consider Private Cloud ⁽¹⁾

Business is adopting cloud **5X** faster than IT operations⁽²⁾

Hybrid Delivery enables Transformation

Right service delivered at right time based on business need



AUTOMATE

Self service delivery to users

ORCHESTRATE AND SECURE

Hybrid services based on
policies

BROKER

Service resources across
private, public, traditional

...and addresses enterprise needs

SECURE:
AND COMPLIANT

OPEN:
CHOICE AVOIDS
LOCK-IN;
MODULAR

AUTOMATED:
END-TO-END
SERVICE
MANAGEMENT

RESILIENT:
SERVICE
LEVELS



SEAMLESS: TRADITIONAL, PRIVATE, &
PUBLIC

Converged Infrastructure: Foundation for the Cloud

Common Modular Infrastructure

Sea of Sensors

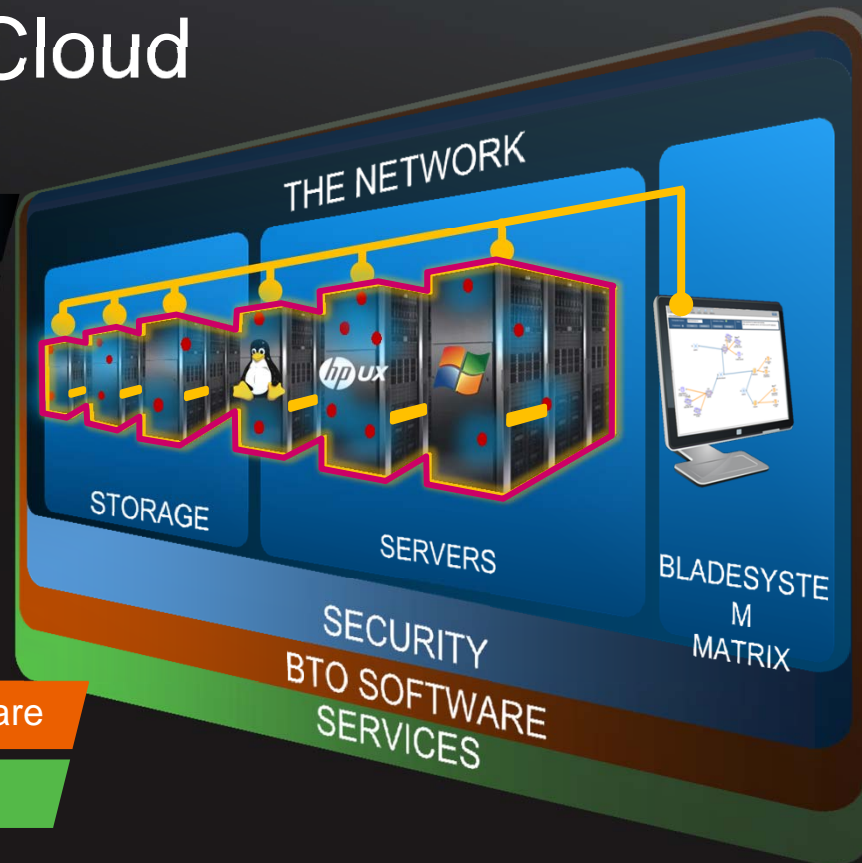
Networking

Infrastructure Security

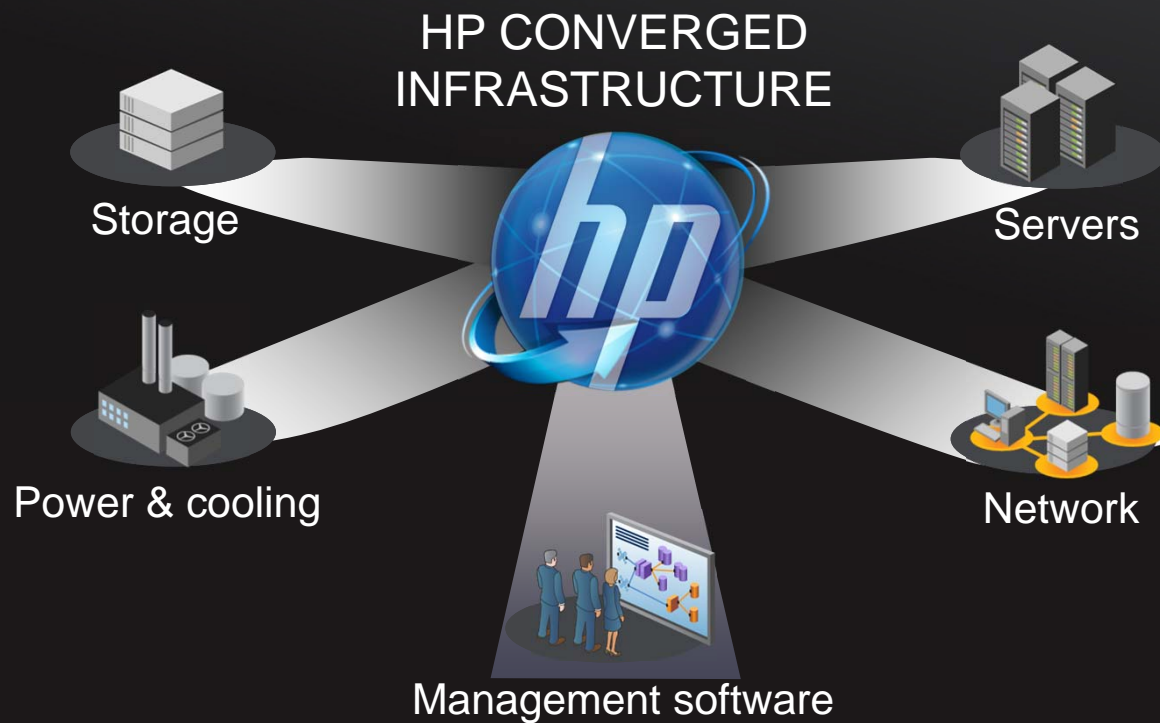
Common Management

Business Technology Optimization Software

HP Services for Cloud Computing



HP Converged Infrastructure for Data Center of the Future



What should a Private Cloud deliver?

