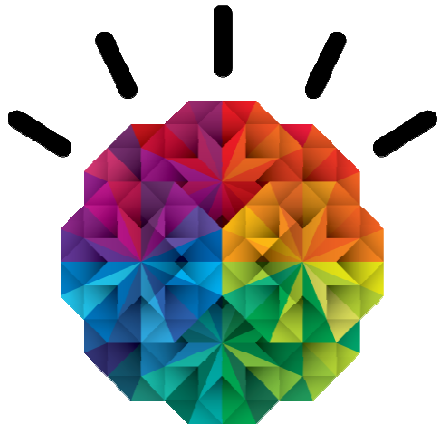
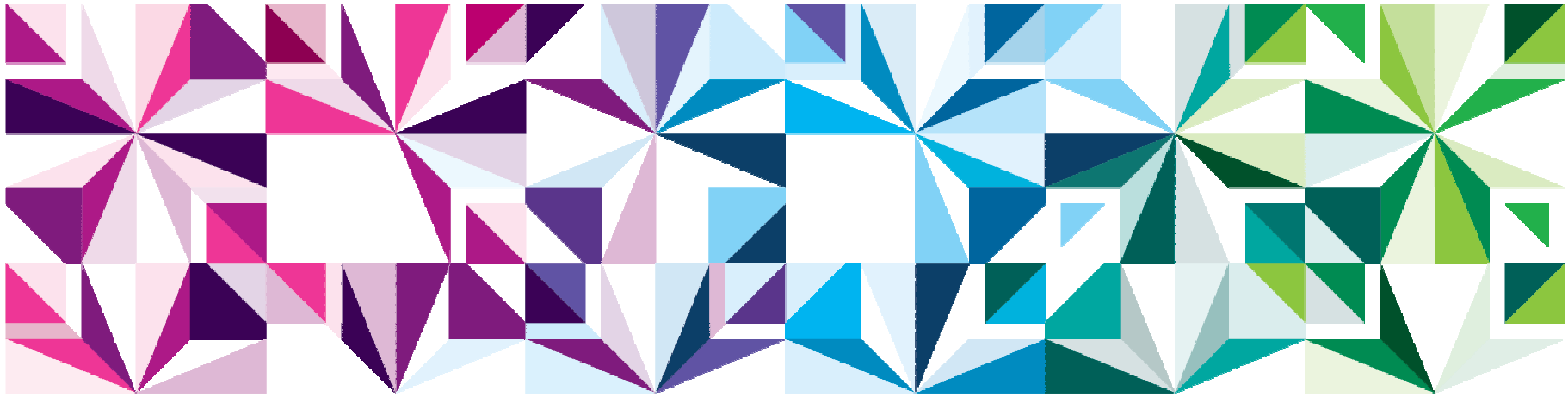
Expert
integrated systems

IBM



IBM PureSystems

A new family of expert integrated systems



Profound changes are taking place in every industry

Information technology is moving to the strategic center of business

Utilities

Transforming power generation and usage

Healthcare

Improving diagnosis and treatment

Banking

Analyzing, predicting and preventing risk

With these changes, how can you be a leader?

80%

CEOs anticipate turbulent change and bold moves.

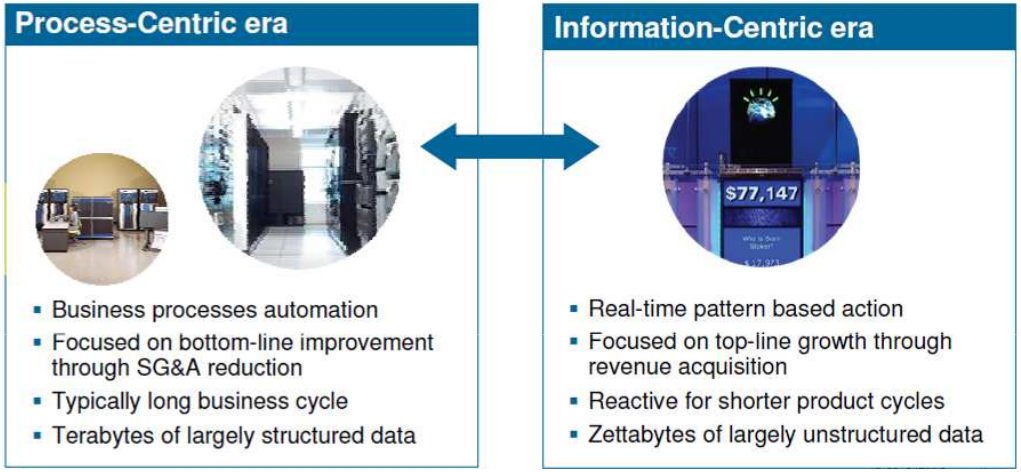
55%

of business executives believe cloud enables business transformation and leaner, faster, more agile processes. *

* Source : 2011 IBM CIO Study, London School of Economics, December 2010

a new era for Information Technology is ongoing.

IT must address the conundrum while dealing with constraints like a flat budget.



In face of constraints, how could be happened to :

• Shift 10% of your IT budget from keeping the lights on to transforming the business?
• Deploy a new business solution in days instead of months/years?

The inefficiencies of traditional computing get in the way :

2/3

go over schedule on their project/ solution deployments 3.**

** Source : IBM Market Intelligence Time-To-Value Study, National Analysts, November 2011

54%

of surveyed enterprise IT budgets in 2010 were spent on ongoing operations and maintenance costs.***

*** Source: Forrester Research, Inc. "2011 IT Budget Planning Guide," October 7, 2010 by Craig Symons

Multiple approaches have emerged

**1. Customer tuned solutions offer flexibility…
but take significant time and effort:**

Getting Up and Running
- Specify/Design
- Procure
- Integrate
- Deploy
- Customize/Tune

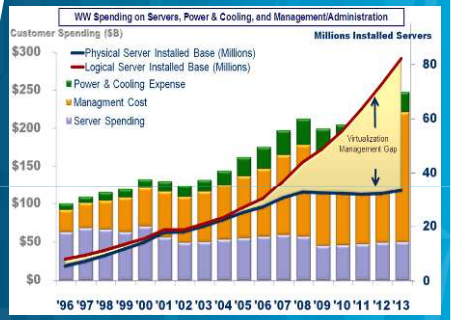
Once In Operation
- Scale
- Manage
- Maintain
- Upgrade

