Stay ahead.

Innovate2013

The IBM Technical Summit

開發者大會

預設模組，開發更快速！
PureApp應用大解密

林澤芬 Job Lam
IBM大中華區軟體事業處
雲平台資深經理

Innovate2013
The IBM Technical Summit
開發者大會

Stay ahead.

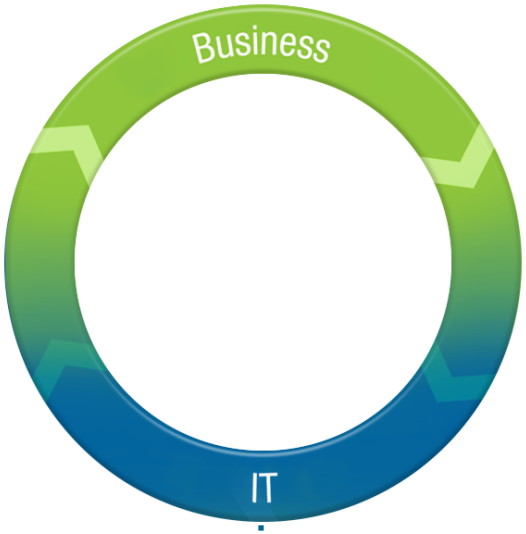
Aligning IT and Business Goals

You Experience the Barriers of Time, Cost and Risk today

Business Goals

Grow top and bottom line by:

- Lowering IT costs
- Driving business innovation
- Responding to the consumerization of IT
- Countering competitive threats
- Enhancing the customer experience



IT Reality

Getting Up and Running

Takes months:

- Specify/Design
- Procure
- Integrate
- Deploy

Development Operations

Takes 30-90 days:

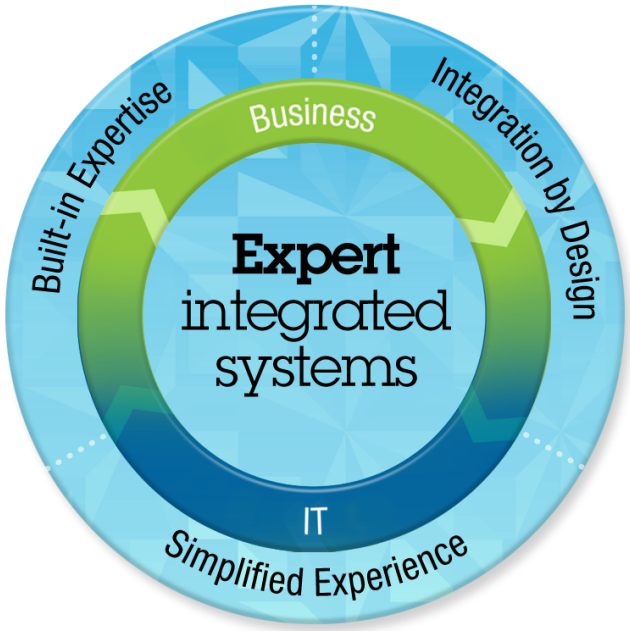
- Provision
- Configure

Ongoing Effort

Takes months and requires downtime:

- Customize/Tune
- Scale
- Manage
- Maintain
- Upgrade

The Time Has Come For a New Breed of Systems



Expert integrated systems:

Systems with integrated expertise that combine the flexibility of a general purpose system, the elasticity of cloud and the simplicity of an appliance tuned to the workload

Fundamentally changing the experience and economics of IT

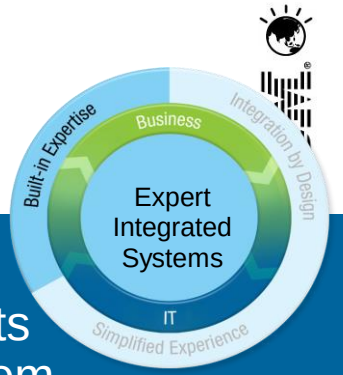
Not bound to a specific OS or hardware platform

Built-in Expertise: ***Capturing and automating what experts do*** – from the infrastructure to the application

Integration by Design: ***Deeply integrating and tuning hardware and software*** – in a ready-to-go workload optimized system

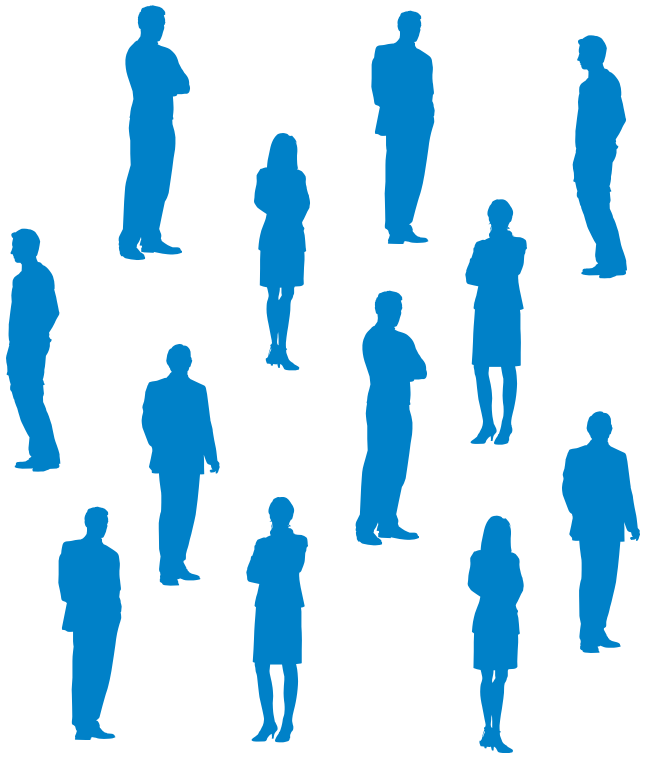
Simplified Experience: ***Making every part of the IT lifecycle easier; Integrated management of the entire system; A broad, open ecosystem of optimized solutions***

IBM PureApplication Systems “ patterns of expertise”



Patterns of Expertise: Proven best practices and experience for complex tasks learned from decades of client and partner engagements that are captured, lab tested and optimized and then built into the system

- Unmatched expertise, virtualization and optimization
- Ability to dynamically adjust where necessary
- **Three levels of patterns** which may be embedded directly into the system or separately deployable:
  - **Application** *(business level)*
  - **Platform** *(middleware level)*
  - **Infrastructure** *(system level)*
- **Value:**
  - ***Agility:*** Faster time-to-value
  - ***Efficiency:*** Reduced costs and resources
  - ***Simplicity:*** Simpler skills requirements
  - ***Control:*** Lower risk and errors



IBM PureApplication System Value Drivers

Simple, Efficient, Flexible and Virtualized Application Platform – Built for Cloud

Complete, Ready-to-Go Systems

- Arrives ready to go with expert integration
- Pre-optimized for Java, web and database performance
- Virtualized across the stack for efficiency
- Resilient, secure, scalable infrastructure

Simplify Ongoing Tasks

- Automated provisioning
- Single point of management
- Integrated monitoring & maintenance
- Application-aware workload management
- Easy to integrate with existing environment

Ready for Cloud

- Repeatable self service provisioning
- Integrated and elastic application and data runtimes

Compute

96-608 cores
16GB/core ram

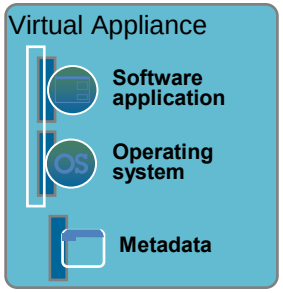
Storage

Solid State (6 TB)
Spindles (48 TB)
"Easy Tier" sw

Interconnect

10 GB ethernet
8 GB FC

Multiple pattern types to enable open ecosystem

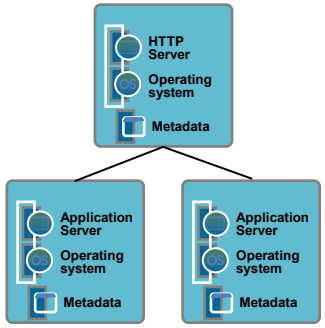


Virtual Appliances

- Standard software installation and configuration on OS
- Images created through extend/capture
- Traditional administration and management model
- Infrastructure driven elasticity