Single governance
and security model

Self-service
delivery on-
demand

Instant scalability
with mission-critical
availability

Automated
metering and
chargeback

Open 3rd-party integration
and extensibility

Optimized for
application experience



The data center of the future

Common Modular Infrastructure

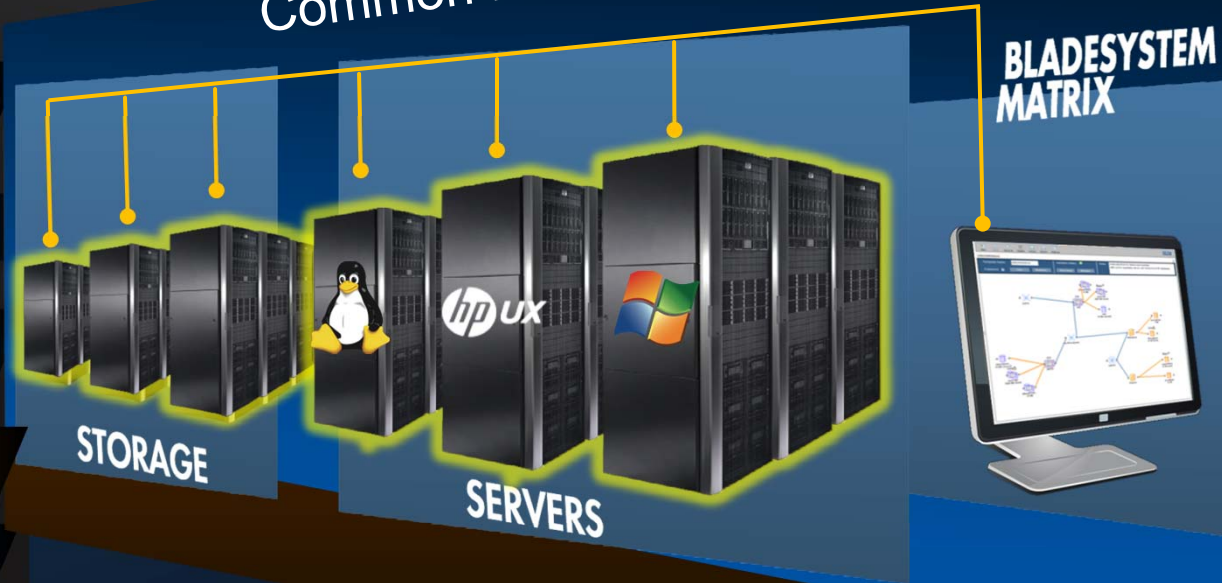
Supports all Servers and OS's
HP ProLiant, Integrity, NonStop
with a common infrastructure

All the major OS's are supported
Windows, Linux, HP-UX, OpenVMS

Common Modular Storage

Common Management Tools
Insight Software

Intelligent power and cooling to lower
costs and support green initiatives



Capitalizing on the Cloud in Financial Services

Implications & opportunities through real-life examples



Cloud is emerging in financial services

- Wall Street and Technology Survey
 - 40% capital market execs using cloud and another 31% plan to use cloud
- Banking Systems and Technology Survey
 - 19% using private cloud, 16% using an external cloud, and 28% considering cloud
- Gartner* forecasts \$11.72 billion spend in 2010 increasing to \$32 billion by 2014 for FSI
- McKinsey & Company view
 - 75% of business executives believe that Cloud would drive value in their company (vs. 9% who believe there is no value)**
 - 70% of business executives see real increased business flexibility as the #1 source of value**
 - Forecasts \$18.3 billion spend in 2014 for FSI***

* "Forecast: Public Cloud Services, Worldwide and Regions, Industry Sectors, 2009-2014, Gartner, 2 June 2010, ID #: G00200833

** "McKinsey Quarterly Survey on information and technology strategy, 2010", McKinsey & Company

*** "Perspectives on Cloud for Financial Services Sector, HP Financial Services Summit, Feb 9, 2011, McKinsey & Company



Hybrid Delivery Cloud

Right Service / Right SLA

BUILD and **BROKER** IT-based Services



Accelerate Speed-to-Market:
Business and IT aligned

Increase Agility:
Respond to continuous opportunity
and competition

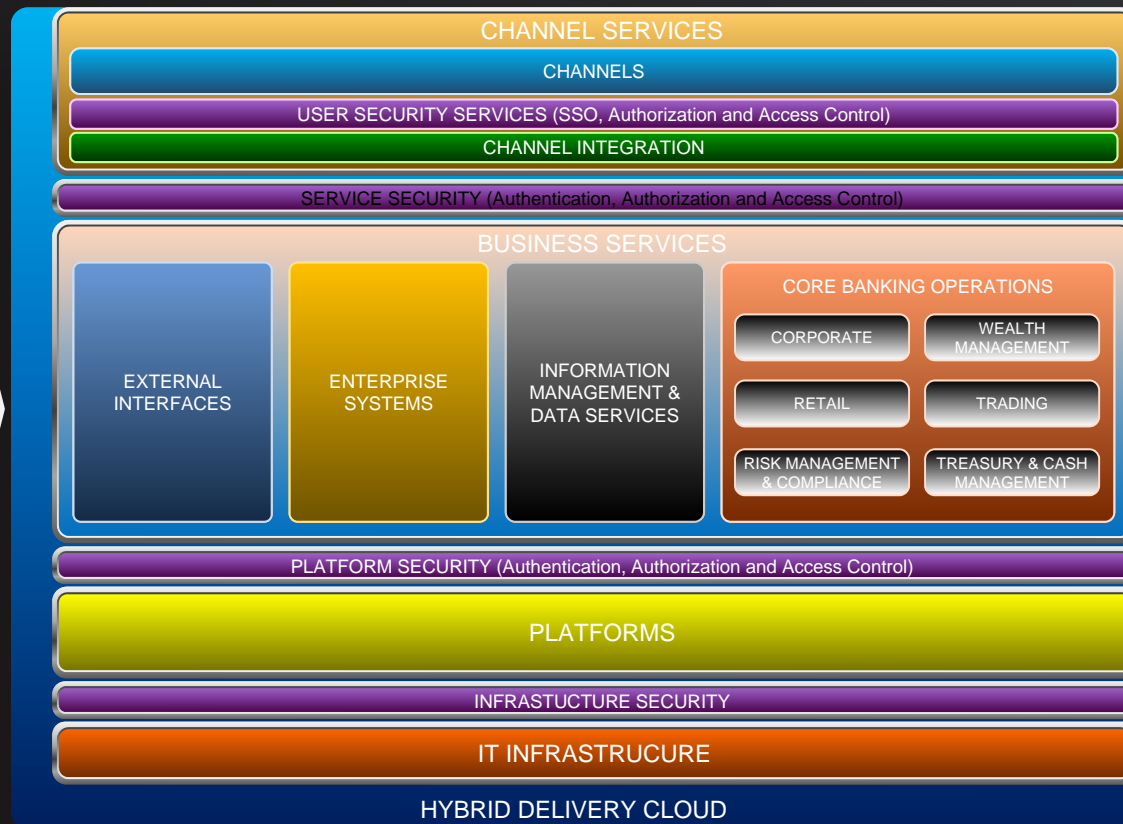
Investment Protection:
Integrate traditional IT and new
Cloud services

