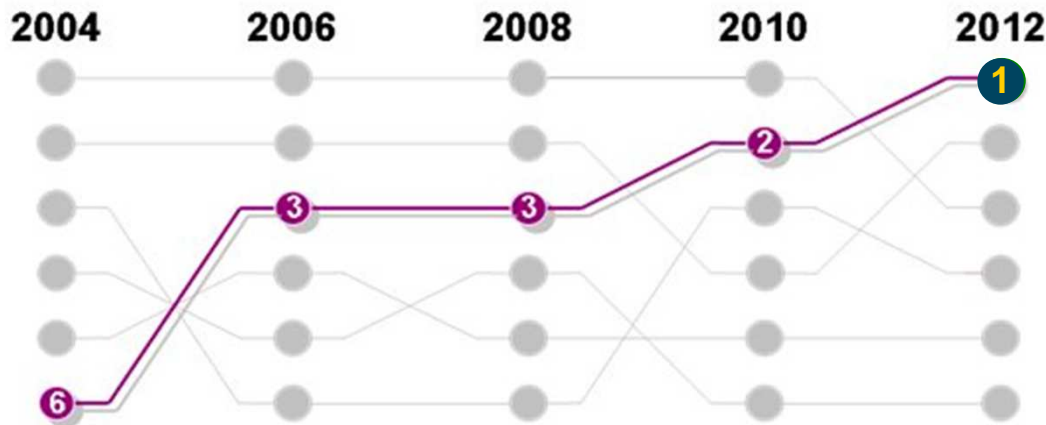# IBM PureFlex – ekspertni integrirani sustav

Zorislav Sić

Split, 10.5.2013.

IBM

For the first time, CEOs identify technology as the most important external force impacting their organizations

2004 2006 2008 2010 2012

Factors impacting organizations:

1. Technology factors
2. People skills
3. Market factors
4. Macro-economic factors
5. Regulatory concerns
6. Globalization

Source: IBM CEO Study 2012

Speed Value
90%
view cloud as critical to their plans

Extended Reach
1 Billion
Smartphones and 1.2 billion mobile employees by 2014

Responsiveness
20B+
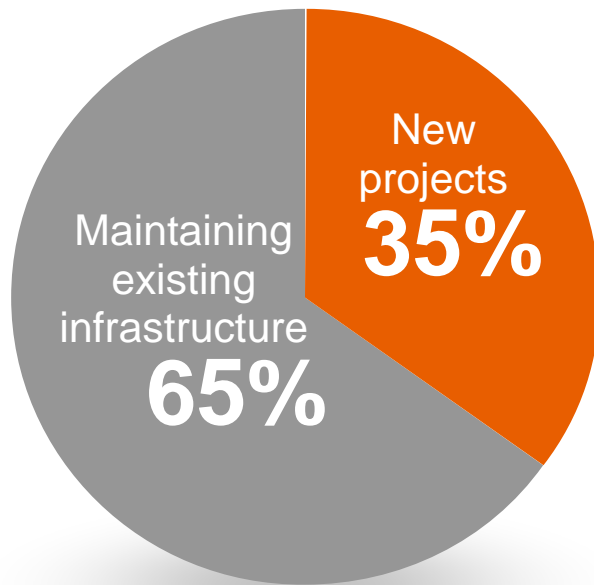Intelligent business assets

New Insights
2.7ZB
of digital content in 2012, up 50% from 2011

IBM

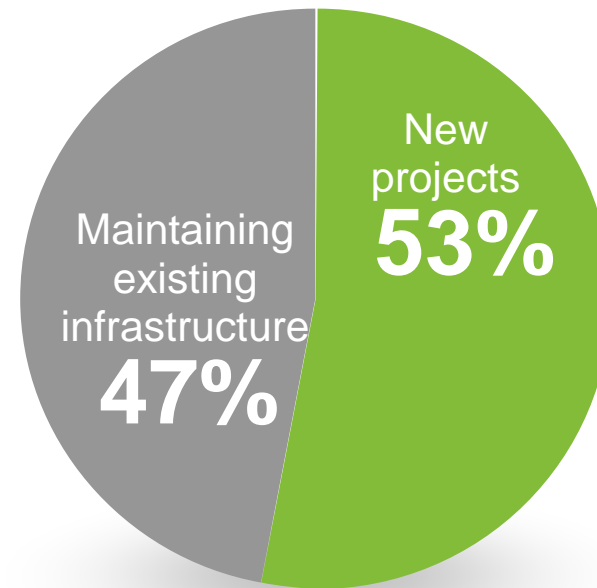# However, only 1 in 5 organizations can allocate more than half of their IT budget to innovation

Less Efficient IT Organizations

New projects **35%**

Maintaining existing infrastructure **65%**

Less effective use of technology:

43% first and fast technology adoption

1% move virtual machines to meet desired outcomes

21% use storage virtualization

3% use a storage service catalog (tiered storage)

Most Efficient IT Organizations

New projects **53%**

Maintaining existing infrastructure **47%**

More effective use of technology:

86% first and fast technology adoption

58% move virtual machines to meet desired outcomes

93% use storage virtualization

87% use a storage service catalog (tiered storage)

IBM

The PureFlex System Value Proposition

Built-in Expertise

Capturing and automating what experts do

from the infrastructure patterns to the application patterns

Integration by Design

Deeply integrating and tuning hardware and software

in a ready-to-go workload optimized system

Simplified Experience

Making every part of the IT lifecycle easier

with integrated management of the entire system and a broad open ecosystem of optimized solutions

What does it mean for you?