2. Appliances offer simplicity

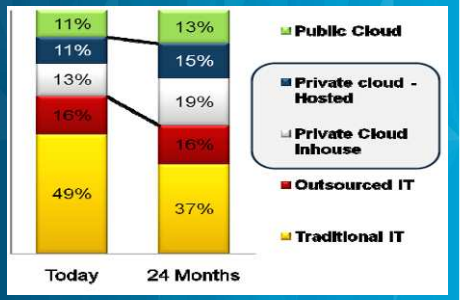
Appliances

3. Cloud can add elasticity

Cloud



Source: IDC Server Virtualization 2009



IDC's Cloud Computing Survey, January 2011 n=603

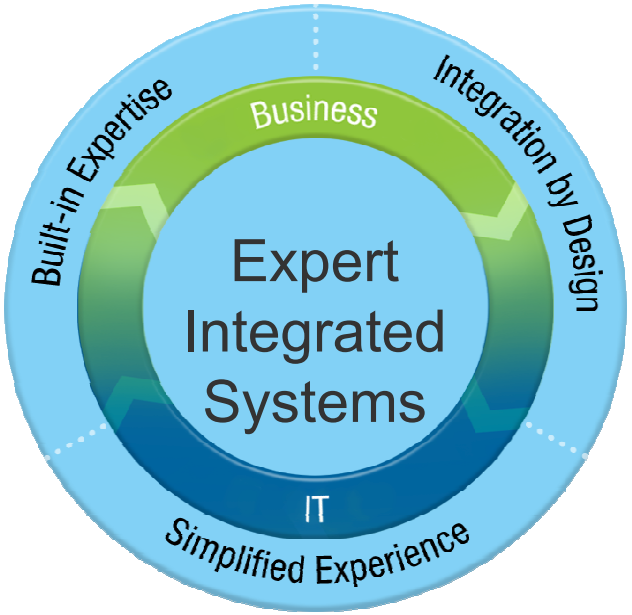
The time has come for a new breed of systems with unique attributes

We will launch and lead the category of ***Expert Integrated Systems***

To achieve **the best of all three approaches**

Built-in Expertise

Dramatically improve time to value with embedded expertise and client-proven best practices



Integration by Design

Tune to the task with an open ecosystem supported by highly integrated hardware and software

Simplified Lifecycle Experience

Drive business innovation by delivering a leap forward in the IT experience making it easier to deliver essential IT

Announcing the first two members of the IBM PureSystems family

PureFlex

New

Infrastructure System:
Expert at sensing and anticipating resource needs to optimize your infrastructure

PureApplication

New

Platform System:
Expert at optimally deploying and running applications for rapid time-to-value

Built-in expertise ▪ Integration by design ▪ Simplified experience

Introducing IBM Pure Flex

Systems Management Appliance

PureFlex Chassis

Storage Node with Controller

2S Intel® Node X240

IBM Fiber and Ethernet Switches

2S Power7® Node p260

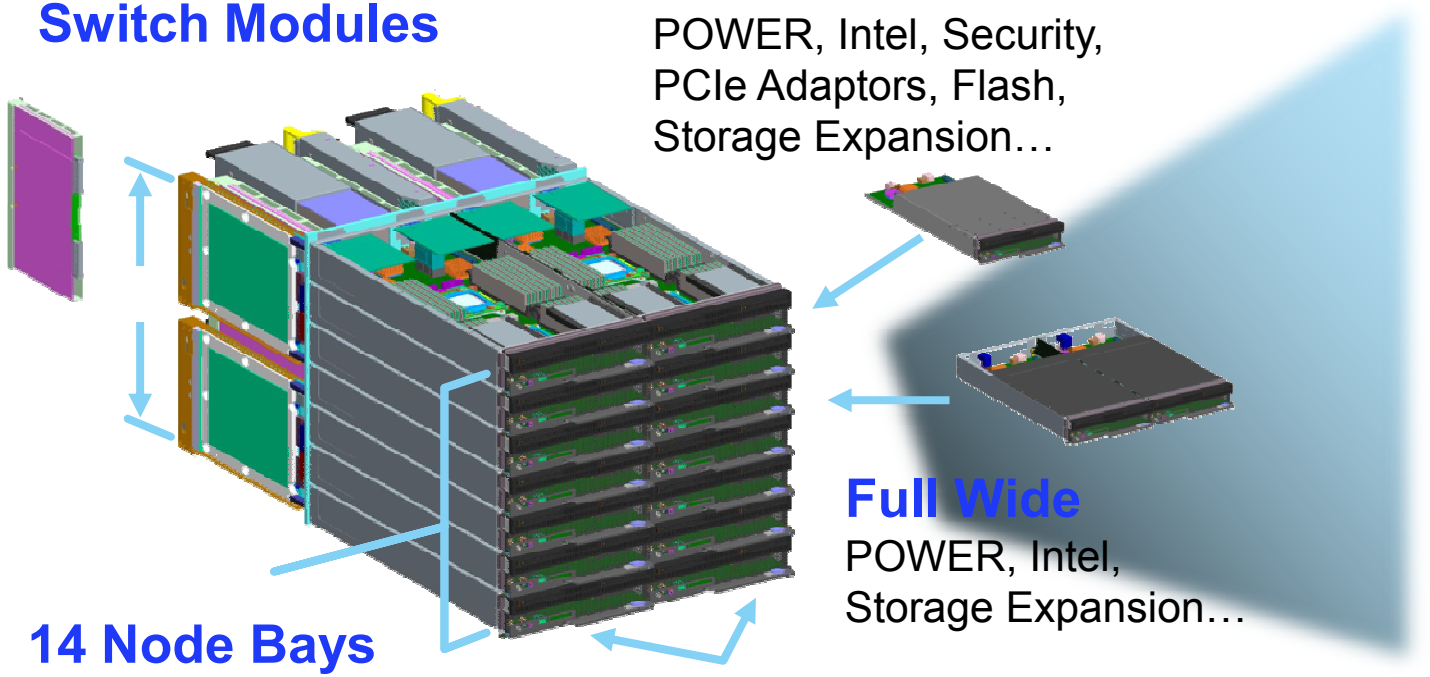
4S Power7® Node p460

System of Systems for the next decade

An evolutionary & game-changing expert integrated system

Scalable
Switch Modules

Half Wide
POWER, Intel, Security,
PCIe Adaptors, Flash,
Storage Expansion…



Full Wide
POWER, Intel,
Storage Expansion…

14 Node Bays
(7 Full Wide)

Half Width Node Bays

Choice of High End Building Blocks

Integrated by Design

IBM PureFlex Building Blocks

Compute Nodes		Power 2S/4S x86 2S/4S
Expansion		PCIe, Dedicated Storage
Storage Nodes		V7000Expansion in/out of chassis
Networking		10/40GbE, FCoE, IB 8/16Gb FC
Management Appliance		Flex System Manager