Reduce CapEx/OpEx:
Flexible sourcing and usage-based
pricing

Fortify Risk Management:
Risk & Security Office engaged

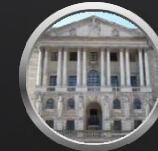
Banking Reference Architecture

A Service Architecture for Banks



SUPPLY

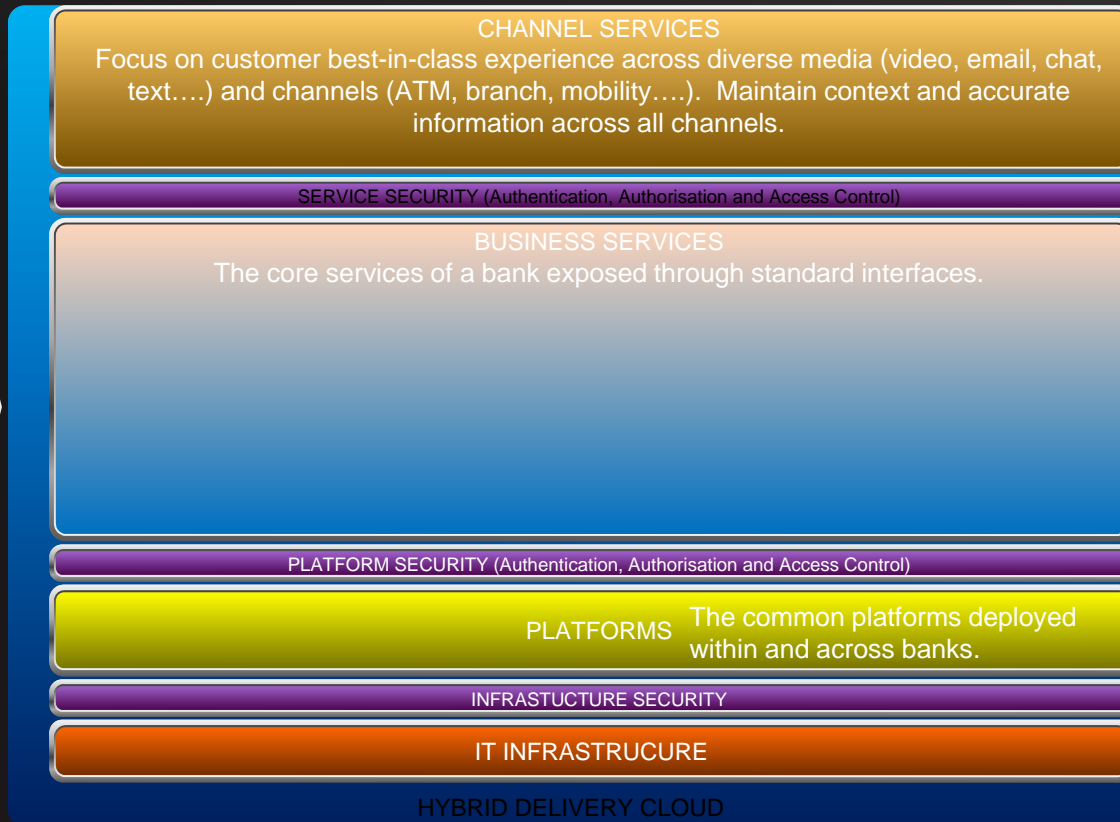
DEMAND



Cloud in Banking

HP's View

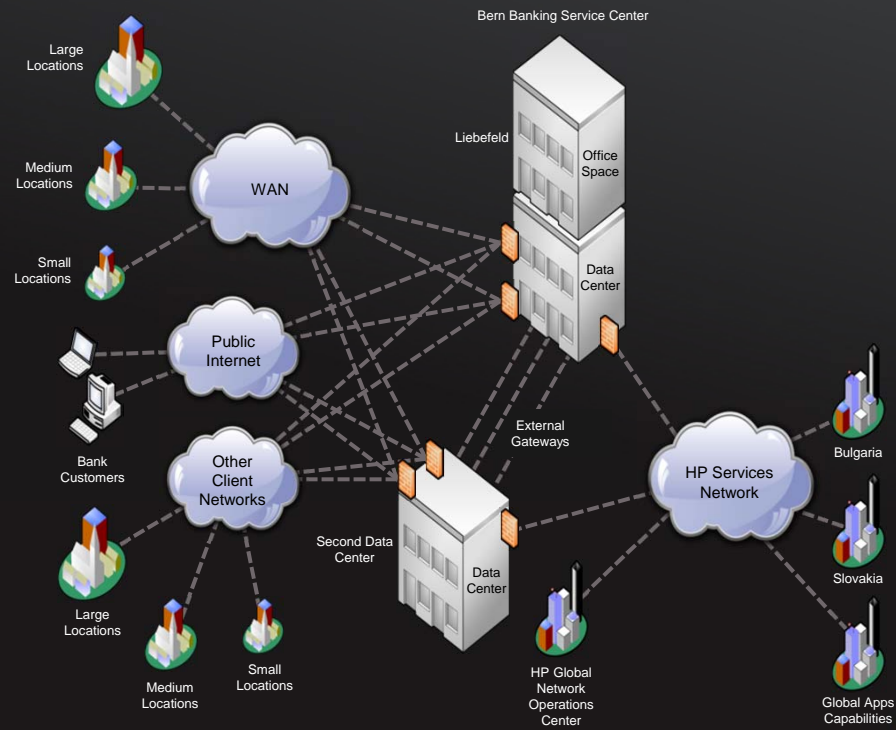
“Cloud will abstract infrastructure from hardware, apps from infrastructure, data from apps, and devices from apps to increase flexibility and improve economics.”
— McKinsey & Company