Agility

- *Get up and running in hours*, cutting months off deployment time of new application projects.

- *Accelerate industry capabilities* with solutions from a broad open ecosystem

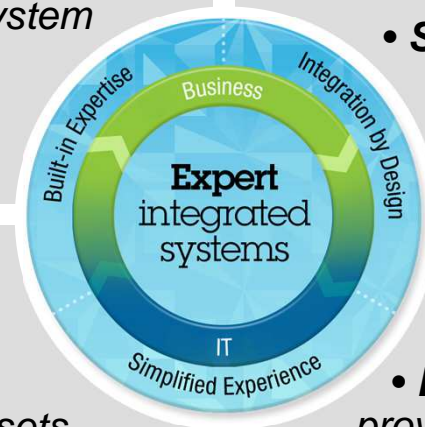- *Elastically adapt* to workload spikes without overbuying

Efficiency

- Deploy *twice as many applications per square foot* of data center space

- *Cut lifecycle maintenance time in half* with no downtime

  - *Save up to 50% of applicable IT costs* over traditional IT approaches

Built-in Expertise · Business · Integration by Design

Expert integrated systems

IT · Simplified Experience

Simplicity

- *Free up time* from procuring, supporting, testing & deploying assets

- *Avoid delays* due to limited IT skills or complex integration with factory integration and built-in expertise

- *Maintain more quickly and easily* with integrated system patches

Control

- *Lower risk and costs* with automated provisioning and seamless scalability with security and resiliency

- *Maximize flexibility* with choice of architectures, and open standards

- *Intelligently manage cloud* environments

Introducing the IBM PureSystems Family - *Infrastructure with integrated Experience*

client tuned systems	expert integrated systems

IBM IBM PureSystems Family

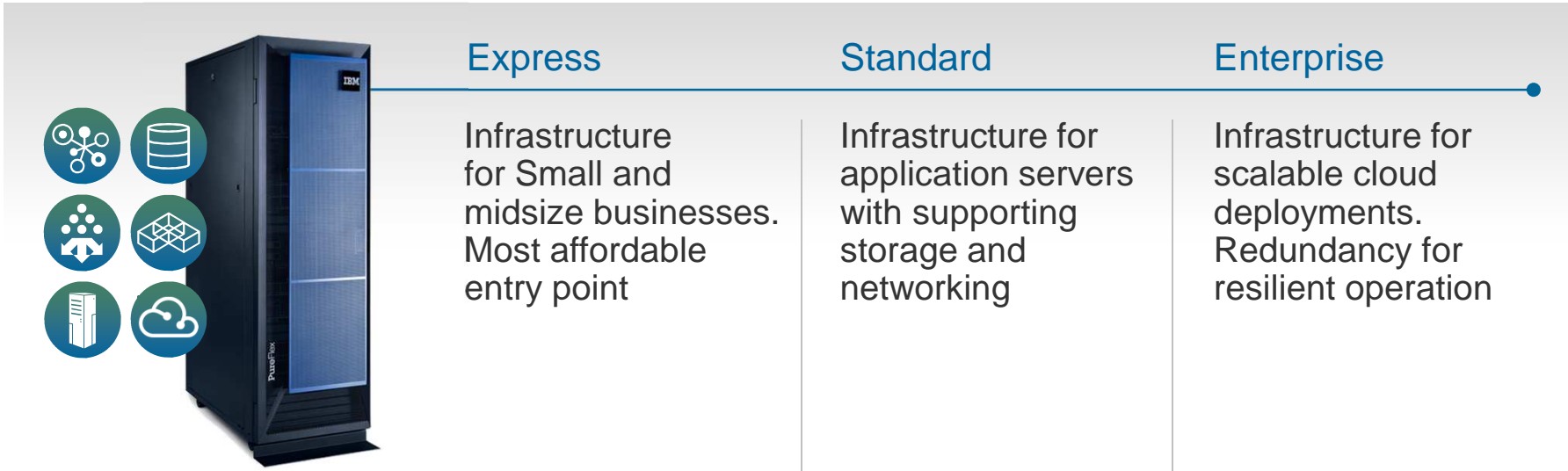|	**IBM FlexSystem**	**IBM PureFlex System**	**IBM PureApplication System**	**IBM PureData System**
Systems (POWER, x, z), Storage, Networking, Systems Management	Build to Order based on System x, Storage, and Networking ITEs	Infrastructure systems - HW-Platform	Platform Systems -MW-Platform	Business Systems -Application-platform
Client-built with Optimized Components		Integrated and optimized infrastructure to work together by design	Pre-integrated and optimized application platform for database, transaction, or web applications	Pre-integrated application platform optimized for business applications (e.g., Commerce, Enterprise Resource Planning) and industries
Supports broad range of workloads		Supports broad range of workloads	Multiple workloads tuned at the factory	Select workloads tuned at the factory