Virtual Appliances

Standard TCO
existing applications



Virtual System Patterns

- Automated deployment of middleware topologies
- Traditional administration and management model
- Application and infrastruture driven elasticity

Virtual System Patterns

Improved TCO
virtualized applications

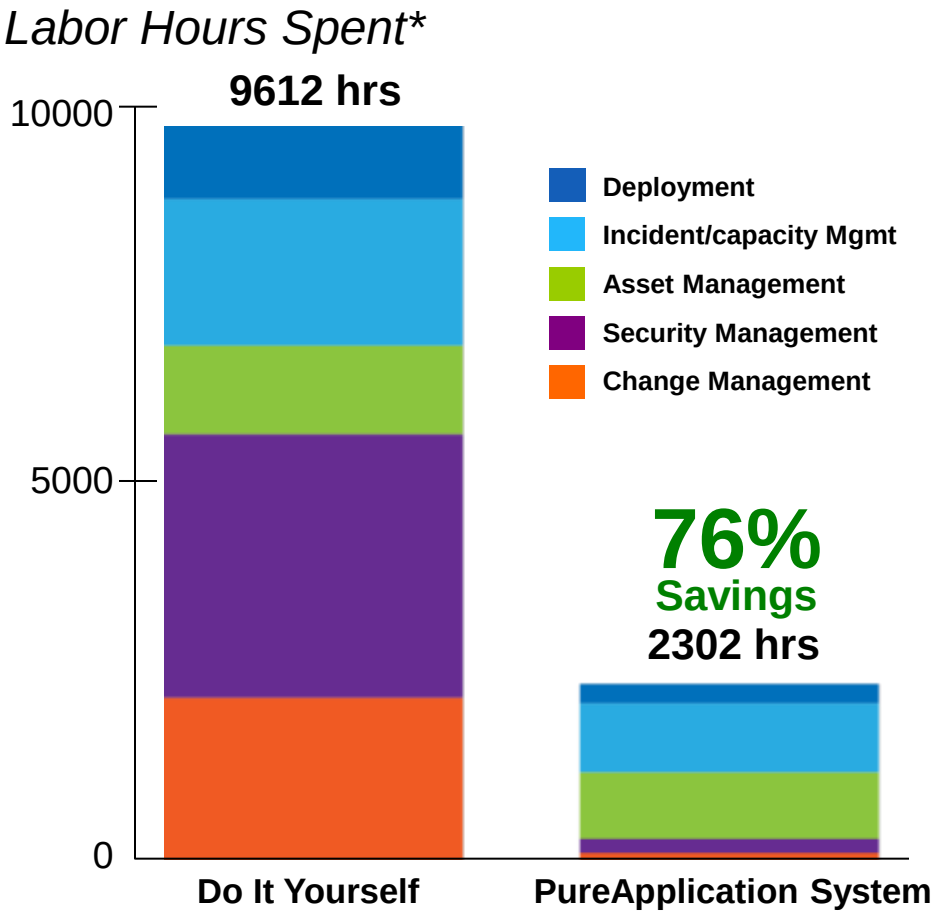
Virtual Application Patterns

- Highly automated deployments using expert patterns
- Business policy driven elasticity
- Built for the cloud environment
- Leverages elastic workload management services

Virtual Application Patterns

Best TCO
cloud applications

IBM PureApplication System provides savings across the IT lifecycle



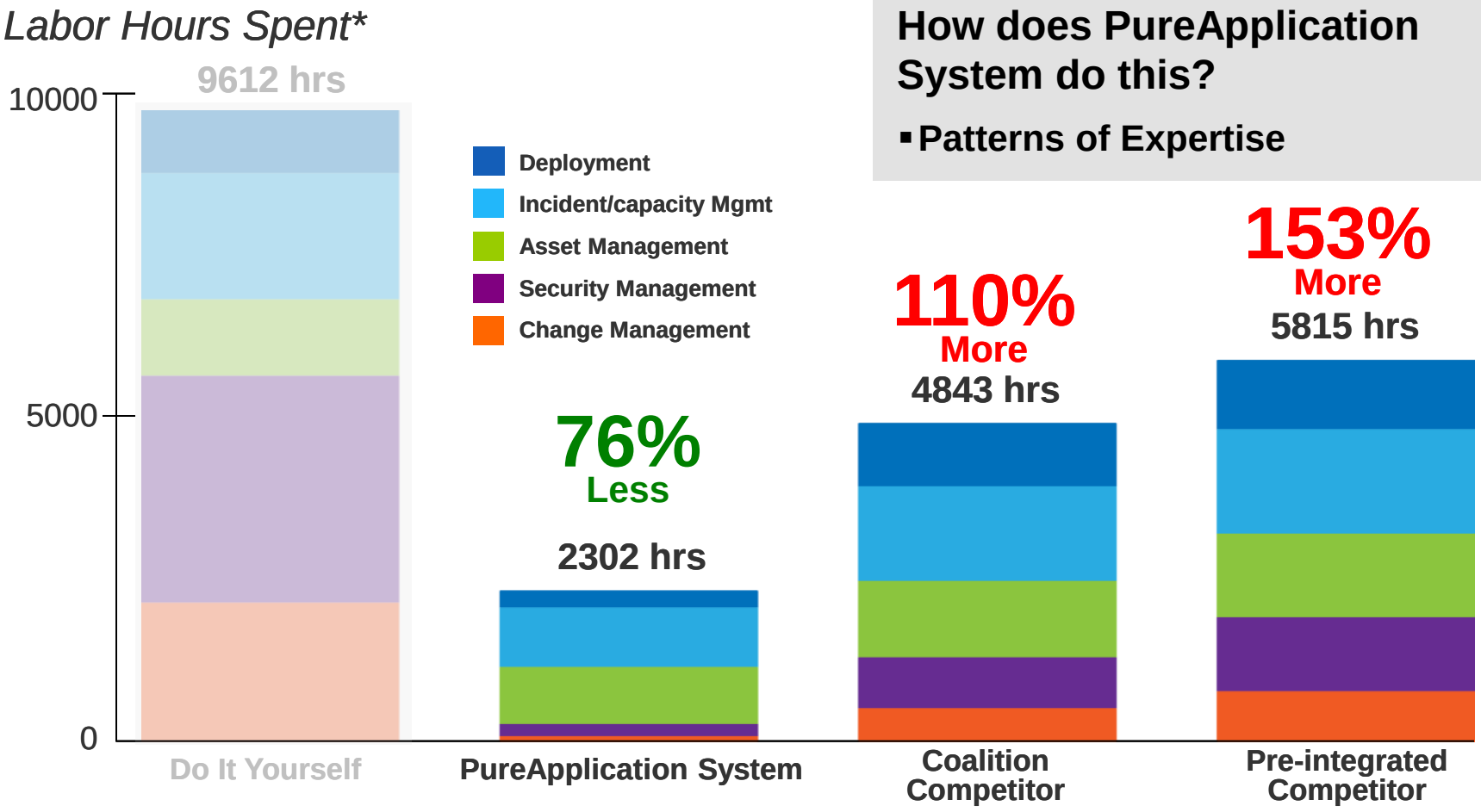
*Note: Do It yourself used 9 blades (144 cores). IBM PureApplication System used 3 nodes (96 cores). Each system has the capacity to run 72 workloads where each workload can sustain a peak throughput of 1720 page elements per second.

How does PureApplication System do this?

- **Deployment**
  - Fully assembled and configured
  - Pre-installed management software
  - Fast pattern-based deployment
- **Incident/capacity management**
  - Centrally monitor and resolve issues
  - Automatic scaling
- **Asset management**
  - Track license usage of products
- **Security management**
  - Centralized access control
- **Change management**
  - Visibility into relationships of virtual images in a workload
  - Automatically apply changes to desired virtual servers

This is an IBM internal estimated labor study based on modeling customer data on IBM hardware and software solutions and on competitor converged solutions designed to replicate typical IBM customer usage in the marketplace. It is not a benchmark. As such, customer applications, differences in stack deployed and other systems variations may produce different results and may vary based on actual configuration, applications, specific queries and other variables in a production environment based on published standard labor rates for IT staff.