HP Banking Service Center

Servicing multiple banks in Switzerland

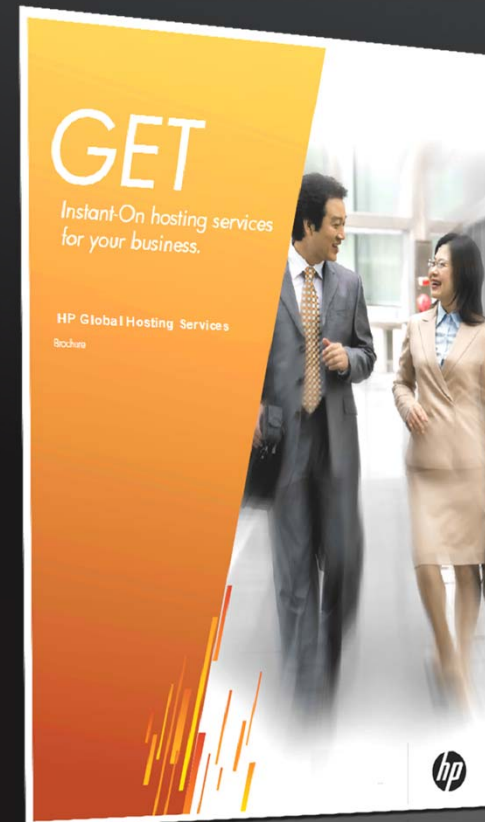
- Core banking services
- Single application instance
- Service delivery model
- Usage-based pricing
- Consistent compliance
- Innovative Product Design tool
- Transaction hub
- Real-time multi-channel operations
- 365x24 operations



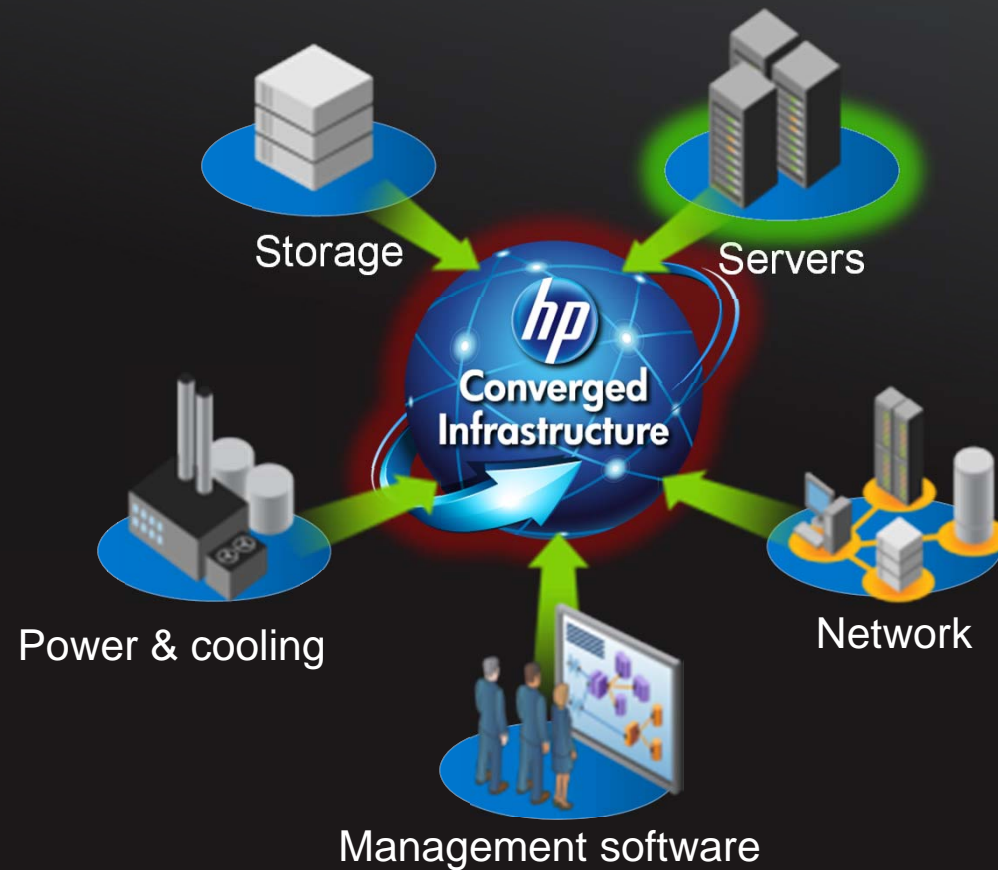
Global Bank Use Case

Delivering a Hybrid Delivery Cloud

- Deliver IT as a service
- Co-branded
- HP designed, built, delivered, and operated
- Engaged risk management, compliance, and security officers
- Regulatory Compliance a key driver
- Expandable service catalog and price list
- Provision in hours as opposed to days












Servers in a Common Modular Infrastructure



Unified blade architecture from x86 to Superdome 2

Common Modular Building Blocks

Common management	Matrix operating environment delivered by Insight Dynamics		Onboard Administrator, iLO	
Common networking	Virtual Connect			
Common enclosure	c3000 	c7000 	Superdome 2 enclosure 	Common spares 
Common server architecture	ProLiant blades 	Integrity blades 	Cell blades 	

HP Server Portfolio

Blades and Rackable Servers

Traditional Rack-Mount



	DL160	DL36X	DL38X	DL58X	DL980	rx2800	
BL2x220c	BL2X0c	BL46Xc	BL49Xc	BL68Xc		BL860c i2	BL870c /BL890c i2



Server Blade



What's New in BCS

A completely refreshed portfolio

 HP-UX 11i v3

Superdome 2

The ultimate mission-critical consolidation platform



Integrity Server Blades

World's first scale-up blades built on the industry's #1 blade infrastructure



Integrity 2 Socket Rack Server



8-core scalability with 3x improved density without sacrificing RAS

Integrity NonStop
Continuous Availability and Extreme Scalability



BladeSystem Matrix
with HP-UX
First Converged Infrastructure platform for shared services, now mission-critical