IBM

IBM PureFlex
Integrated *configurations ease acquisition experience and match your needs*

	Express	Standard	Enterprise
	Infrastructure for Small and midsize businesses. Most affordable entry point	Infrastructure for application servers with supporting storage and networking	Infrastructure for scalable cloud deployments. Redundancy for resilient operation

- Designed for Cloud - SmartCloud Entry included on Standard and Enterprise

- Designed for choice of architectures: IBM POWER7 and/or Intel x86 processors within the same systems

- Designed for choice of OS: AIX, IBM i, Microsoft Windows$^{®}$, and Linux from Red Hat, SUSE

- Designed for choice of hypervisors: PowerVM, KVM, VMware, or Microsoft HyperV

- Designed for simplicity: Integrated, single system management across physical and virtual resources
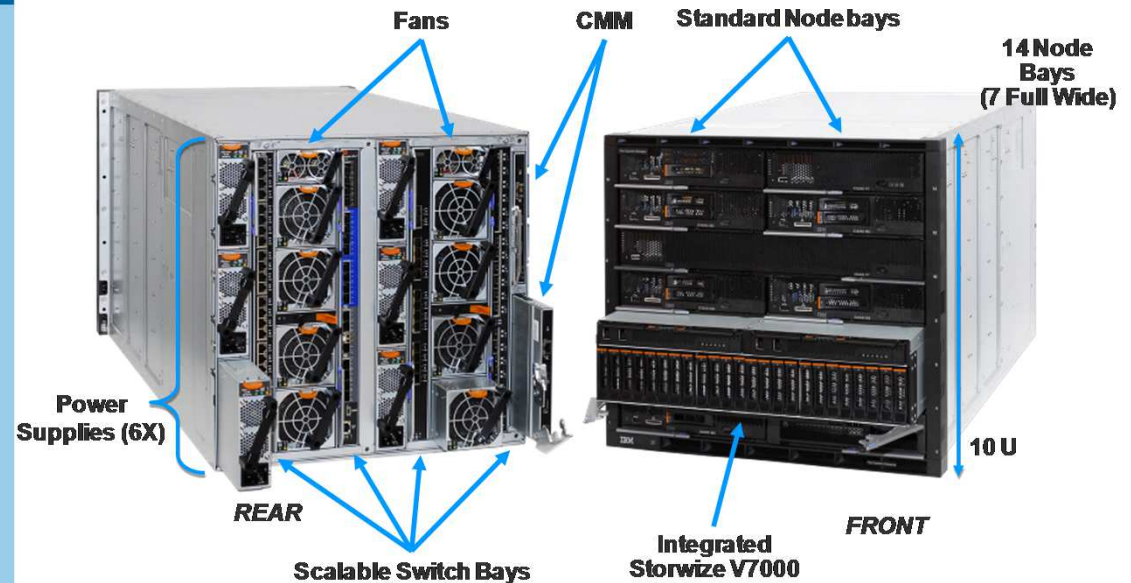
Enterprise Chassis Design

Networking

IBM Flex System Enterprise Chassis

Infrastructure supporting multi fabrics, Ethernet, FCoE, Fibre Channel

◇

Energy efficient cooling and power system

◇

Multi-chassis management

◇

Easy to use with integrated single-point management

◇

Designed to support future advancements in I/O, processors, memory, and storage

System infrastructure

Fans · CMM · Standard Node bays · 14 Node Bays (7 Full Wide) · Power Supplies (6X) · REAR · Scalable Switch Bays · Integrated Storwize V7000 · FRONT · 10 U

- 4 scalable switch bays
- 10U Chassis, 14 bays
- Standard and Full width node support
- Up to 6 2500W power supplies N+N or N+1 configurations
- Up to 8 cooling fans (scalable)
- Integrated chassis management through CME

Diverse offerings to match the diverse workloads

System infrastructure

Compute

System Portfolio tuned to workloads

◇

Reduce acquisition costs through virtualization consolidation

◇

Maximum platform capability provides deployment flexibility

IBM Flex System x220

IBM Flex System x240

IBM Flex System x440 Compute Node

IBM Flex System PEN (PCIe Expansion Node)

IBM Flex System p260

IBM Flex System p24L

IBM Flex System p460

Enterprise Storage Flexibility

Storage

Simplifies storage administration with a single user interface and common CLI through a tightly integrated management console