IBM PureApplication System
patterns of expertise add unique value



How does PureApplication System do this?

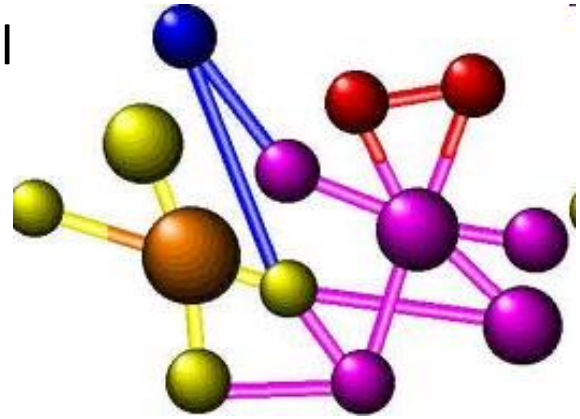
- **Patterns of Expertise**

*Note: Coalition competitor used 9 competitor blades (144 cores). Pre-Integrated competitor used 18 pre-integrated nodes (288 cores). IBM PureApplication System used 3 nodes (96 cores). Each system has the capacity to run 72 workloads where each workload can sustain a peak throughput of 1720 page elements per second.

This is an IBM internal estimated labor study based on modeling customer data on IBM hardware and software solutions and on competitor converged solutions designed to replicate typical IBM customer usage in the mark place. It is not a benchmark. As such, customer applications, differences in stack deployed and other systems variations may produce different results and may vary based on actual configuration, applications, specific queries and other variables in a production environment based on published standard labor rates for IT staff.

What is an Software Application pattern?

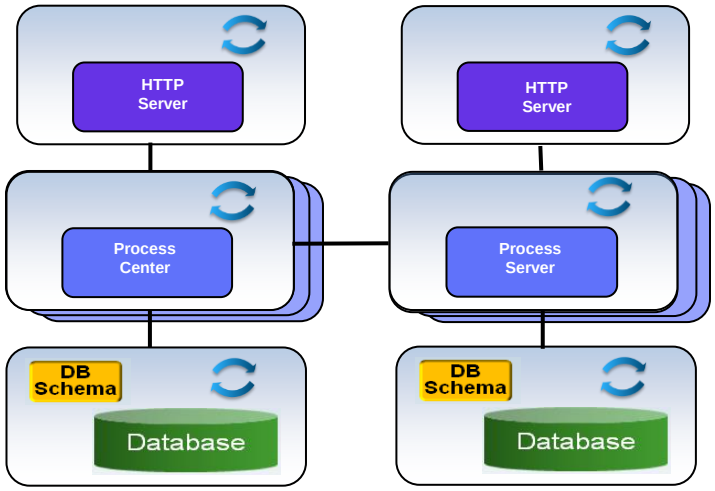
- A Software Application pattern is…
  - a model of a multi-server environment
  - …represented as a file
  - …which can be interpreted by a deployment tool
  - …and shared between users/teams



- Software Application Patterns…
  - Can be created in PureApplication System
  - Can be exported and imported for sharing across systems
  - Are available in two types: **Virtual Applications** and **Virtual Systems**

Example: PureApplication System + IBM BPM Pattern

A proven approach

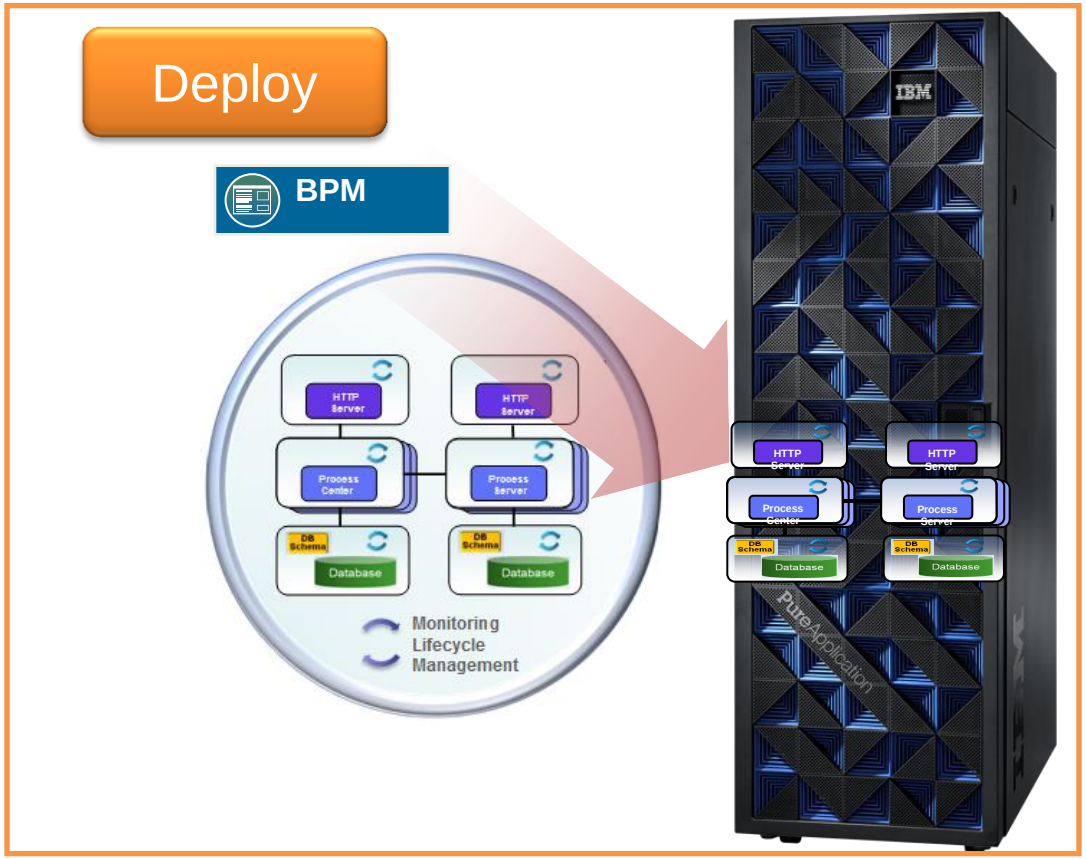


Redbooks®

developerWorks®

Weeks of manual effort & documentation and ongoing maintenance

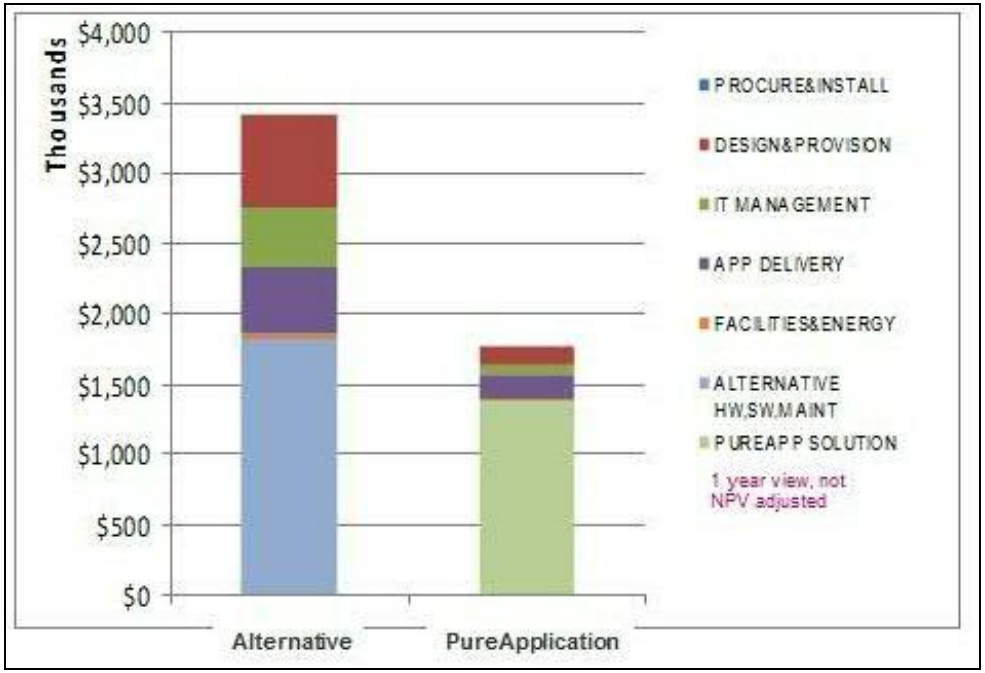
A new approach



- Less than 90 minutes to deploy IBM recommended highly available golden topology in a repeatable fashion
- Ability to customize and extend the pattern
- Easier management and maintenance with ability to monitor and apply maintenance at the pattern level vs. individual server instances