DL980 G7
Scalable x86 with advanced reliability



HP Integrity NonStop BladeSystem

Double the performance

Half the footprint

100% NonStop

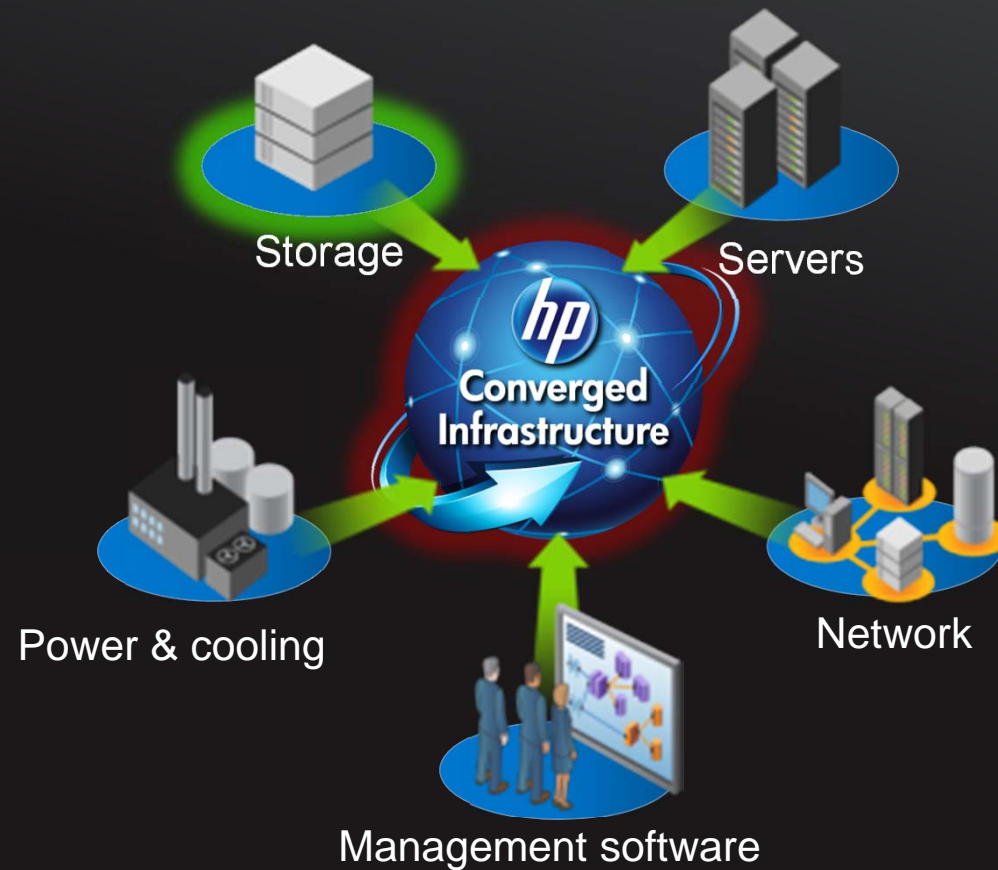
Maintain all that makes it NonStop...

- N+1 hardware fault-tolerance
- NonStop software fault-tolerance
- Linear scalability

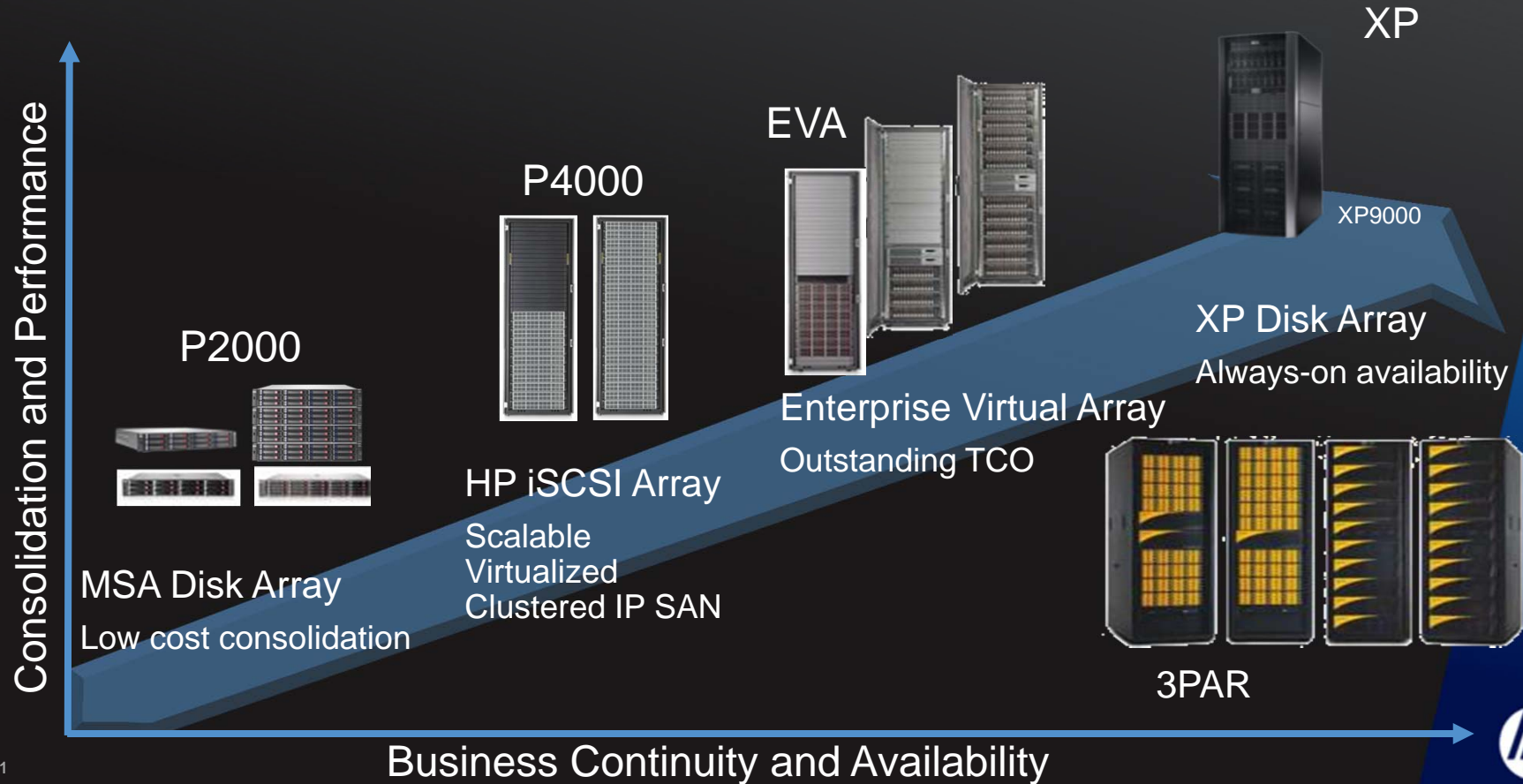
While multi-core technology drives performance over time