◇

Virtualizes third-party storage with non-disruptive migration of the current storage infrastructure
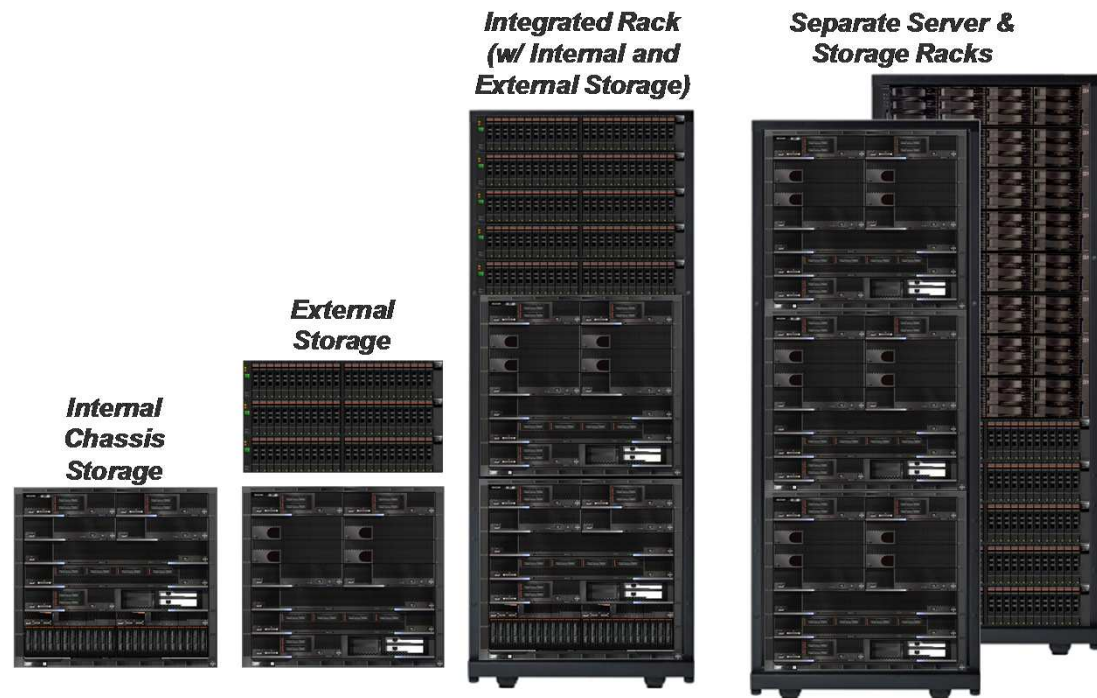
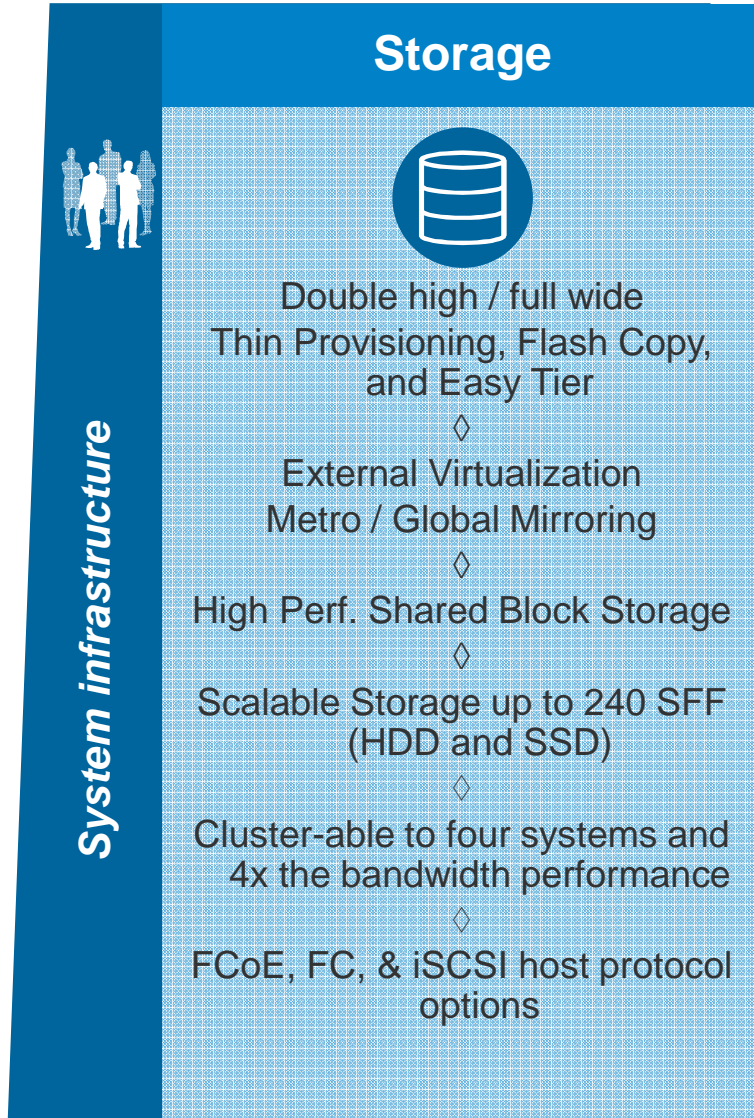◇