BPM on PureApplication System v/s Roll Your Own

PureApplication System delivers **net cost reduction of 48%** and **net labor reduction of 76%** in first year*



Tangible benefits*

- A 1 year net benefit potential worth $1,640,371 based on assessment
- A direct positive impact to the bottom line

Intangible benefits*

- 8 times faster environment design and provisioning
- Improved business productivity due to better IT performance
  - A potential savings of $347,625

*This is a sample BVA in US and results vary based on environments

PureApplication System
x86 and Power 7+ Configurations

25U Small Rack

x86

Power 7+

32 Cores
5 TB RAM

64 Cores
1 TB RAM

2.4 TB SSD
24 TB HDD

42U Large Rack

x86

Power 7+

96 Cores
1.5 TB RAM

192 Cores
3.1 TB RAM

384 Cores
6.1 TB RAM

608 Cores
9.1 TB RAM

6.4 TB SSD
48 TB HDD

All configurations include:

- **Rack, Chassis, PDUs**
- **Networking** (Top of Rack, Chassis & Fibre)
- **Pre-integrated software entitled for full capacity of configuration:** OS, Hypervisor, application server, database, Java runtime, cloud provisioning, management and full stack monitoring

Upgrade to larger configurations **without taking an outage**

IBM PureApplication System (x86)

- **Expert Integrated Platform for Applications**
  - Compute, Storage, Networking
  - Integrated application server & database middleware services
  - Integrated management, monitoring & maintenance
- **Built-in Expertise**
  - Infrastructure, platform, and application patterns
  - Fault tolerant design
  - Automated elasticity
- **Flexibility & Growth Options**
  - Right-size and upgrade as business expands
- **NEW!** 32 & 64 core
  - Lower environmentals (size, single-phase power, cooling) ideal for Growth Markets, departmental, partners & development & test

Install, Config, Tune:
Up and running in **less than 4 hours**[1]

Deploy:
Deploy a 3-tier web application in under **15 minutes**[2] and automatically scale in **minutes**[3]

Manage:
Concurrent management of **1000+ VM's** on a single W1500-608 system[4]

Optimize:
Up to **60% better price/performance**[5] running typical web and DB applications (over a competitor's configuration)

Automatic throughput improvement of **up to 2.3X** for data intensive applications[6]

IBM PureApplication System (POWER)

- **Expert Integrated Platform for Applications**
  - Compute, Storage, Networking
  - Integrated application server & database middleware services
  - Integrated management, monitoring & maintenance
- **Built-in Expertise**
  - Infrastructure, platform, and application patterns
  - Fault tolerant design
  - Automated elasticity
- **NEW! Power7+ Compute**
  - Enhanced performance, density
  - Improved resiliency: AIX and PowerVM delivers significantly lower levels of vulnerabilities

Install, Config, Tune:
Up and running in **less than 4 hours**[1]

Deploy:
Deploy a 3-tier web application in under **11 minutes**[2] and automatically scale in **minutes**[3]

Manage:
Concurrent management of **1000+ VM's** on a single W1700-608 system[4]

Optimize:
Automatic throughput improvement of up to **4.1x** for data intensive applications

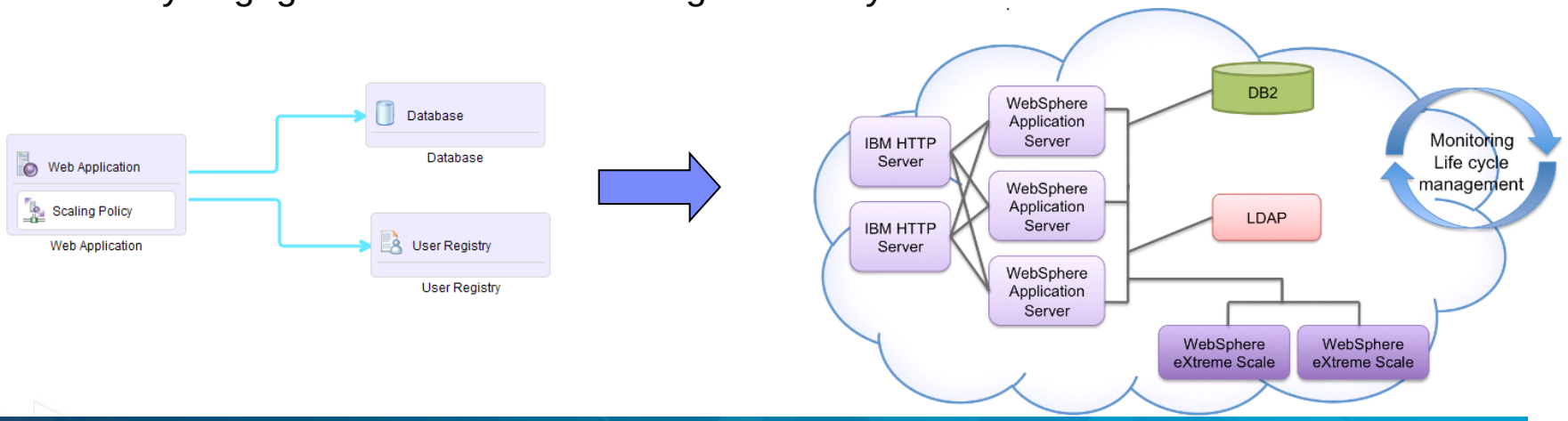
Patterns: Virtual Application Patterns

"Web Application" Virtual Application

- *Captures decades of experience* in helping clients design, build and deploy new business applications
- *Codifies best practices* for presetting configuration options by type of selected Web application (e.g., high availability, high security, etc.)
- *Bring your data and application code*, select the type of application you want and everything else is handled for you in the background

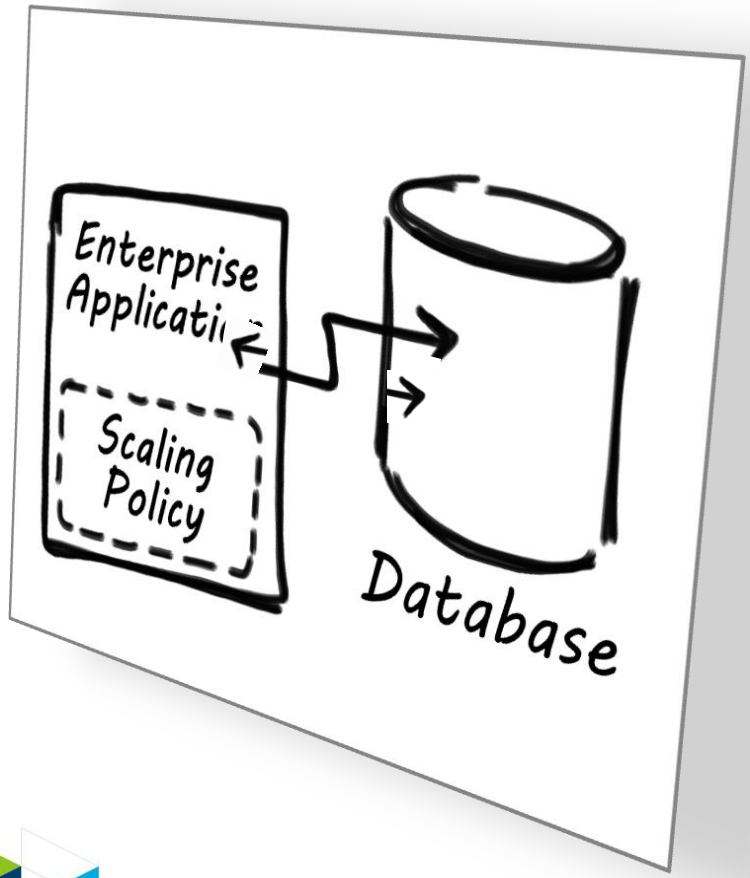
What do you NOT have to do?