- Latest generation Intel Sandy Bridge
  - 2 or 4 Sockets (Dense Compute Node)
  - 768 GB memory Max
- POWER7
  - 2 or 4 sockets (50% Speed bump)
  - 512 GB memory Max
- Hypervisors
  - KVM, HyperV, Vmware, POWERVM, none
- Oses
  - AIX, Linux, Windows, IBM i

*Some capabilities planned for future delivery; IBM Plans subject to change

Choix de composants haut de gamme

Intégré par conception

Composants IBM PureFlex

Noeud de traitement		Power 2S/4S x86 2S/4S
Extension		PCIe, Dedicated Storage
Noeud de Stockage		V7000Expansion in/out of chassis
Réseau		10/40GbE, FCoE, IB 8/16Gb FC
Nœud de Gestion		Flex System Manager

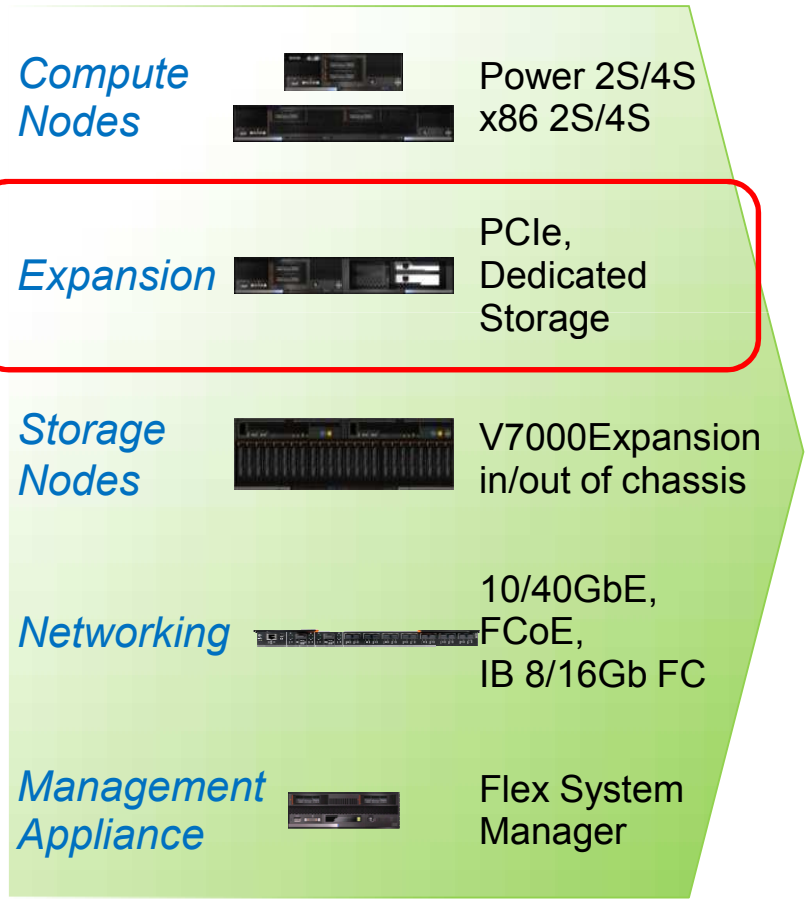
- Un noeud d'extension
  - Supporte les cartes PCIe Gen3
  - Sur les noeuds x240
  - Graphiques, stockage
- Noeud d'extension stockage
  - Noeud additionnel
  - Jusqu'à 12 HDDs ou SDDs
  - RAID intégré, 1 GB cache

*Some capabilities planned for future delivery; IBM Plans subject to change

Choice of High End Building Blocks

Integrated by Design

NGP Building Blocks



- A new I/O expansion Compute sidecar
  - Industry standard PCIe cards
  - Additional Next Generation Platform fabric I/O
  - Graphics, Storage, and I/O adapters
- IBM eX Flash expansion
  - Up to 8x 200/400 GB SSDs
- Storage Expansion Node
  - Daughter Node
  - Up to 12 HDDs or SDDs
  - Integrated RAID, 1 GB cache

*Some capabilities planned for future delivery; IBM Plans subject to change

Choice of High End Building Blocks

Integrated by Design

NGP Building Blocks

Compute Nodes		Power 2S/4S x86 2S/4S
Expansion		PCIe, Dedicated Storage
Storage Nodes		V7000Expansion in/out of chassis
Networking		10/40GbE, FCoE, IB 8/16Gb FC
Management Appliance		Flex System Manager

- Integrated Storage System (Double high / full wide)
- Similar to Storwize V7000

- Advanced storage efficiency capabilities
- Thin Provisioning, Flash Copy, Easy Tier, Performance Management and Optimization
- External Virtualization for rapid data center integration
- Metro / Global Mirroring option for multi-site recovery
- Scalable Storage up to 240 SFF (HDD and SSD)
  - Cluster-able to four systems (960 SFF drives) and 4x the bandwidth performance

- Internal storage Node
- NGP compute node support for single to multiple chassis

*Some capabilities planned for future delivery; IBM Plans subject to change

Choice of High End Building Blocks

Integrated by Design

NGP Building Blocks

Compute Nodes		Power 2S/4S x86 2S/4S
Expansion		PCIe, Dedicated Storage
Storage Nodes		V7000Expansion in/out of chassis
Networking		10/40GbE, FCoE, IB 8/16Gb FC
Management Appliance		Flex System Manager

- Extreme Flexibility
  - Designed to meet port and bandwidth requirements for next decade
  - Pay for what you need today with Features on Demand (FoD)
  - Partitionable
- Highest Performance
  - First 40Gb capable Blade Ethernet Switch
  - First 16Gb capable Blade SAN Switch
  - First 56Gb capable Infiniband FDR switch
  - Up to 220Gb uplink BW and <1microsec latency
- Standards based Convergence
  - 10Gb iSCSI and FCoE offering
  - First 40Gb end to end FCoE offering (post GA)
  - Standard based for seamless integration

*Some capabilities planned for future delivery; IBM Plans subject to change

Simplified Lifecycle Experience & Built-in Expertise

Simplified Lifecycle Experience

- ✓ *Set-up Wizards*
- ✓ *Element Discovery*
- ✓ *User Management*
- ✓ *Firmware & Software Updates/Upgrades*
- ✓ *Chassis Maps*
- ✓ *Remote Presence*
- ✓ *Integrated Open Fabric Manager Support*
- ✓ *Reliable Logging / Events…*