Balances high performance and cost for mixed workloads

◇

Protects data for business continuity and disaster recovery with built-in local and remote replication and snapshot functions

System infrastructure

IBM PureFlex extends the Storwize capabilities: Maximum performance and flexibility, integrated management and ease of use for customer for all customer configurations

Full spectrum of servers and storage options

Integrated Rack (w/ Internal and External Storage)

Separate Server & Storage Racks

External Storage

Internal Chassis Storage

Storage that is virtualized – Storwize V7000

Storage

IBM V7000 Storage Node

System infrastructure

Double high / full wide
Thin Provisioning, Flash Copy,
and Easy Tier

◇

External Virtualization
Metro / Global Mirroring

◇

High Perf. Shared Block Storage

◇

Scalable Storage up to 240 SFF
(HDD and SSD)

◇

Cluster-able to four systems and
4x the bandwidth performance

◇

FCoE, FC, & iSCSI host protocol
options

Simplifies storage administration with a single user interface through a tightly integrated management console

Virtualizes third-party storage with non-disruptive migration of the current storage infrastructure

Balances high performance and costs for mixed workloads

Protects data for business continuity and disaster recovery with built-in local and remote replication and snapshot functions

Full breadth of Networking offerings

Networking

Simplifies network deployment via integrated management

◇

Reduces network complexity via convergence and intelligent fabric monitoring

◇

Improves network performance via uncompromised IO throughput

◇

Fits with existing infrastructure and scales with Customer's IO needs

System infrastructure
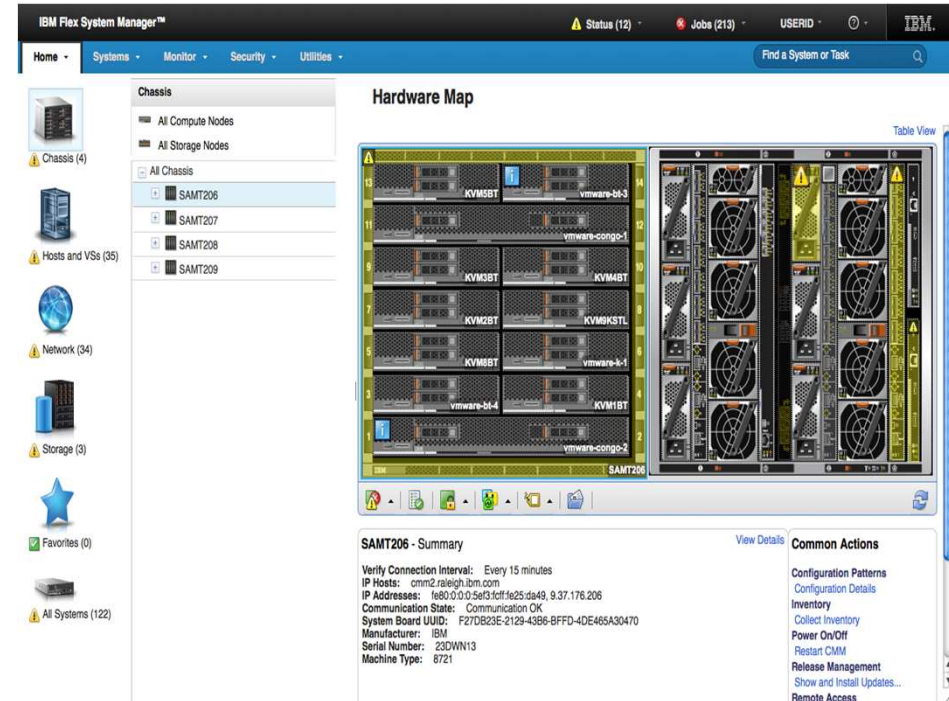
IBM Networking Offerings

- Scalable Switch modules for Next Generation Platform.
- Four Scalable switches per chassis
- Capable to provide up to 16 virtual switch partitions per chassis
- Feature on Demand port upgrades for switches

	Ethernet & FCoE	Fibre Channel	InfiniBand

Switch	• 52 port 1Gb Switch
	   Base: 14/10 (internal/external)
	   Upgrade: 14/10
	   Upgrade: four 10Gb uplinks
	• 64 port 10Gb Ethernet Switch
	   Base: 14/10
	   Upgrade: 14/8 (two 40Gb uplink)
	   Upgrade: 14/4
	• 1/10Gb Pass Thru
		• 20 port 8Gb
		• 20 port 8Gb Pass Thru
		• 48 port 16Gb
			• QDR Switch upgrade: FDR

Adapter	• 4 port 1Gb - Broadcom • 4 port 10Gb - Emulex • 2 port 10Gb – Mellanox	• 2 port 8Gb – Qlogic • 2 port 8Gb – Emulex • 2 port 16Gb – Brocade	• QDR & FDR Adapter