- Understand the interdependencies and connections between your database, application server, management, security, and the rest of the middleware
- Manually engage in the real-time management of your infrastructure

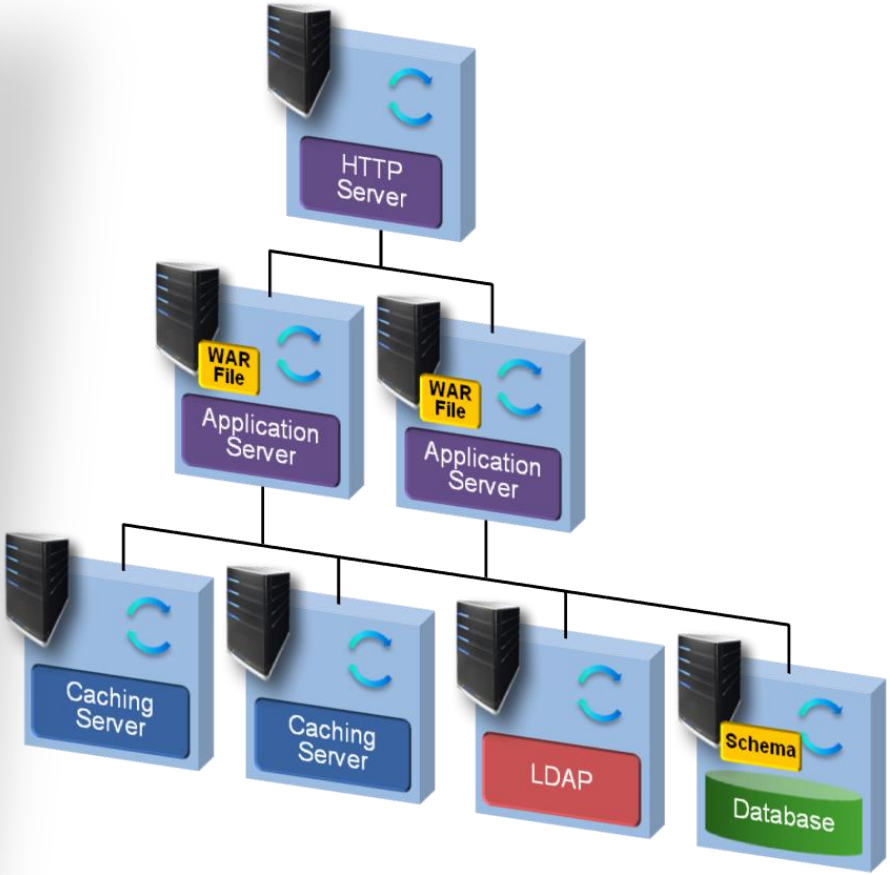


Result: Speed deployment of Web applications

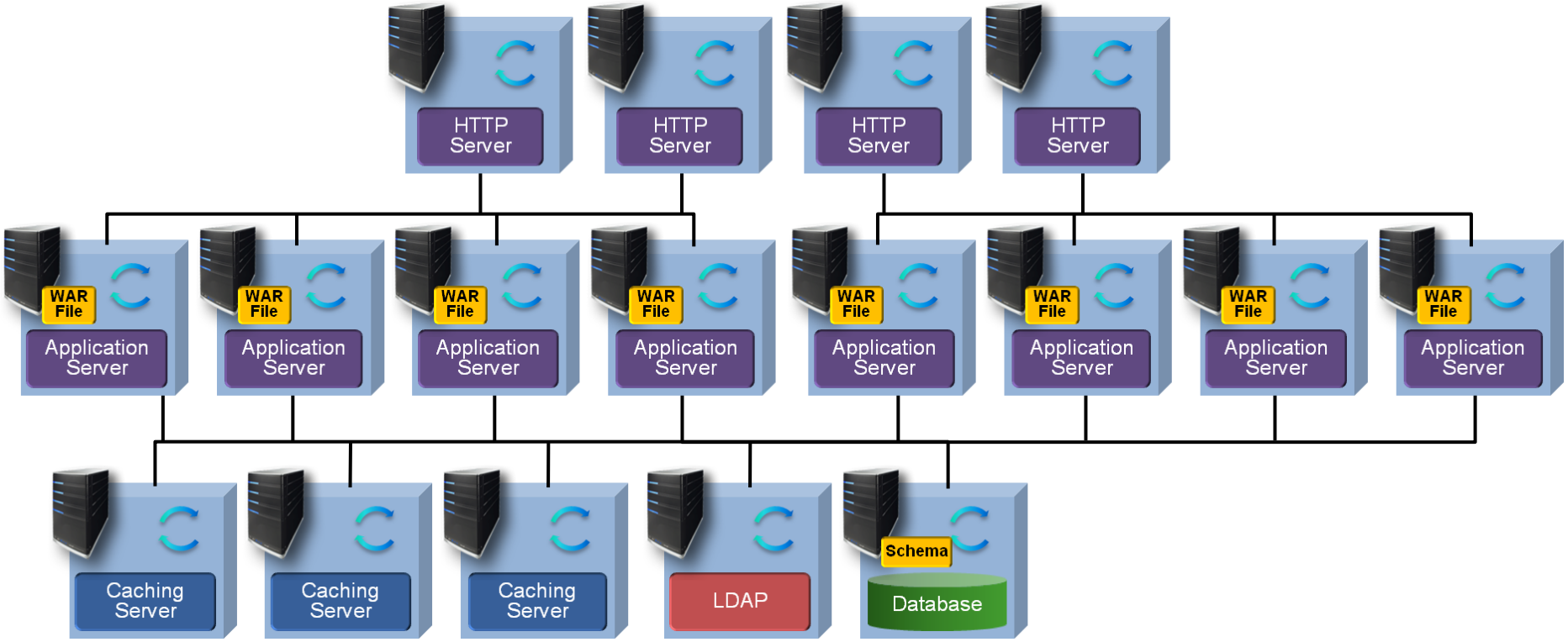
What the business wants…



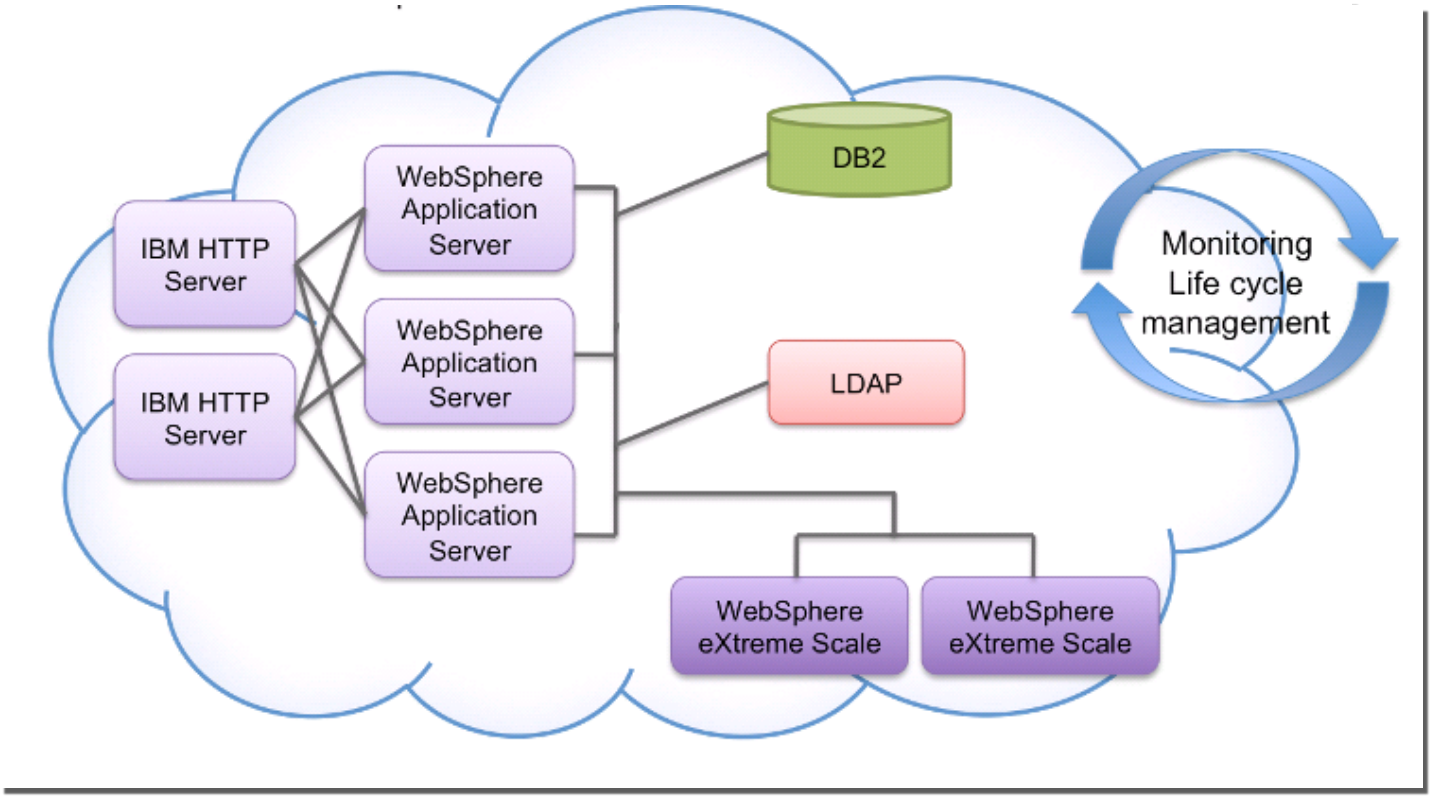
What's required…



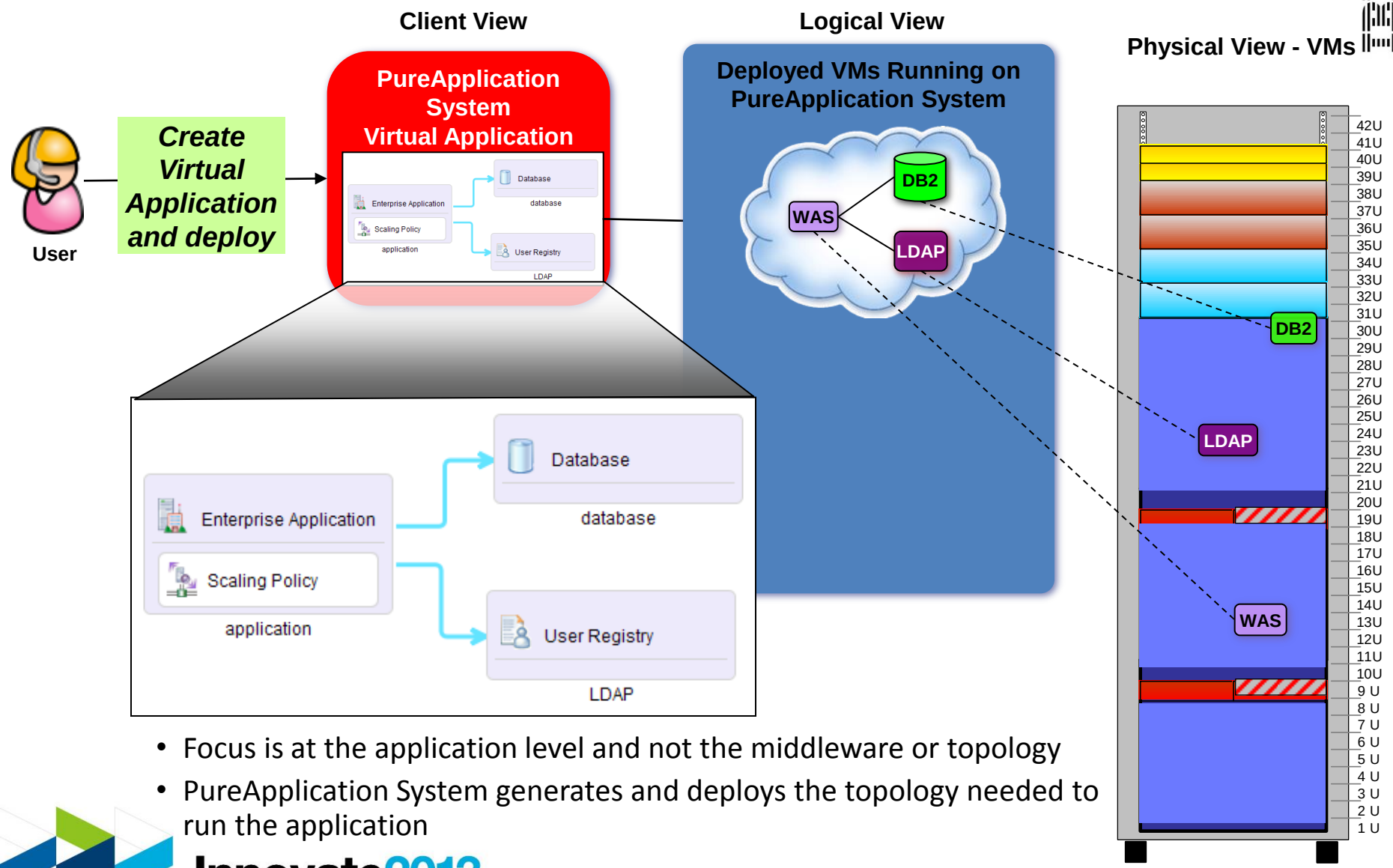
What will be needed tomorrow…



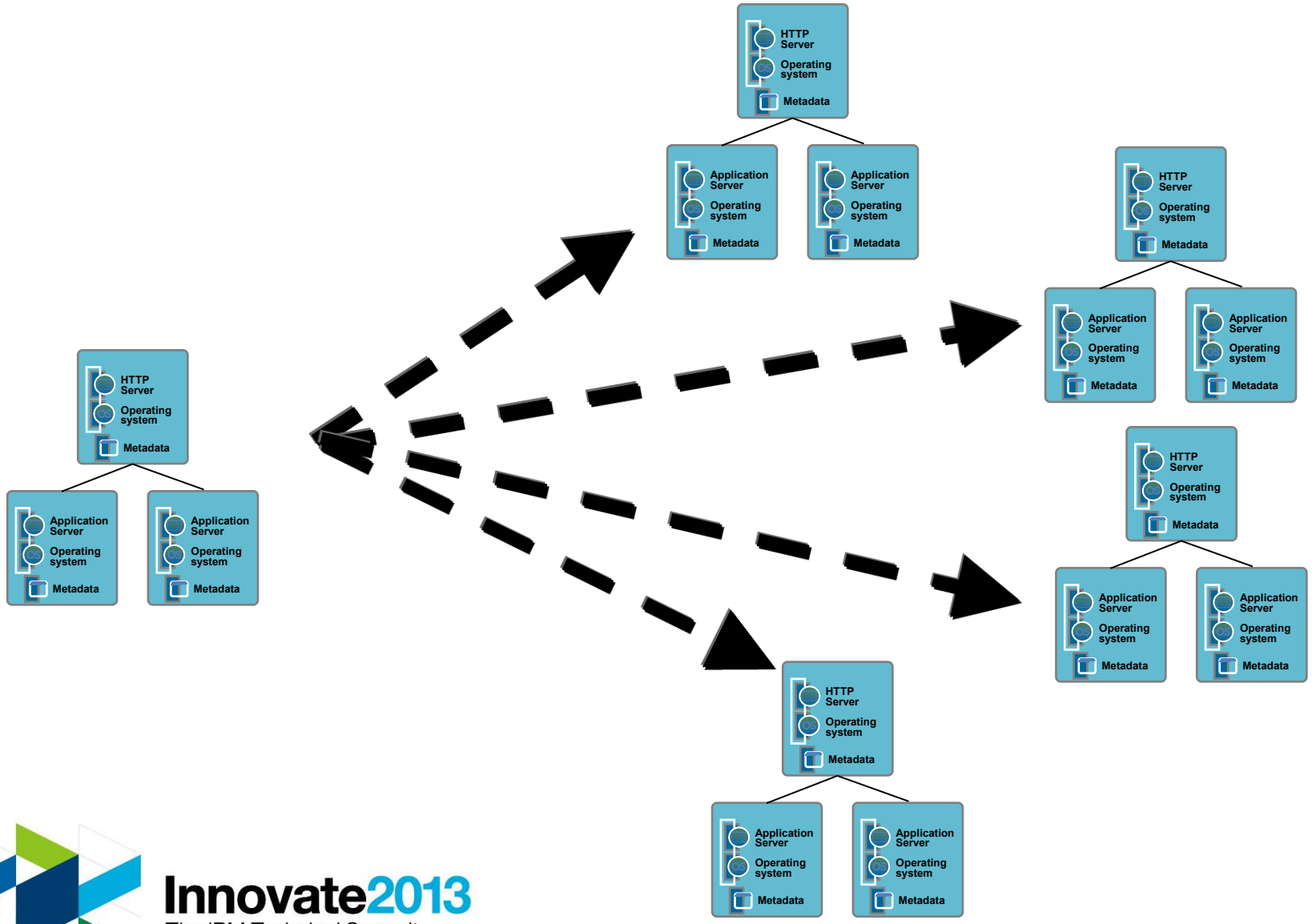
Virtual Application Pattern



Virtual Application Views



- Focus is at the application level and not the middleware or topology
- PureApplication System generates and deploys the topology needed to run the application


HTTP Server
Operating system
Metadata
Application Server
Operating system
Metadata
Application Server
Operating system
Metadata
HTTP Server
Operating system
Metadata
Application Server
Operating system
Metadata
Application Server
Operating system
Metadata
HTTP Server
Operating system
Metadata
Application Server
Operating system
Metadata
Application Server
Operating system
Metadata
HTTP Server
Operating system
Metadata
Application Server
Operating system
Metadata
Application Server
Operating system
Metadata

Patterns of Expertise Accessible via PureSystems Centre

Built-in Foundational Content	Additional Solution Pattern Content	Additional Middleware Pattern Content
• Web Application Pattern (1.0, 2.0) • IBM Transactional Database Pattern 1.1 • IBM DataMart Pattern 1.1 • IBM Application Pattern for Java 1.0 • WebSphere Application Server HV (7.0, 8.0, 8.5) • DB2 Enterprise Server Edition (9.7 FP5, V10.1)	• WebSphere Portal Server 8.0 • Web Content Management 8.0 • IBM Business Process Manager 8.0 • IBM Operational Decision Manager 8.0 • Business Intelligence 1.0 • IBM Connections 4.0 • Virtual Application for SAP CRM 1.0 • WebSphere Commerce Sample 7.0**	• Messaging Extension for Web Application Pattern 2.0 • WebSphere Message Broker 8.0 • WebSphere MQ 7.5, 8.0 • WebSphere Transformation Extender w/Launcher 8.4 • SOA Policy 2.0 • SOA Policy Gateway 2.0 • Informix 11.7 • InfoSphere Information Server 9.1