Storage in a Common Modular Infrastructure



HP StorageWorks Array family



The 3PAR Portfolio

Represents **THE** storage architecture for the next decade with the newest **SOFTWARE ARCHITECTURE** in the marketplace

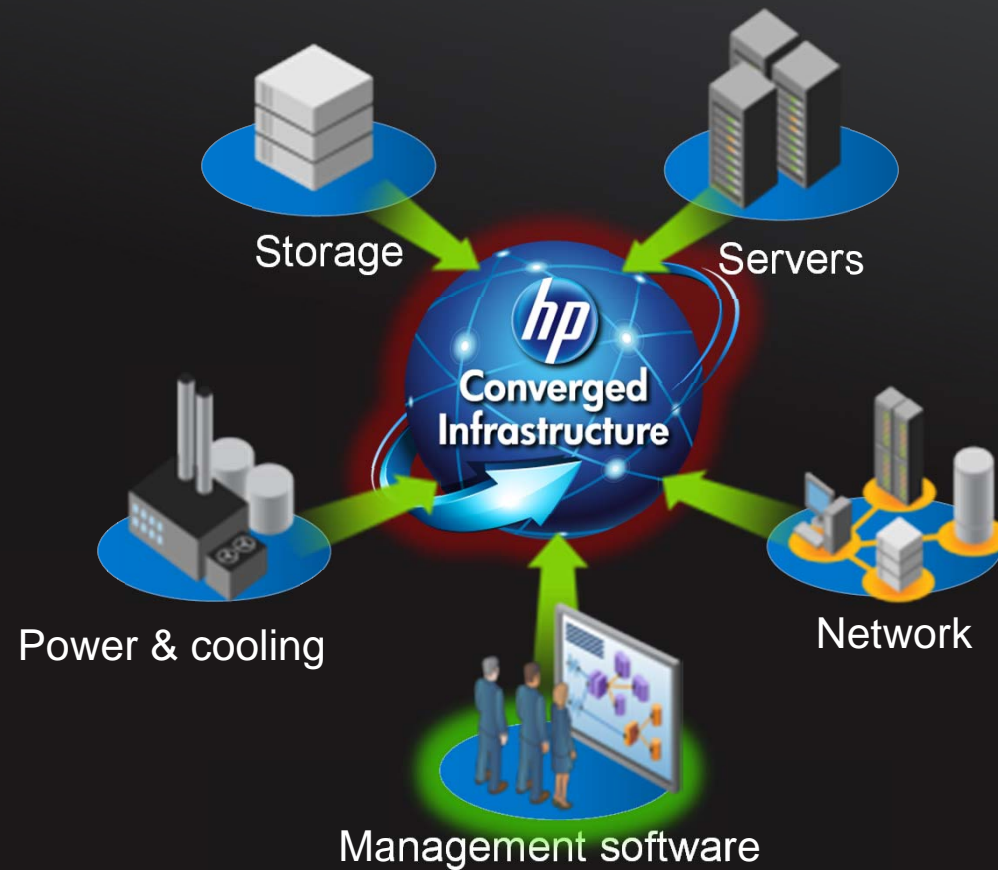
Next generation technology with **ALL THE FEATURES** customers want

COVERS MULTIPLE MARKETS with a single product; from mid tier markets, to large enterprise to the cloud

LARGE FOOTPRINT with service providers

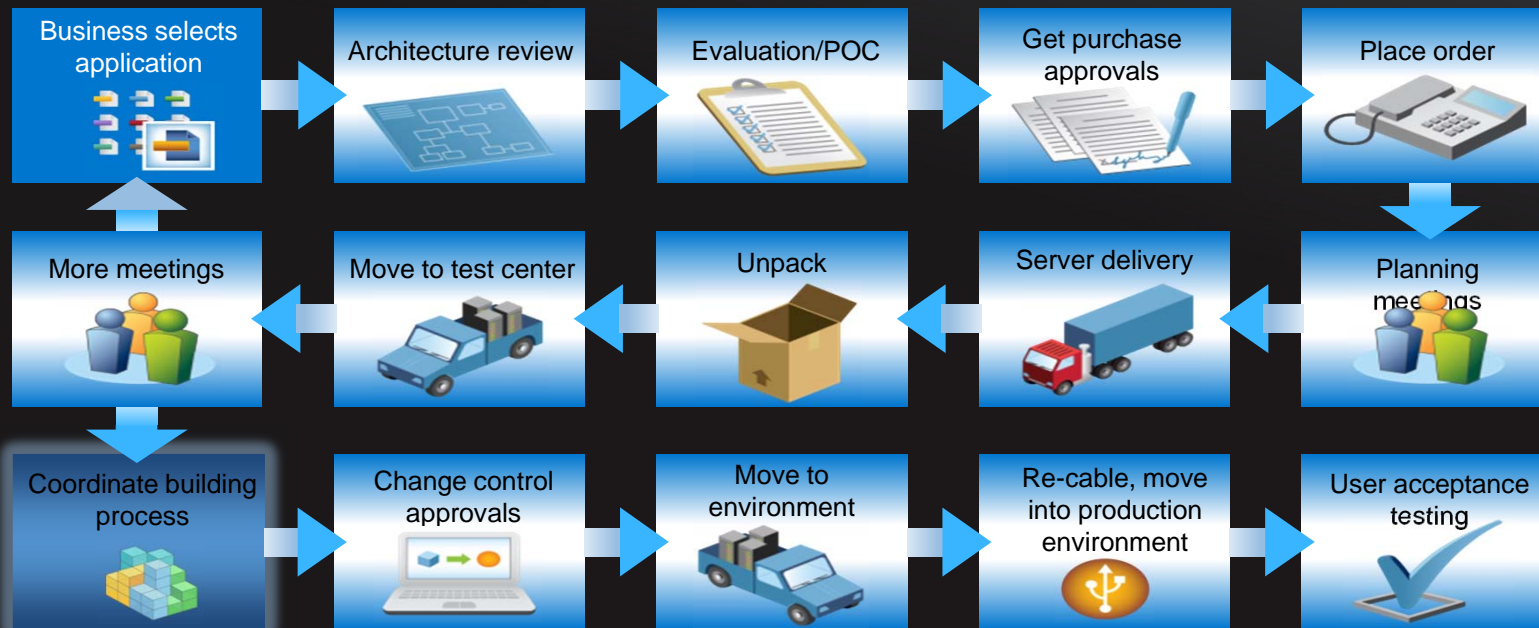


Managing a Common Modular Infrastructure?