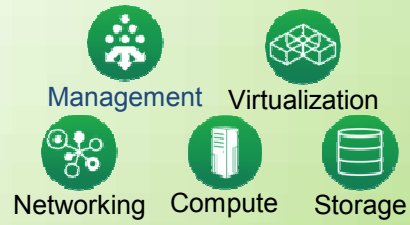
Built-in Expertise…

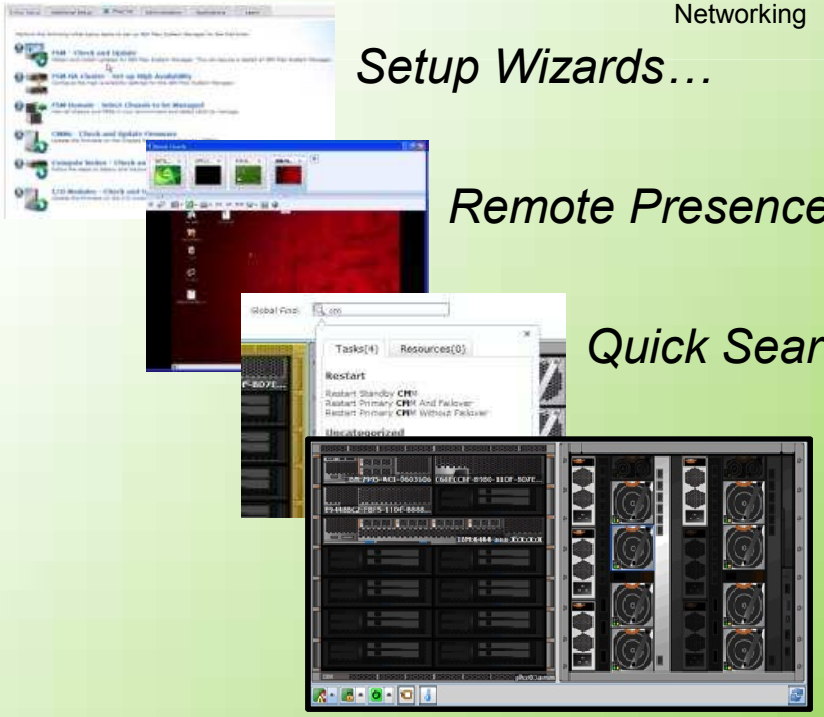
- ✓ *Workload Placement Service*
- ✓ *Features On Demand*
- ✓ *System Pools Management*
- ✓ *VM Control Advance Manager*
- ✓ *Storage Control*
- ✓ *Network Control*