Flex System Manager – Simplified Management Experience
Management integration across all physical and virtual resources

Flex System Manager

Manage physical/virtual resources across compute, storage, network

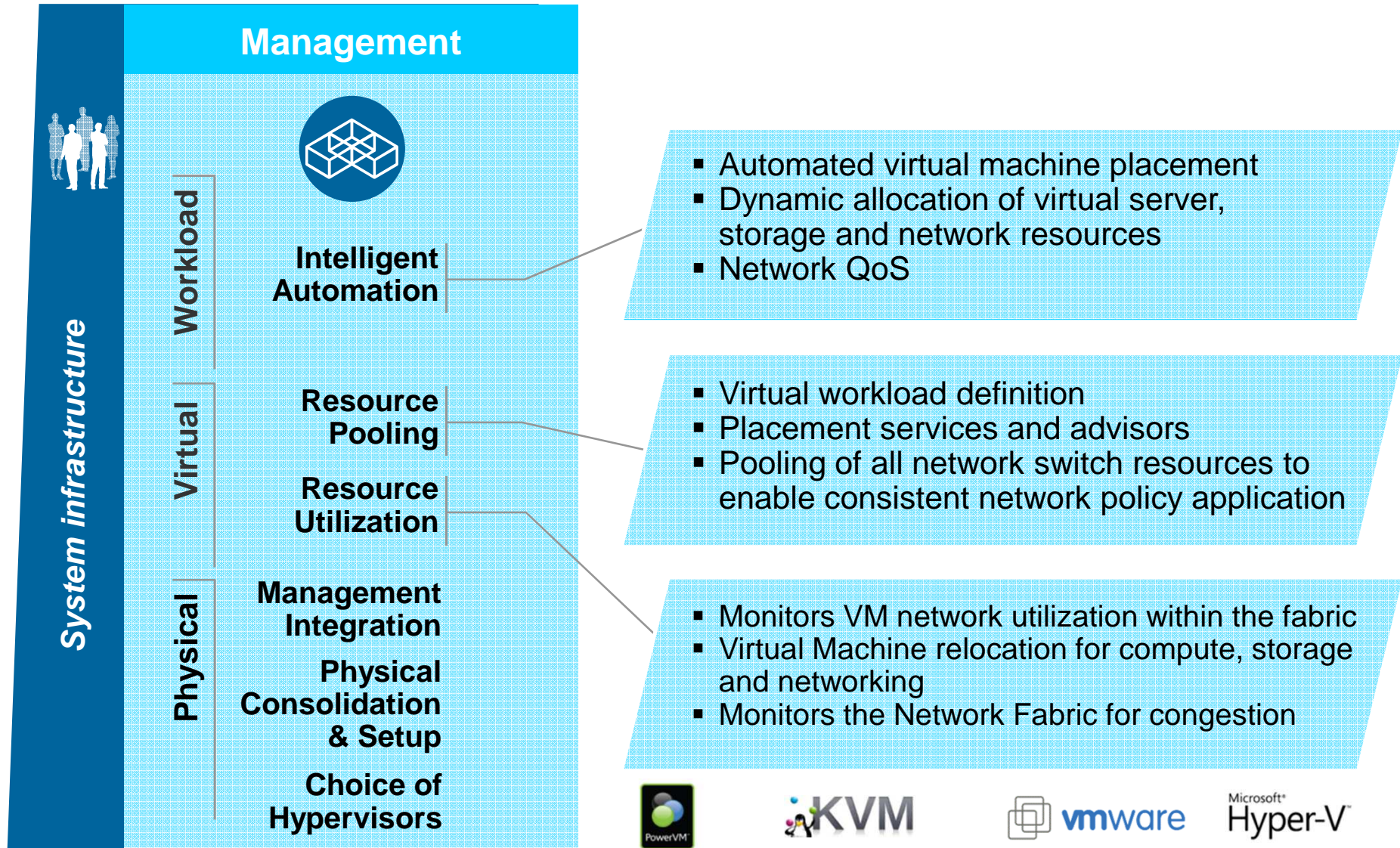**Manage workloads while the system automatically manages resources**