Scenario

The BladeSystem has arrived. We've solved the power problems. But I still need to get everything connected to my existing storage and networking components. I'm just one guy with a hundred other things to do. I can't continue to operate this way... Surely there's a better way to manage all of this stuff?



Today's **integrated** infrastructure

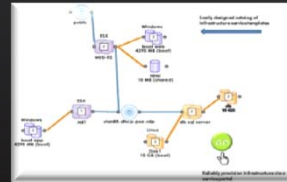
Provisioned when needed



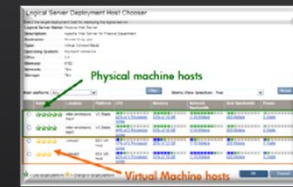
Line of business selects application



Verify resource allocation (self-service portal)



Choose infrastructure application template (right size?, right app?)



Tool determines available resources and when



Initiate



Provisioning workflow starts automatically



A full application infrastructure up and running!

- Less people
- A few automated steps
- Integrated information
- Plan DR as well!

HP BladeSystem Matrix is a Solution

Pre-integrated solution ships from the HP factory ready to go

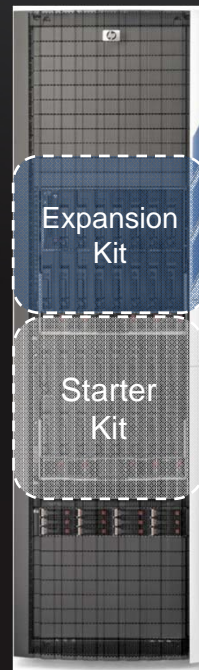
HP c7000 BladeSystem & Virtual Connect

(Dual Flex-10 10Gb Ethernet & 8Gb 24-Port FC Modules)

Optional additives

*HP Servers, StorageWorks, ProCurve
& other hardware options*

HP Factory Express
Services



Matrix Operating Environment

(HP Insight software with CMS & ISV Application templates)

Optional additives

HP Services & 3rd party software

HP Implementation
Services



End-to-End Project Management

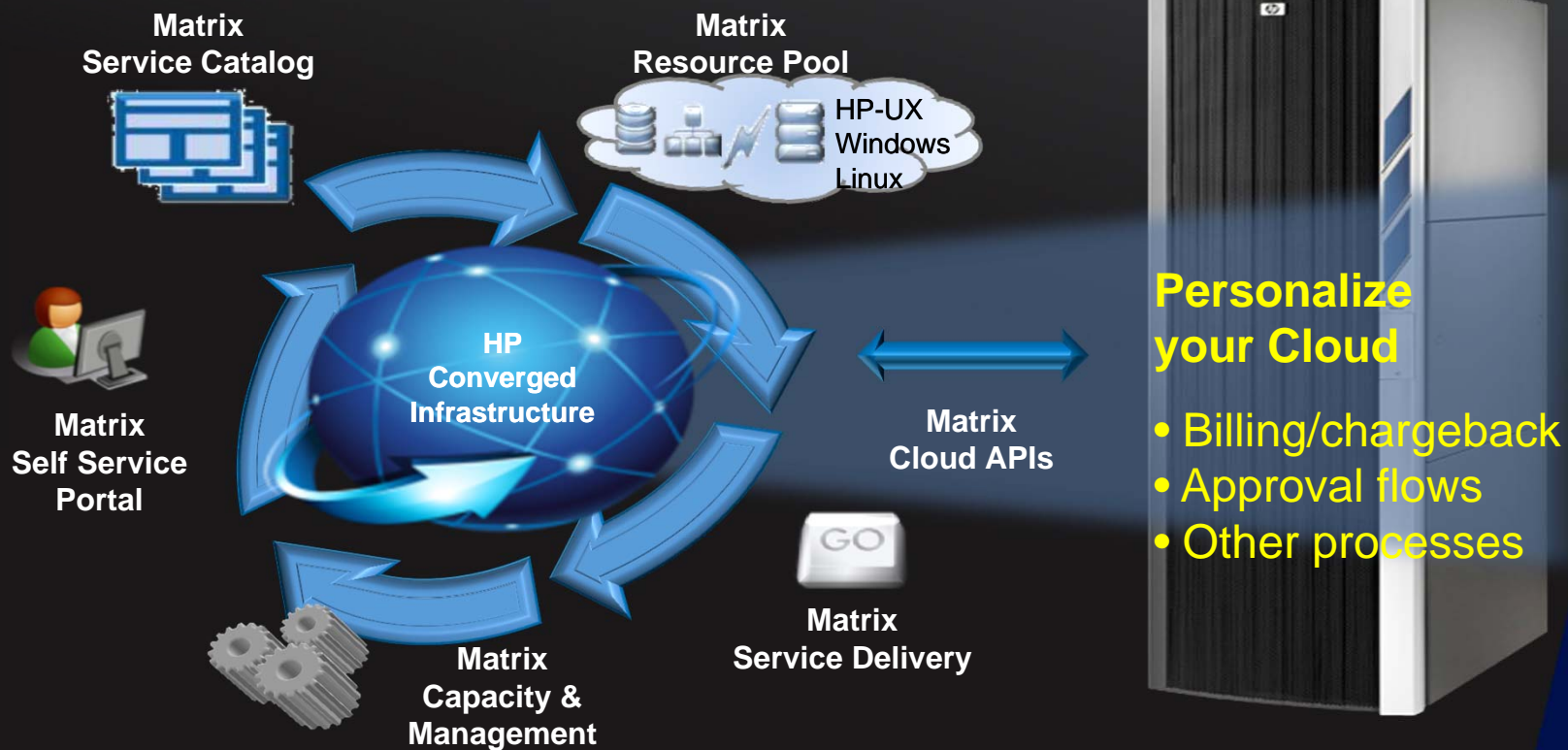


Notes*

36 Expansion Kit available as CTO or BTO. BTO does not come with Factory Express or Implementation Services if purchased as a separate sale after the fact from initial Starter Kit purchase
Central Management Server (CMS) by default comes as Blade within Starter Kit, but may be substituted with DL Rack based ProLiant server