Management Appliance

Flex System Manager

Managing the Lifecycle… All Resources & Workloads, Both Physical & Logical





Setup Wizards…

Remote Presence…

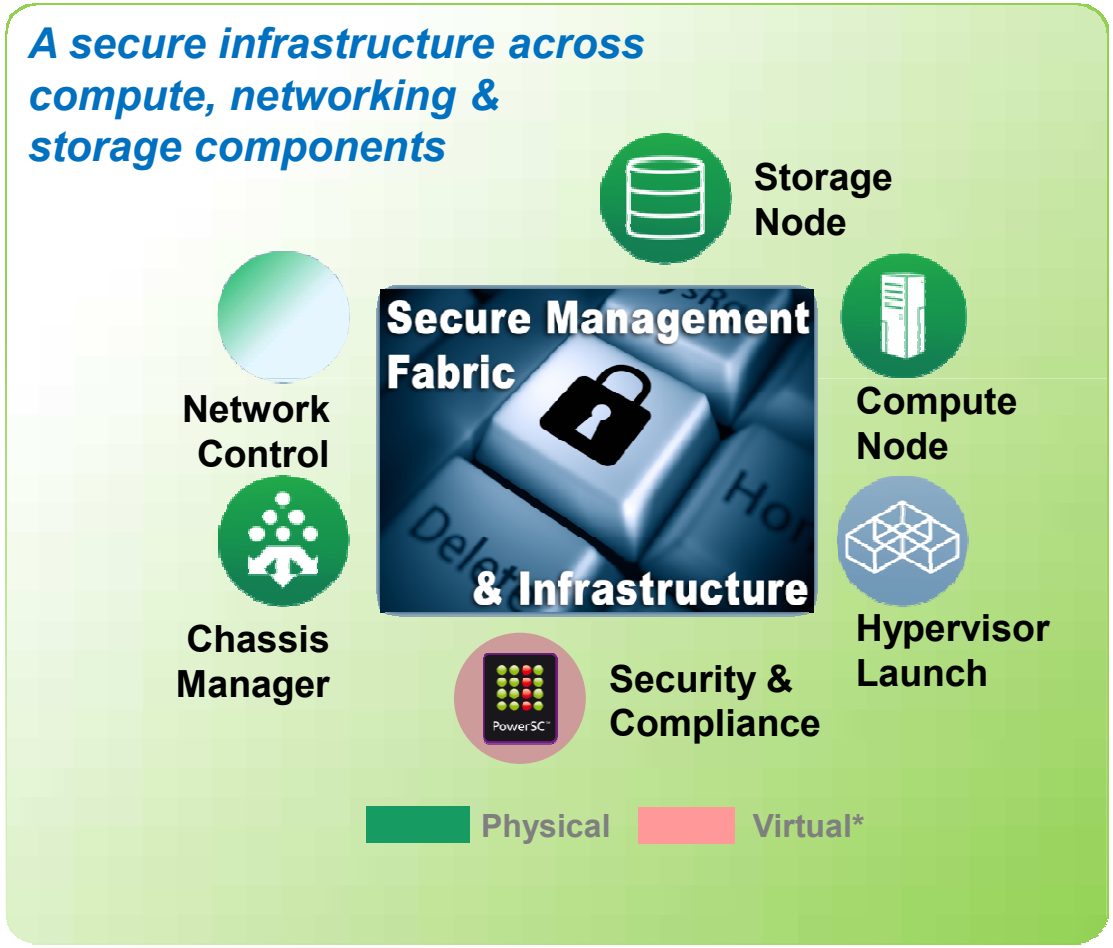
Quick Search…

Chassis Maps…

Security Expertise that Keeps You in Control

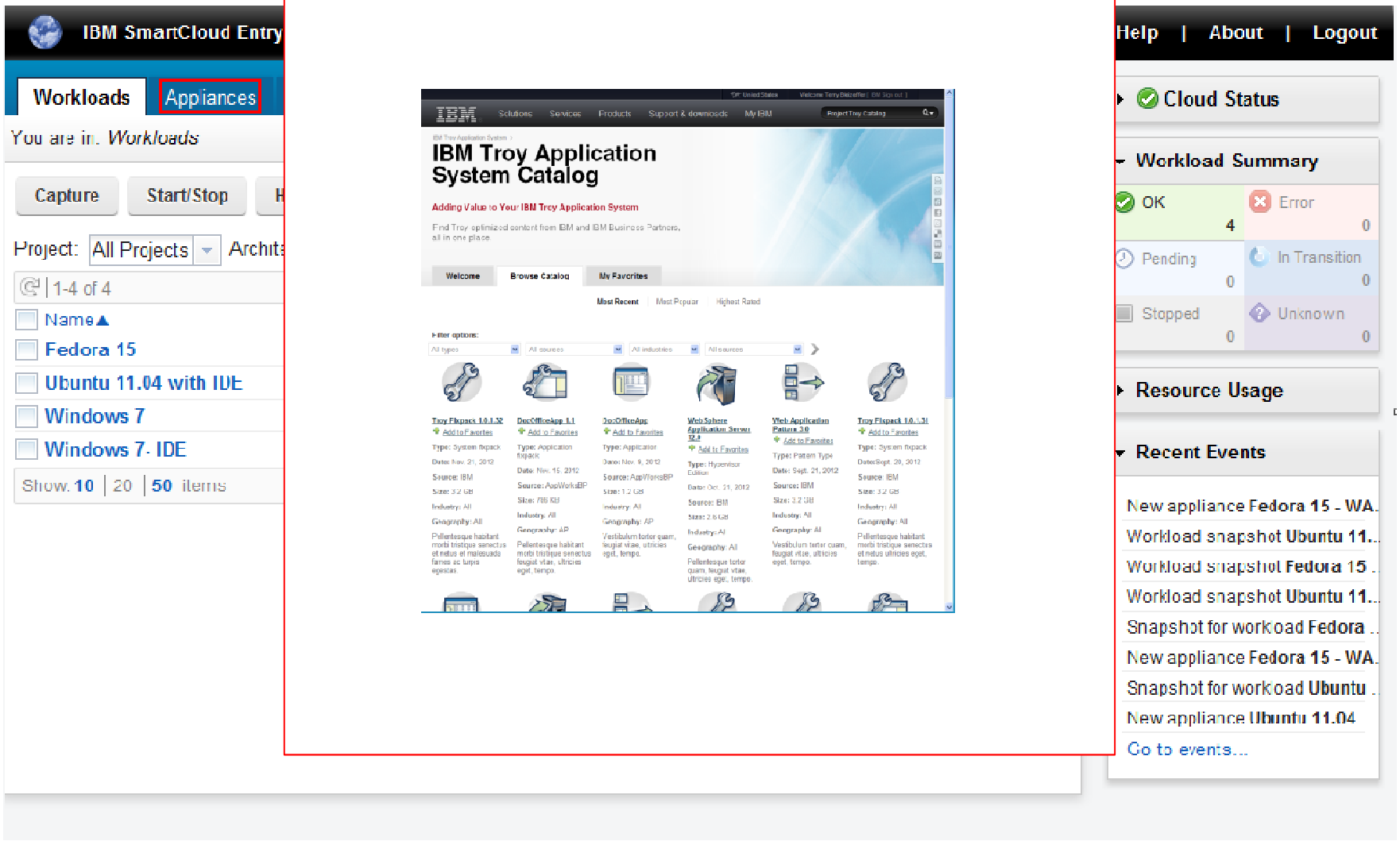
Integrated security throughout the system

- ***Leveraging Trusted Computing Group Standards***
- ***Secure Chassis Infrastructure***
  - ✓ Centralized security policy
  - ✓ Centralized user management
  - ✓ Secure Boot (Compute, etc.)
  - ✓ Secure firmware authentication
- ***Network Isolation & Control***
- ***Secure Management Traffic***



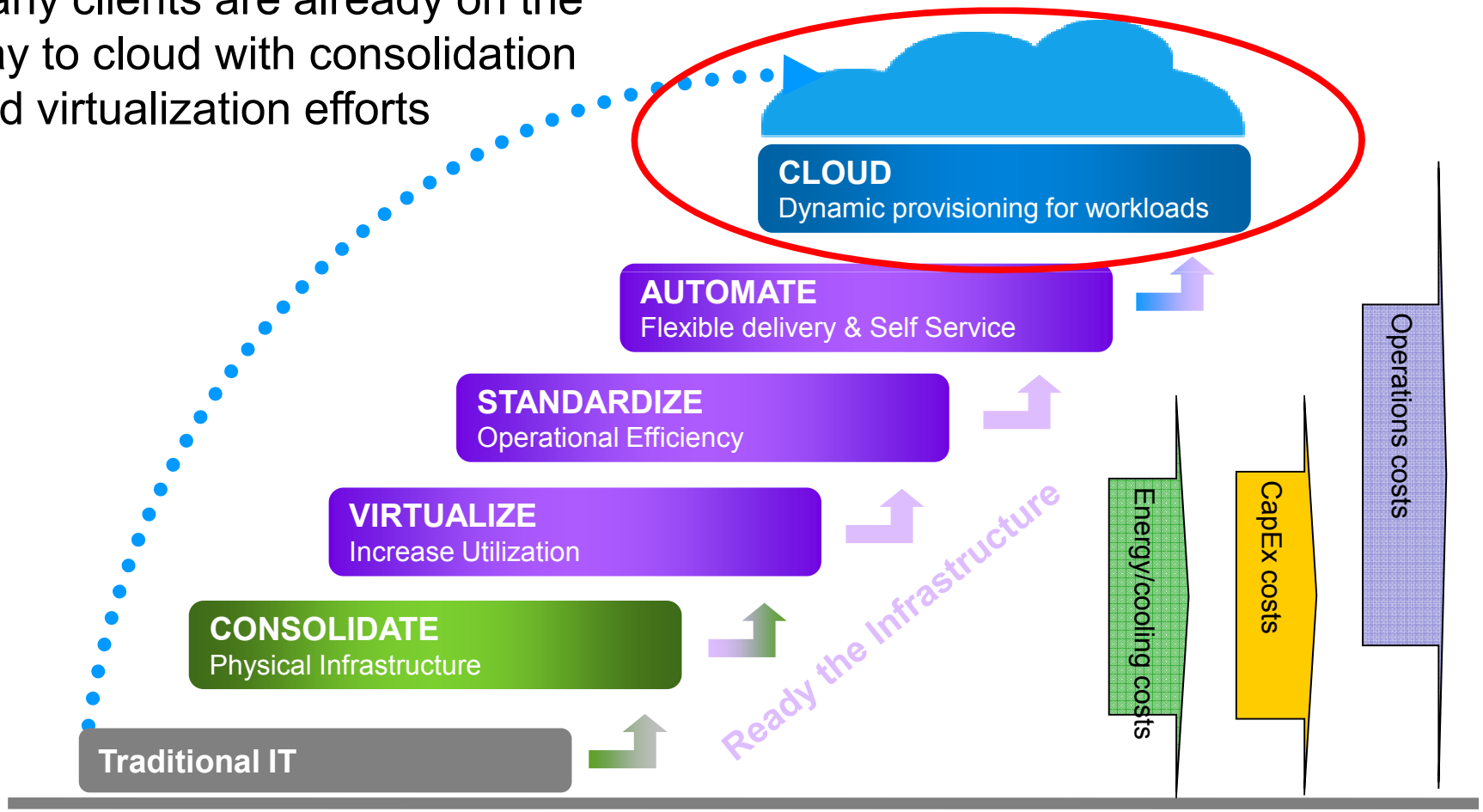
*Some capabilities planned for future delivery; IBM Plans subject to change