Additional solutions and middleware content are separately purchased
** Available via free download from ibm.com

PureApplication System W1500: Pre-Optimized, Pre-Entitled Software

- "All you can eat" entitlement to run the following software on the full capacity of the purchased System

  - Full stack monitoring (hardware, OS, entitled middleware)
  - Virtualization & virtualization management
  - Tooling for creating patterns

  - Virtual System Patterns:
    - IBM OS Image for Red Hat Linux Systems v1 (RHEL 64-bit v6.2)
    - IBM WebSphere Application Server Hypervisor Edition v7 with IMP (WAS 7.0)
    - IBM WebSphere Application Server Hypervisor Edition v8 with IMP (WAS 8.0)
    - IBM WebSphere Application Server Hypervisor Edition v8.5 with IMP (WAS 8.5)
    - IBM DB2 9.7 FP5 Enterprise Server Edition HV*
    - IBM DB2 10.1 Enterprise Server Edition HV*
    - Automation Framework HV (for migrating applications)

  - Virtual Application Patterns:
    - Java Pattern v1 (64-bit Java 7 SDK)
    - IBM Workload Deployer Pattern for Web Applications v1 (with WAS v7)
    - IBM Web Application Pattern v2 (with WAS v8)
    - IBM Transactional Database for Cloud v1.1 (with DB2 9.7 FP5 & 10.1)
    - IBM Data Mart for Cloud v1.1 (with DB2 9.7 FP5 & 10.1)

*DB2 ESE with options entitled:
- Storage Optimization
- Label-Based Access Control
- Optim Performance Manager

PureApplication System W1500 (x86)		W1500-32	W1500-64	W1500-96	W1500-192	W1500-384	W1500-608
Compute	Processor	8 core, 2.6GHz Intel Sandy Bridge EP processor, 115 W					
	Compute Node	Dual Processor, 16-core, 256GB memory					
	Memory/Compute Node	256GB (8 2x16GB, 1333 MHz, DDR3, LP RDIMMS(1.35V))					
	Network cards/Compute Node	1 x EN4054 – 4 port 10Gb Ethernet Mezz Adapter					