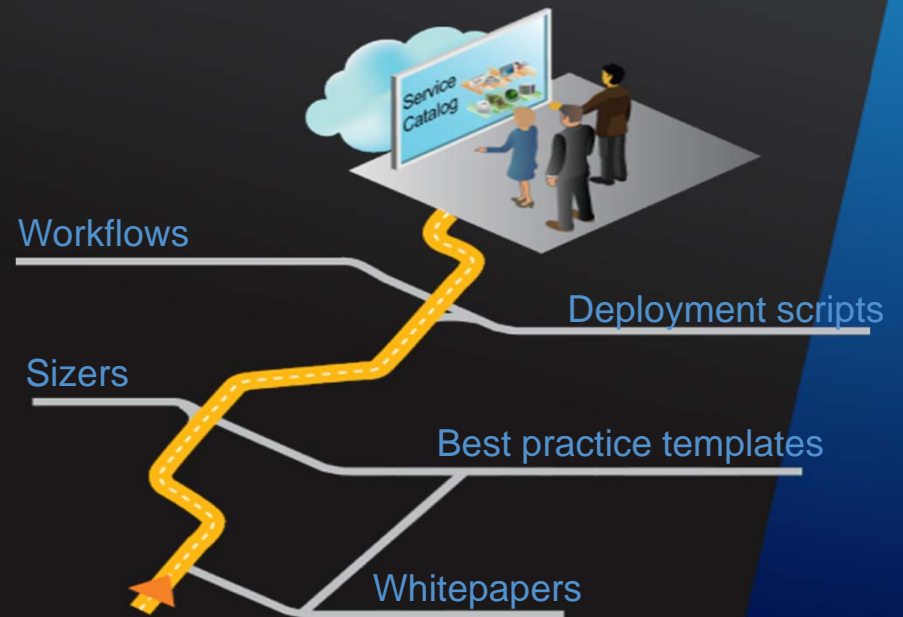
HP BladeSystem Matrix with HP-UX: Mission Critical for your Private Cloud



HP Cloud Maps

Accelerate automation of business applications

- Navigate the steps to create a service catalog yourself, quickly & consistently
- Easy to import into Matrix and integrate into your environment



Benefits of a Common Modular Infrastructure

- Faster time to deployment
- Flexible/modular infrastructure that minimizes complexity in the data center (fewer SKUs)
- Lower server costs
- Reduces number of LAN and SAN ports required (saving \$ up to 90% with LAN and up to 75% with SAN)
- Significantly lower support and management costs



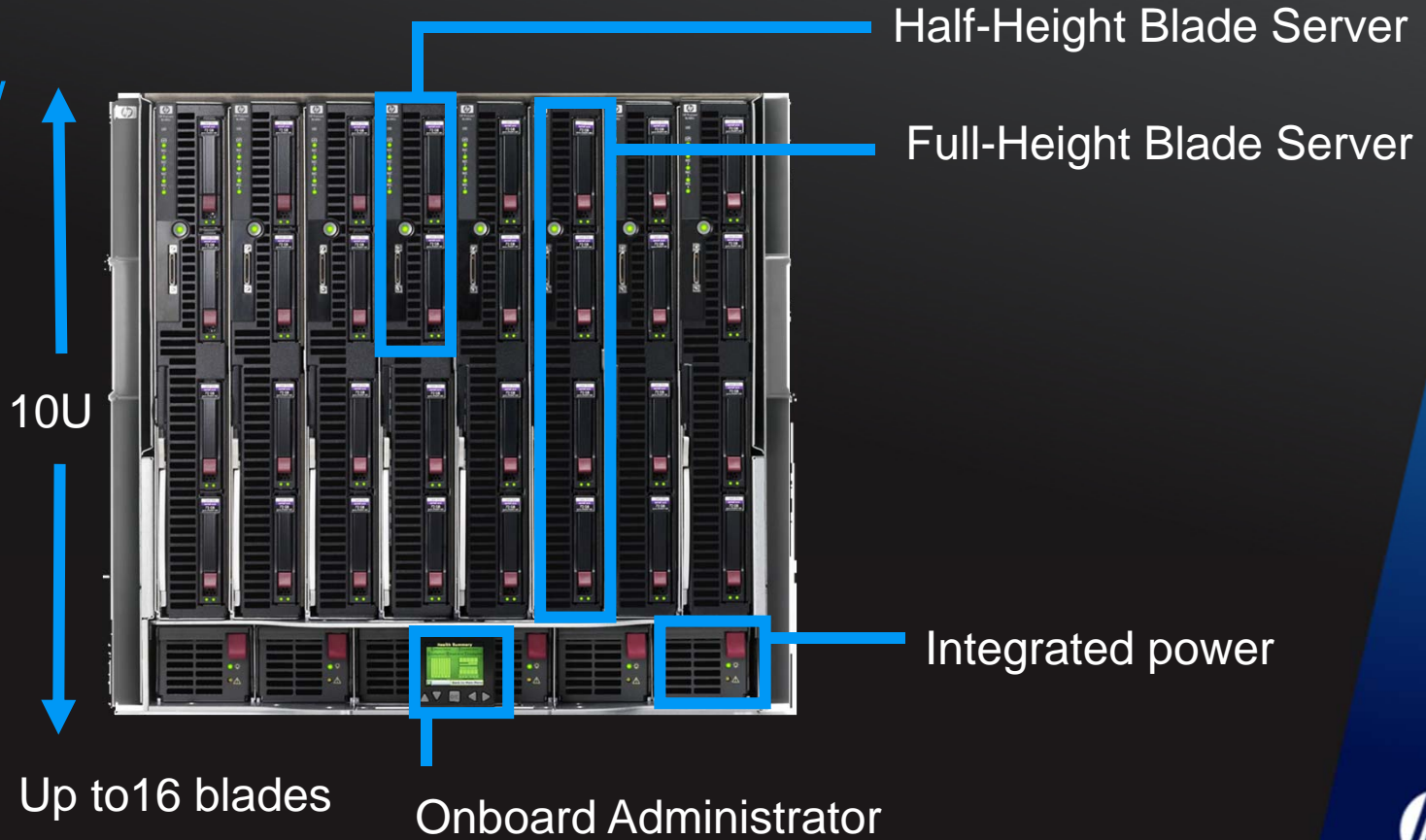


Tour of the HP BladeSystem



c7000 Enclosure

Front view



c7000 Enclosure – fully redundant

Rear view

Active Cool fans

Interconnect bays

Onboard Administrator

Power management