Thousands of end points at your fingertips with Quick Find
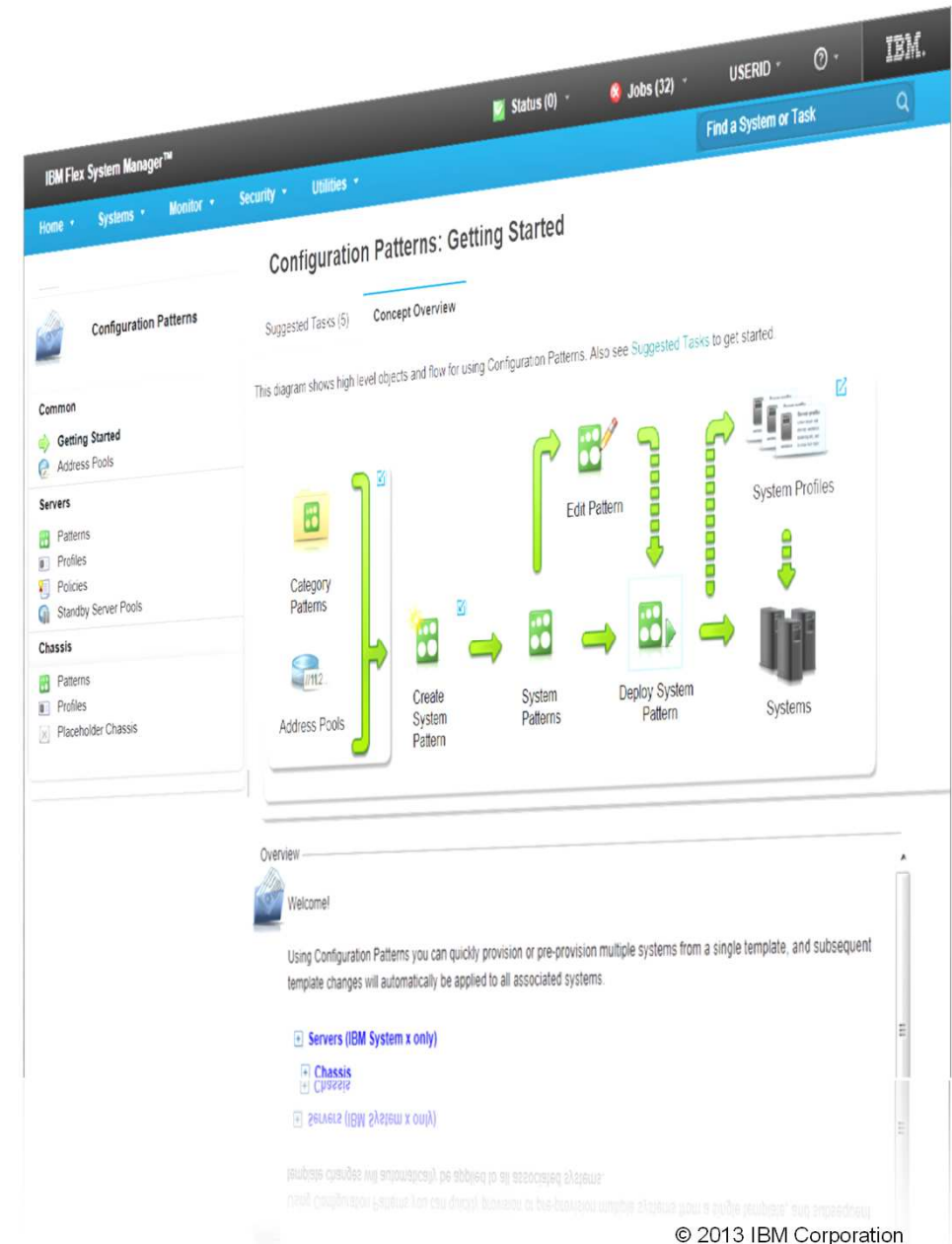
Flex System Manager Strategy

- **Primary Interface:** *FSM is the primary user interface for PureFlex platform*

- **Single Point of Control:** *FSM UI is the single point of control for PureFlex*

  - The role of the FSM administrator is to provide centralized "systems" or "infrastructure" management

  - FSM console provides cross-resource management (compute, network, storage) for physical and virtual resources

  - For recommended PureFlex system deployments, FSM orchestrates all required system setup.

    - For advanced customization, launching an embedded element manager for a particular resource(s) may be required (Eg. CMM, ToR, configuration toolkit)

- **Controls and Orchestrates Virtualization:** *FSM controls KVM & PowerVM, orchestrates VMware for added value*

  - **All**: FSM optimizes resources and workloads within the PureFlex management domain across all hypervisors

  - **KVM & PowerVM** hypervisors: FSM also provides a single consolidated interface for end-to-end virtual resource management

  - **VMware**: FSM integrates with VMware and complements the functions provided by vCenter

    - vCenter is the primary console for base ESXi hypervisor, virtual resource, & image management

    - FSM integration does not replace the vCenter console, rather adds value on top of vCenter

  - **Hyper-V**: Microsoft System Center Virtual Machine Manager (SCVVM) provides the analog to vCenter

IBM

Simplified Virtualization Management experience

Management

System infrastructure

Workload

Intelligent Automation

- Automated virtual machine placement
- Dynamic allocation of virtual server, storage and network resources
- Network QoS

Virtual

Resource Pooling

Resource Utilization

- Virtual workload definition
- Placement services and advisors
- Pooling of all network switch resources to enable consistent network policy application

Physical

Management Integration

Physical Consolidation & Setup

Choice of Hypervisors

- Monitors VM network utilization within the fabric
- Virtual Machine relocation for compute, storage and networking
- Monitors the Network Fabric for congestion

