

# Announces Cloud on Power



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IBM Client Center*

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 **@trollnyrd**

  
**Power  
Systems**



**There is no cloud**  
it's just someone else's computer

# “ZAIUS”, the next Google machine fueled with IBM POWER9

April 2016, during OpenPOWER Summit 2016, Google announced a partnership with Rackspace to develop a new server platform, based on IBM Power9, code-named ZAIUS.

More information:

<http://www.nextplatform.com/2016/04/06/inside-future-google-rackspace-power9-system/>

[http://www.theregister.co.uk/2016/04/07/open\\_power\\_summit\\_power9/](http://www.theregister.co.uk/2016/04/07/open_power_summit_power9/)



OpenPOWER™

Google

**rackspace**  
the #1 managed cloud company

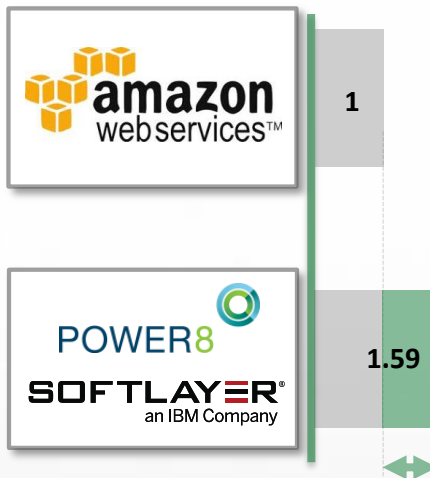
- 2x POWER9 CPU
- 32x DDR4 DIMM Slots
- 2x PCIe Gen4 x16 FHFL slots
- 1x PCIe Gen4 x16 HHHL slot
- 1x PCIe Gen4 x16 OCP Mez
- 1x M2 Sata Port
- 1x Sata Port
- 15x 2.5" SAS/SATA/NVME Slots
- BMC w/ GbE LOM
- “Diskless” Option

**ZAIUS 1.25 OU**

# POWER8 in SoftLayer is built for the Waitless World that demands a more efficient and reliable hybrid cloud



**1.59X more work at  
65% lower cost**



**Superior Cloud Economics** with **1.59X more users** per hour at **65% lower cost** per user per hour for LAMP application stack

**Designed for Data** with **1.4X more transactions** per second at **61% lower cost** per transaction for Database workloads

**Open Innovation** from OpenPOWER to build a more secure, efficient and reliable hybrid cloud with **2X faster per core performance**



WEB ▼

## DEDIBOX®



DEDIBOX® POWER 8

1.599,00 € HT/mois

Frais d'installation: 1.500,00 €

FONCTIONNALITÉS  
INCLUDES

- WOPR Special perform

[Voir les avis \(0\)](#)

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## teuto.net uses Ubuntu to bring IBM POWER8 to the Public Cloud

By Canonical on 9 June 2015



Deploy Big Data services  
the easy way



Discover the importance of flexibility  
in big data infrastructure automation.

[Register for webinar](#)

Sign up for email updates

Choose the topics you're interested in

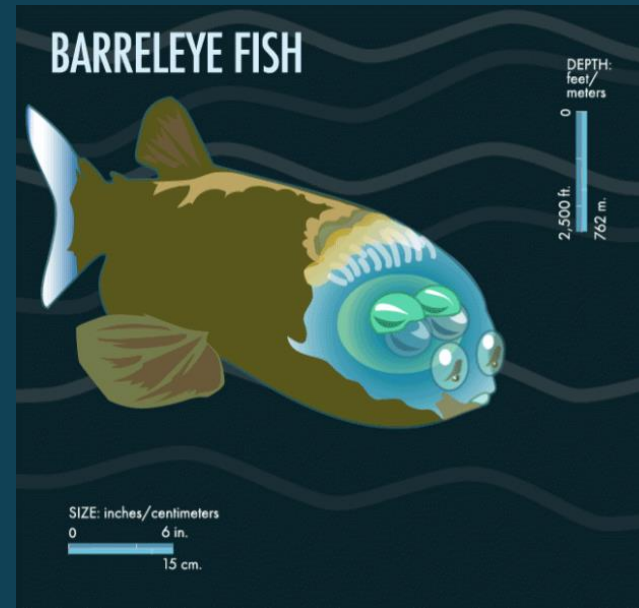
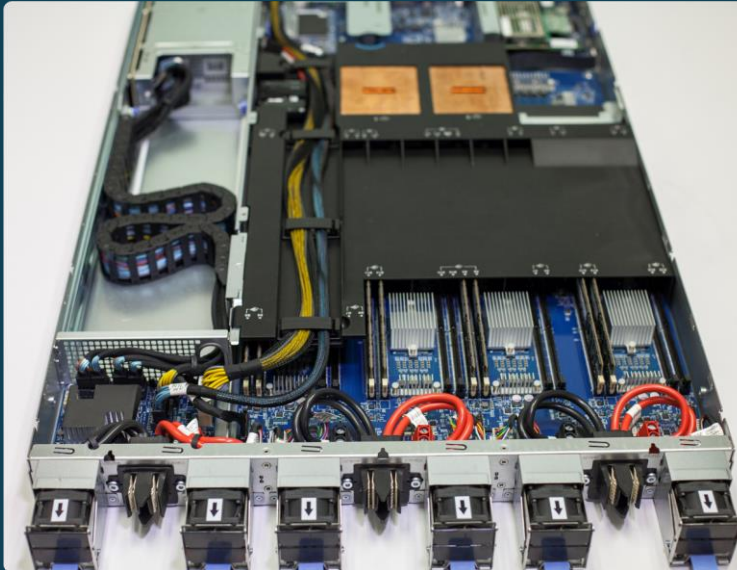
- ☒ Cloud and server
- ☐ Desktop
- ☐ Phone and tablet
- ☐ Things





Coming soon: Barreleye

In partnership with Avago, IBM,  
Mellanox, PMC & Samsung





Houston, we have a problem...