Tuned to the Task: Ready for Cloud



Movement from traditional environments to Cloud One Step or An Evolution

Many clients are already on the way to cloud with consolidation and virtualization efforts



IBM PureApplication System value drivers

Simple, Efficient, Flexible and Virtualized Infrastructure for Applications

Complete, Ready-to-Go Systems

- Pre-optimized for highest workload performance
- Virtualized across the stack for efficiency
- Resilient, secure, scalable Infrastructure

Simple Delivery

- Arrives pre-integrated
- Single point of management
- Easy to integrate with existing environment

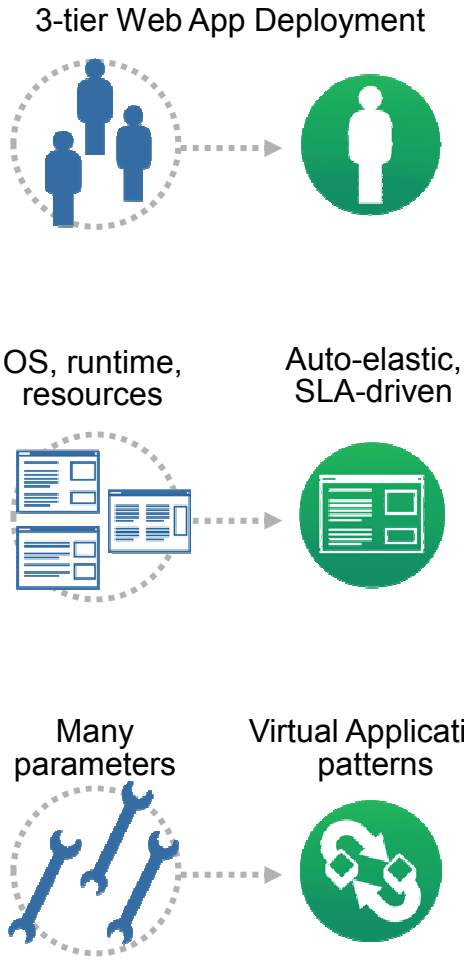
Ready for Cloud

- Integrated middleware
- Elastic runtimes and data
- Application-aware workload management

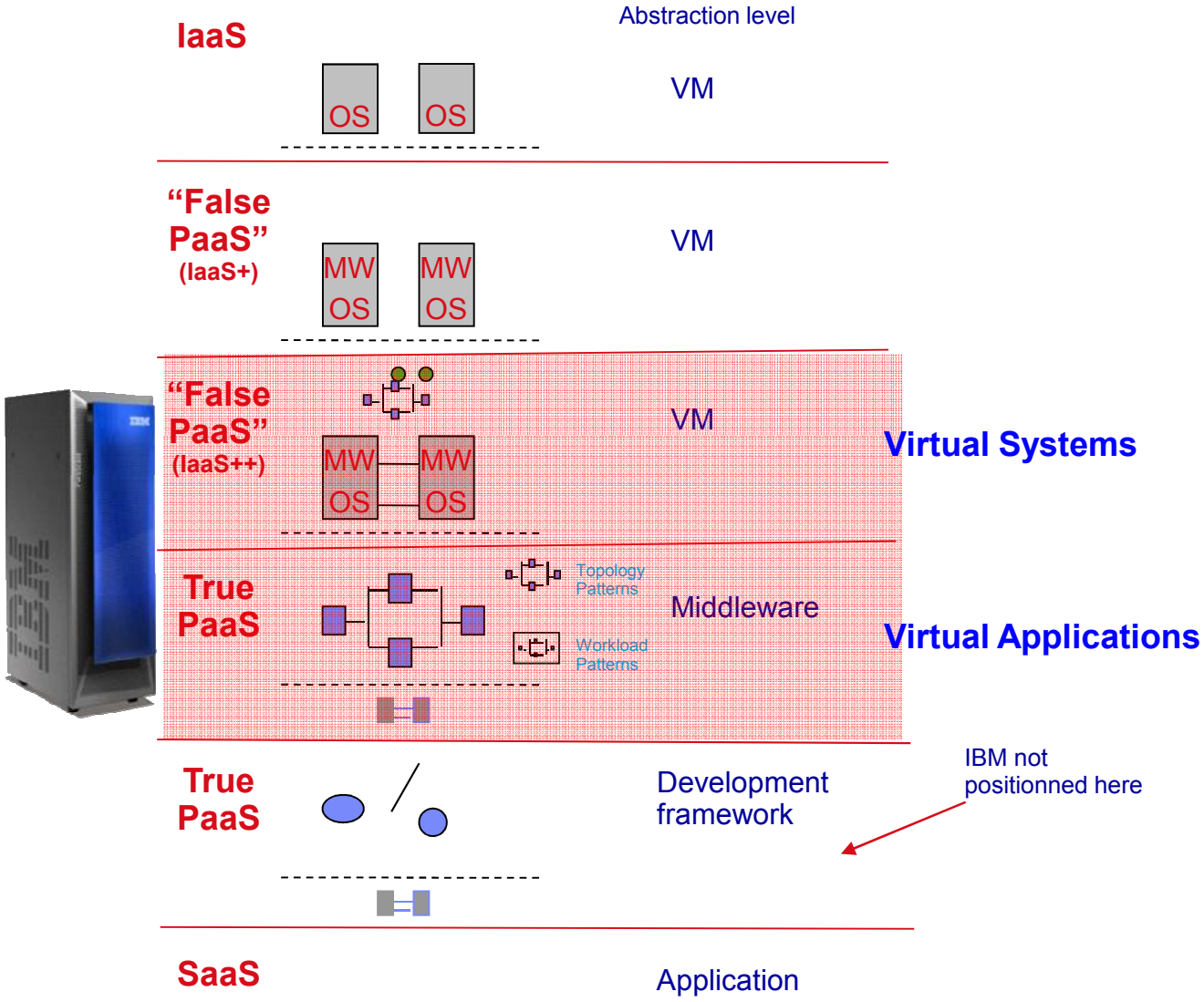
Deploy
From Weeks to Minutes

Manage
From Separate to Integrated

Optimize
From Manual to Pre-optimized



Beware of vocabulary… 4 different « PaaS » meanings in the field



Old paradigm
- infrastructure focused
- less disruptive
- less change required

New paradigm:
- workload focused
- more disruptive
- more change required

Pattern Types

Virtual Applications

- Provide the application
- Describe the characteristics of how the app should be run/managed
- Middleware is configured under the covers by IPAS in **"auto pilot"** fashion