	Fibre cards/Compute Node	1 x FC 3172 - 2 port 8Gb Fibre Channel Mezz Adapter					
	# Compute nodes	2	4	6	12	24	38
	# Cores	32	64	96	192	384	608
	Memory	512 GB	1 TB	1.5 TB	3.1 TB	6.1 TB	9.7 TB
Storage	Solid State Drive (SSD)	6 x 400GB 2.5 in. SSD (E-MLC)		16 x 400GB 2.5 in. SSD (E-MLC)			
	Hard Disk Drive (HDD)	40 x 600 GB 2.5 in. 10k HDD		80 x 600 GB 2.5 in. 10k HDD			
	Storage Controller	1 x IBM Storwize V7000 Disk System		2 x IBM Storwize V7000 Disk System			
	Storage Expansion	1 x IBM Storwise V700 Storage Drawer		2 x IBM Storwise V700 Storage Drawer			
	Total Storage SSD	2.4 TB unformatted / 1.6 TB usable		6.4 TB unformatted / 4.8 TB usable			
	Total Storage HDD	24.0 TB unformatted / 21.6 TB usable		48.0 TB unformatted / 43.2 TB usable			
Network	Top of Rack Switches (TOR)	BLADE Network Technologies TOR G8264 switches for Customer Data Center & Rack to Rack communications					
	Transceivers	Choice of: 10GbE Fibre, 1GbE Fibre, 1GbE Copper, Direct Attach Cabling (DAC / Twinax)					
Chassis	Network / Chassis	2 x EN4093 – BNT 10GbE					
	Fibre / Chassis	2 x FC5022– Brocade 48 16GbFC					
	Chassis	1 x Accipiter Chassis		3 x Accipiter Chassis			
Power	Power Distribution Unit (PDU)	4 x 60A 1ph - North America 4 x 32A 1ph - International		4 x 60A 3ph - North America 4 x 32A 3ph - International			
Mmgt Node		2 x PureSystems Manager (PSM) 2 x Virtualization System Manager (VSM)					
Rack	Rack	1.3 M 19” Enterprise Rack		2.0 M 19” Enterprise Rack			
Specs	Weight	365.6 Kg (815 lb)	385.6 Kg (850 lb)	936 Kg (2027 lb)	953 Kg (2095 lb)	1016 Kg (2232 lb)	1088 Kg (2391 lb)
	Power	Max: 5.5 kW Typical: 4.68 kW	Max: 6.5 kW Typical: 5.52 kW	Max: 7.9 kW Typical: 5.9kW Label: 14kW	Max: 10.4 kW Typical: 7.8 kW Label: 17.4 kW	Max: 15.4 kW Typical: 11.6 kW Label: 24.3 kW	Max: 21.2 kW Typ.: 15.9 kW Label: 31.1 kW
	Dimensions	Height: 1240 mm (49 in) / Depth: 1000 mm (39.4 in) / Width: 610 mm (24 in)		Height: 2.015 m (79.3 in) / Depth: 1.098 m (43.3 in) / Width: 0.644 m (25.4 in)			