PowerVM   KVM   vmware   Microsoft® Hyper-V

Configuration Patterns

- Configuration Patterns
  - Intuitive step-by-step configuration flow
  - Store and reuse patterns
  - Capture patterns from existing device(s)
  - Dramatically improve out-of-box experience by enabling Out-of-Band configuration
  - Deploy to empty bays to prepare for new hardware
  - Failover monitoring

- Server Components Included
  - RAID
  - Adapters and IFM
  - Boot order and targets
  - IMM and UEFI
  - IP address pools (management IPs)

- Chassis Components Included
  - CMM
  - IO Modules: Port enablement settings

PureFlex System and SmartCloud Entry
Optimized platform for cloud solutions

Cloud-ready, cloud enabled systems with IBM SmartCloud Entry included

… Deploy a cloud workload in 4 clicks

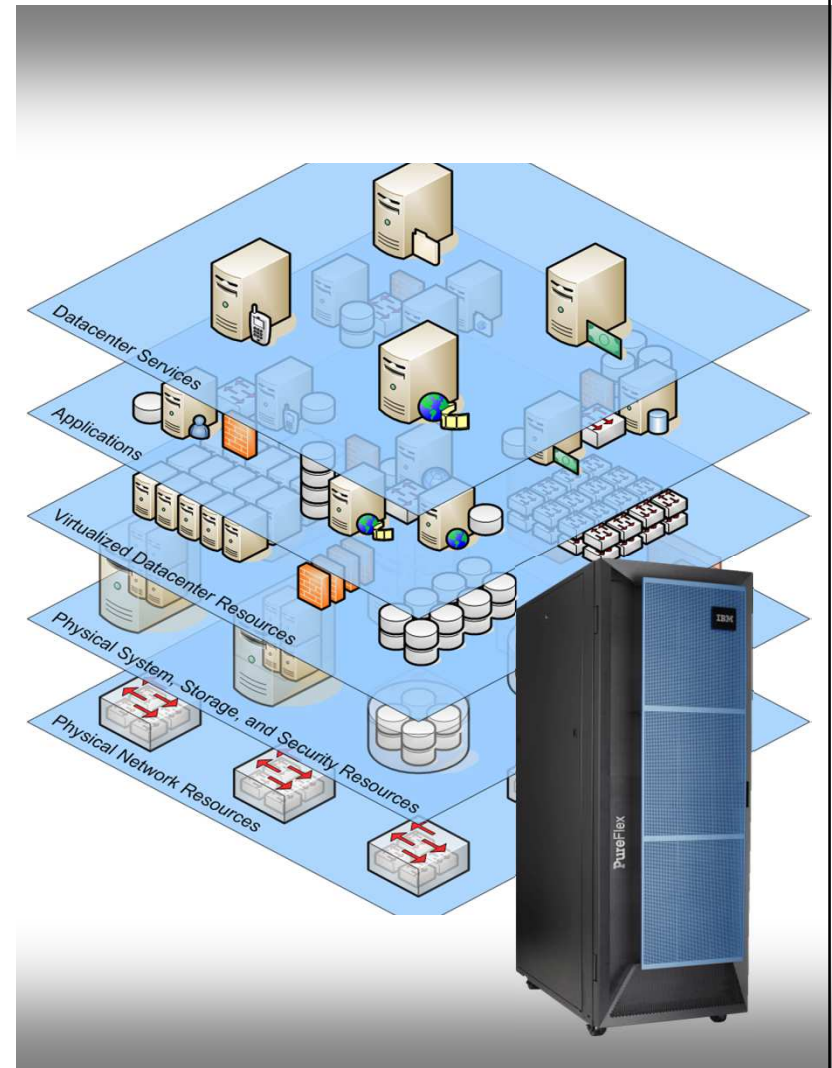**Converged server, storage and network resources with integrated platform management …**

… Completely integrated solution on day 1, no tuning needed

Resource Pooling & Automated Provisioning Expertise …

… Manage a cloud as easily as a single system

Certified Trusted Computing Standards system to ensure a secure cloud environment …

… Centrally control all user permissions and access

Datacenter Services

Applications

Virtualized Datacenter Resources

Physical System, Storage, and Security Resources

Physical Network Resources

PureFlex

IBM PureSystems Benefits

The first IT infrastructure to deliver integration with flexibility across compute, storage and networking

Efficiency
Consolidation / Virtualization

- Manage across server, storage, and networking

- Single management interface

- Consolidate your IT needs in a single package, virtualizing your workloads based on your policies not the hardware

Flexibility
Open / Dynamic

- Flexible choice of OS and hypervisor support

- Flexible networking choice, open choice for internal as well as top of rack switches

- Flexible storage options, with internal or external choices

Agility
Deploy / Performance

- Time to value, quickly deploy new workloads with the Deployment manager

- Intelligent workload placement and optimization

- React to business needs, quickly manage to get to resolution

Hvala!

IBM

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