User:

- Here's my .ear file, .ddl file
- "Make it scale & highly available"

System:

- I have calculated that your system needs to look like XYZ, and I have set up that system for you

Virtual Systems

- Describe the middleware topology **explicitly**
- Provide script packages and application
- Middleware is configured based on scripts provided

User:

- I want 3 WAS nodes, 2 DB2 nodes
- Run these scripts when you install the WAS & DB2 nodes

System:

- OK, I'll do what you told me to do

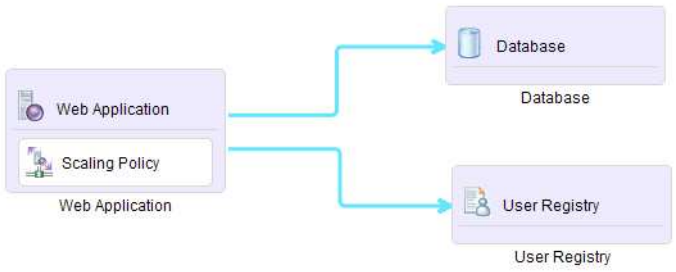
Virtual Application Pattern

- A Virtual Application represents a collection of application components, behavioral policies and their relationships

Core components of the pattern include web applications, databases, queues, connections to existing resources, business process models, batch jobs, mediations, etc.

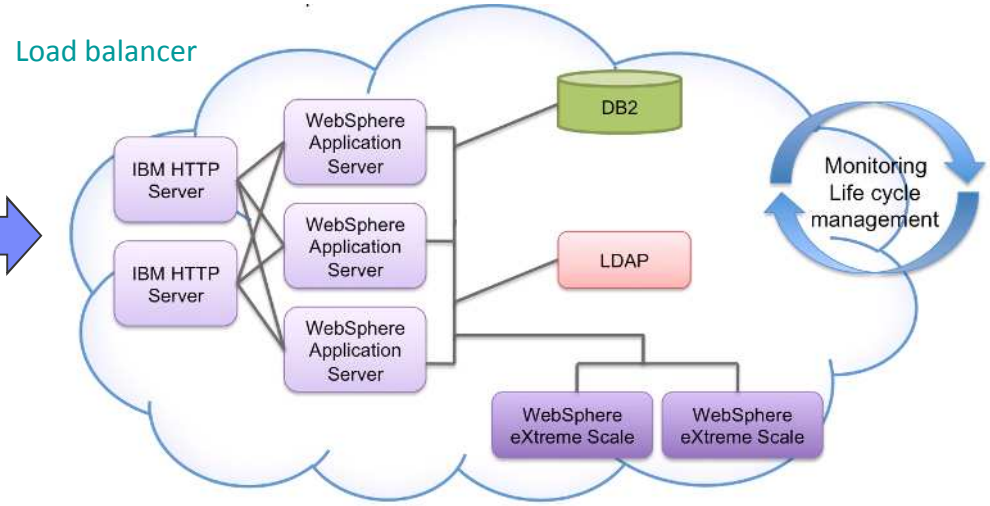
Core policies of the pattern include high availability, SLAs, security, multi-tenancy, isolation, etc.