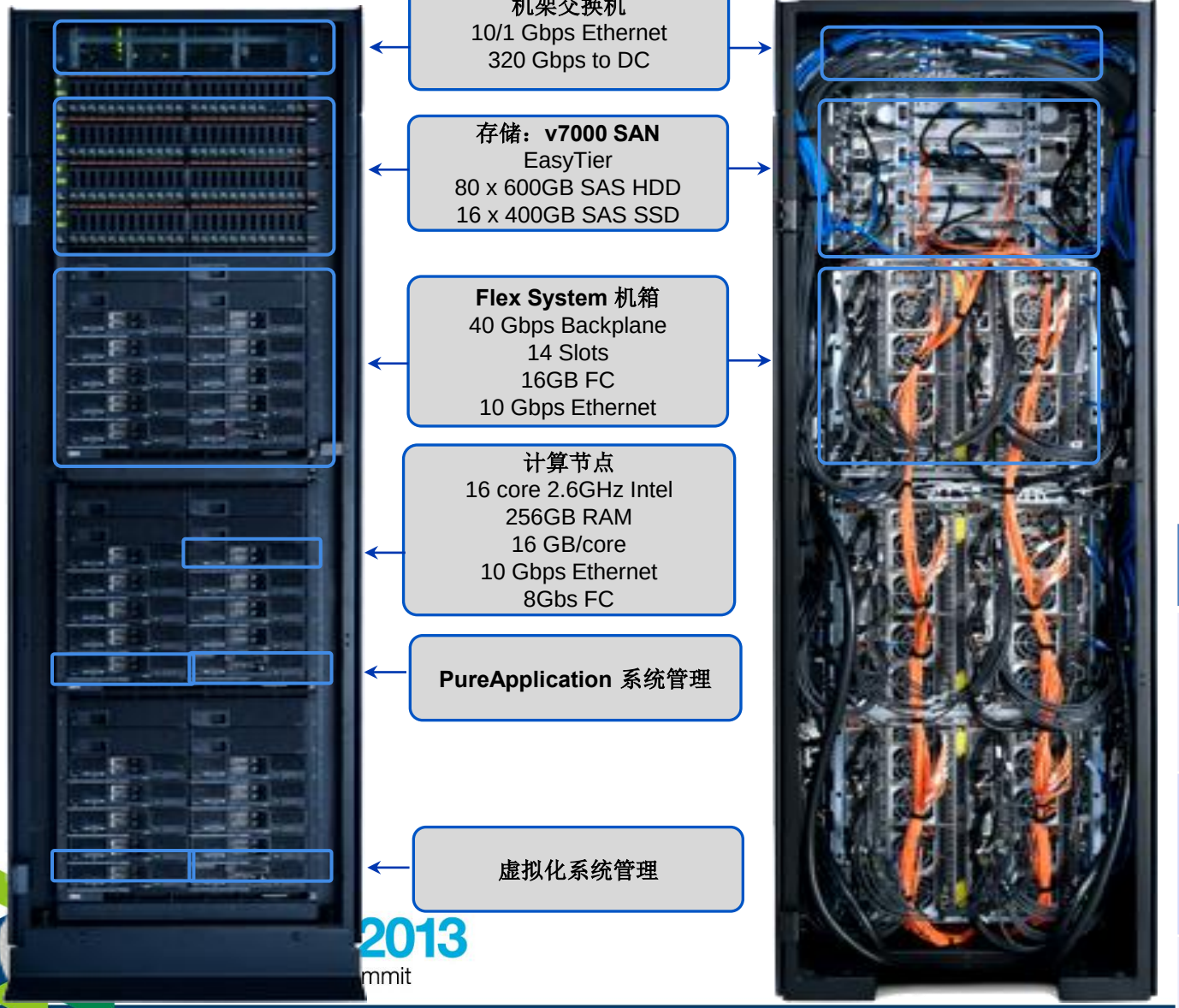
PureApplication System W1700: Pre-Optimized, Pre-Entitled Software

- "All you can eat" entitlement to run the following software on the full capacity of the purchased System
  - Virtualization hypervisor and virtualization management
  - Full stack monitoring (hardware, OS, entitled middleware)
  - Tooling for creating patterns
  - Virtual System Patterns:
    - IBM OS Image for Power Systems (AIX v6.1 Tech level 5 & AIX v7.1)
    - IBM WebSphere Application Server Hypervisor Edition v7 with IMP (WAS 7.0.0.21)
    - IBM WebSphere Application Server Hypervisor Edition v8 with IMP (WAS 8.0.0.2)
    - IBM WebSphere Application Server Hypervisor Edition v8.5 with IMP (WAS 8.5.0.0)
    - IBM DB2 9.7 FP5 Enterprise Server Edition HV*
    - IBM DB2 10.1 Enterprise Server Edition HV*
    - Automation Framework HV (for migrating applications)
    - IBM Mixed Language Application Modernization Pattern (for C & COBOL apps)
  - Virtual Application Patterns:
    - Java Pattern v1 (64-bit Java 7 SDK)
    - IBM Workload Deployer Pattern for Web Applications v1 (with WAS v7)
    - IBM Web Application Pattern v2 (with WAS v8)
    - IBM Transactional Database for Cloud v1.1 (with DB2 9.7 FP5)
    - IBM Data Mart for Cloud v1.1 (with DB2 9.7 FP5)

*DB2 ESE with options entitled:
- Storage Optimization
- Label-Based Access Control
- Optim Performance Manager

PureApplication System W1700		W1700-96	W1700-192	W1700-384	W1700-608
Compute	Processor	8 core, 3.61GHz Power7+			
	Compute Node	Quad Processor, 32-core, 512GB memory			
	Memory/Compute Node	512GB (8 2x16GB, 1066 MHz, DDR3, LP RDIMMS(1.35V))			
	Network cards/Compute Node	2 x Emulex 4-port 10GbE Network Adapter Mezz (Wildcat 2+2)			
	Fibre cards/Compute Node	2 x Qlogic 2-port 8Gb Fibre Channel Expansion Card (Ninja)			
	# Compute nodes	3	6	12	19
	# Cores	96	192	384	608
	Memory	1.5 TB	3.1 TB	6.1 TB	9.7 TB
	Solid State Drive (SSD)	16 x 400GB 2.5 in. SSD (E-MLC)			
	Hard Disk Drive (HDD)	80 x 600 GB 2.5 in. 10k HDD			
	Storage Controller	2 x IBM Storwize V7000 Disk System			
	Storage Expansion	2 x IBM Storwize V700 Storage Drawer			
Storage	Total Storage SSD	6.4 TB unformatted / 4.8 TB usable			
	Total Storage HDD	48.0 TB unformatted / 43.2 TB usable			
Network	Top of Rack Switches (TOR)	BLADE Network Technologies (BNT) TOR switches for Customer Data Center & Rack to Rack communications			
	Transceivers	Choice of: 10GbE Fibre, 1GbE Fibre or Copper			
Chassis	Network / Chassis	2 x COMPASS – BNT 10Gb			
	Fibre / Chassis	2 x Pharos FC – Brocade 48 port			
	Chassis	3 x Accipiter Chassis			
Power	Power Distribution Unit (PDU)	4 x 60A 3ph – North America / 4 x 32A 3ph – International			
Rack	Rack	2.0 M 19” Enterprise Rack			
Specs.	Weight	936 Kg (2027 lb)	953 Kg (2095 lb)	1016 Kg (2232 lb)	1088 Kg (2391 lb)
	Power	Max: 9.3 kW Typical: 8.7 kW	Max: 13.4 kW Typical: 12.4 kW	Max: 21.8 kW Typical: 20.0 kW	Max: 31.5 kW Typical: 28.8 kW
	Dimensions	Height: 2.015 m (79.3 in) / Depth: 1.098 m (43.3 in) / Width: 0.644 m (25.4 in)			

PureApplication 硬件配置



总计	
CPU 核	608 核
内存	9.7 TB
SSD	6.4