Virtual Application Pattern



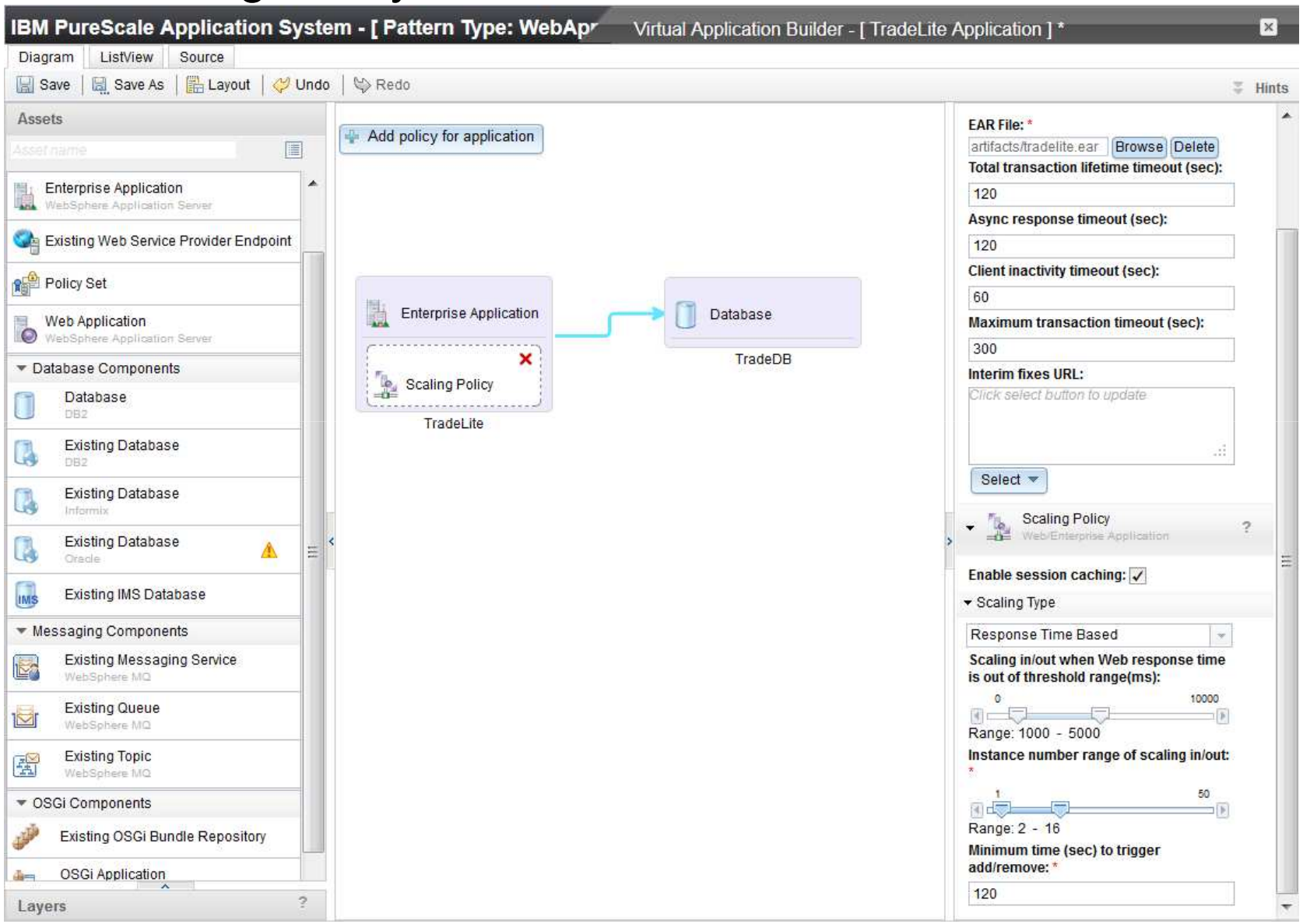
Initial instance = 3

Virtual Application Instance

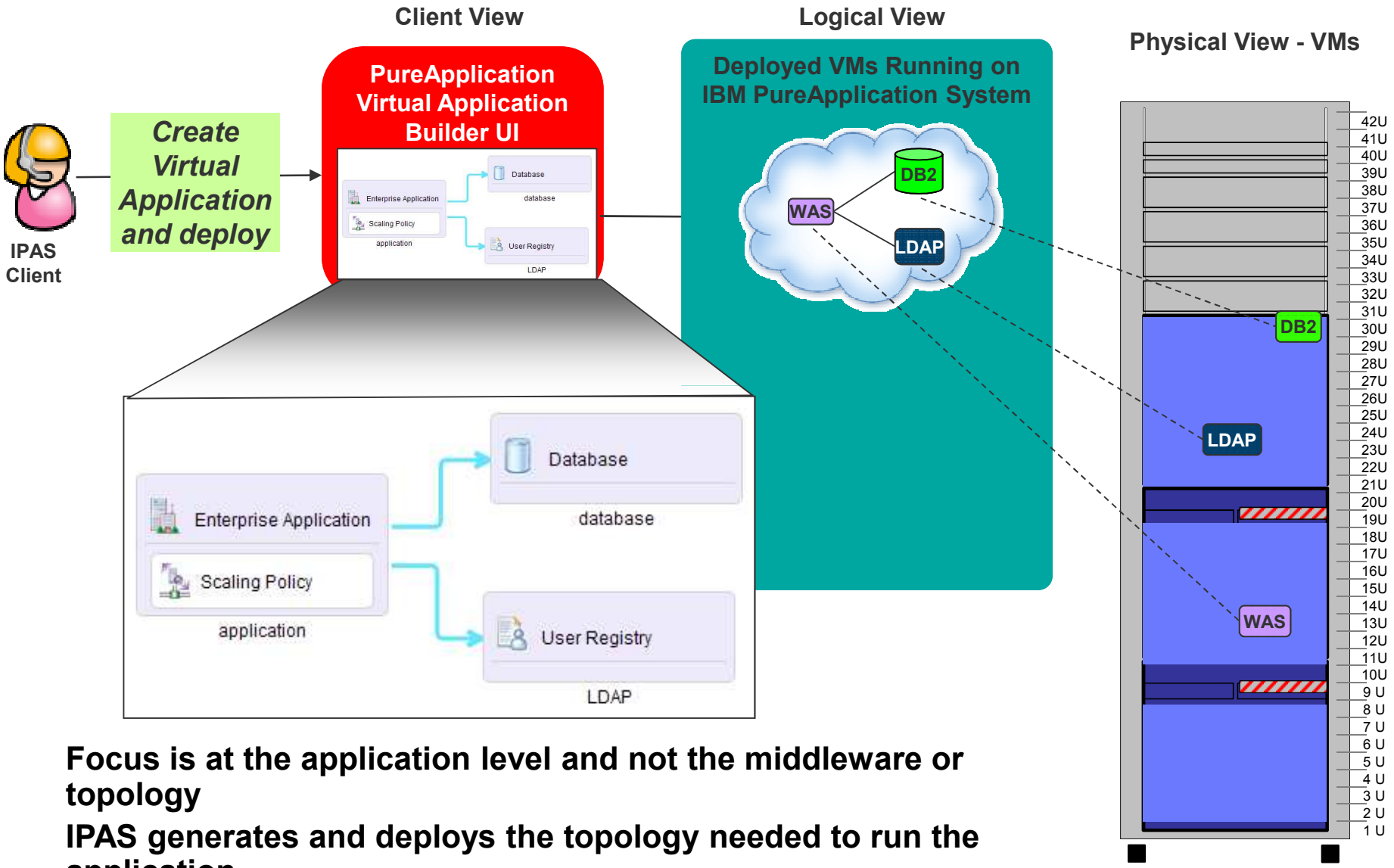


WAS cluster configured with session replication

Add a Scaling Policy



Virtual Application Views



Focus is at the application level and not the middleware or topology

IPAS generates and deploys the topology needed to run the application

IBM PureApplication System Configurations

Configuration 1
96 Cores
1.5 TB Ram

Configuration 2
192 Cores
3.1 TB Ram

Configuration 3
384 Cores
6.1 TB Ram

Configuration 4
608 Cores
9.7 TB Ram

6.4 TB SSD storage
48 TB HDD storage
Application Services entitlement

Upgrade to larger systems ***without taking an outage***!

Project PureApplication System Software Offerings

Existing Virtual Application Patterns :

- Java Pattern
- IBM Pattern for Web Applications
- IBM Transactional Database Pattern
- IBM Data Mart Pattern

Coming soon :

- IBM Business Intelligence Pattern
- IBM Messaging Pattern
- BPM Pattern
- Informix Pattern
- Predictive Enterprise Pattern
- SOA Policy Managed Gateway

Virtual Systems:

- IBM System Image for Red Hat Systems
- IBM WebSphere Application Server 7, 8, 8.5 Hypervisor Edition
- IBM WebSphere Intelligent Management Pack
- DB2 9.7, 10 Enterprise Server Edition Hypervisor Edition
- Automation Framework Hypervisor Edition (for migrating applications)

IBM PureSystems

An evolutionary and game-changing expert integrated system

Built-in Expertise

- **Flexibility and Simplicity** from integrated expertise across all infrastructure elements
- **Agility** to drive business velocity through rapid service deployment and open choice

Integration by Design

- **Efficiency** for superior economics from management that lowers operational expense

Simplified Experience

- **Control** that speeds deployment, reduces risk and improves security