# OpenPOWER™ This is what a r-evolution looks like





**AIX | IBM i**  
ISVs and Middleware

**Linux**  
ISVs and Middleware

## IBM Power Systems

## Industry

Installed  
Base  
Legacy  
Mission  
critical  
needs

**Power Systems**

AIX

Linux

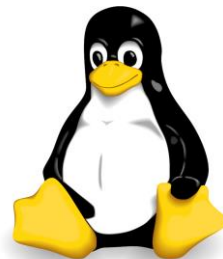
i for Business

**Ecosystem  
Innovation**

**OpenPOWER™**

**Linux on  
POWER8**

**IP Licensing  
and Chip  
Sales**

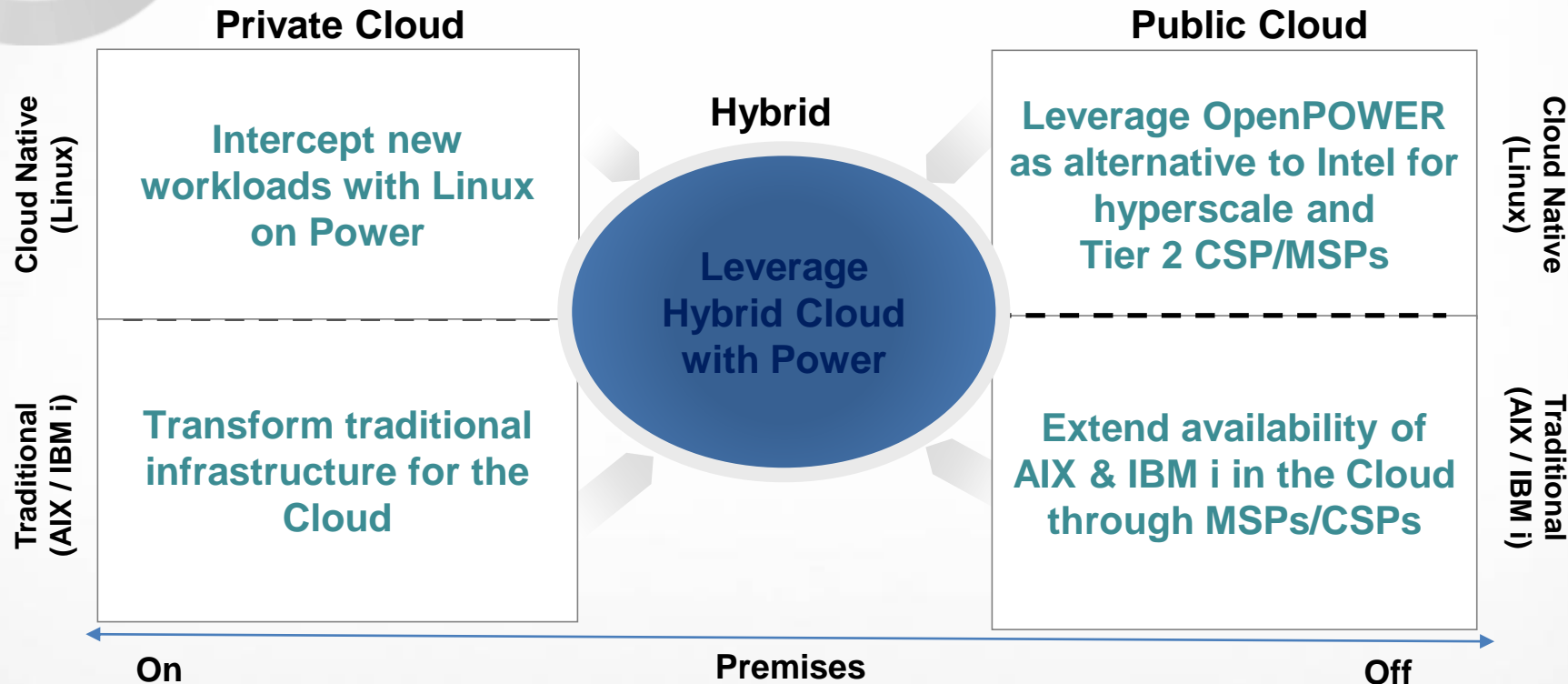


Agility  
Open  
Source  
Leading  
Edge

**POWER8  
Processor with**

**CAPI  
Technology**

## Power Cloud Offerings – *Hybrid cloud-ready solutions on scale up or scale out infrastructure for private and Service Provider clouds*



# IBM Power Systems Enterprise Cloud Offering (C-models)

*Modernize your Power infrastructure for the Cloud, get access to IBM Cloud for free and cut your current operating costs by 50%*

## On-Premises Cloud

**Transform** traditional infrastructure with automation, self-service and elastic consumption models



- OpenStack-based Cloud Management: enabling DevOps to Full production
- **Open source automation: installation and config. recipes**
- Flexible elastic private cloud capacity and consumption models
- **Cross Data Center Inventory and Performance Monitoring via the IBM Cloud**

## Hybrid Infrastructure

**Securely extend** to Public Cloud with rapid access to compute services and API integration

- Manage VMs across on and off-premises clouds with a single pane of glass (e.g., VMware vRealize)
- Securely connect traditional workloads with cloud-native apps (Power & API Connect, BlueMix)
- **Optional DR as a Service (GDR for Power)**
- **Free access and capacity flexibility with SoftLayer**
  - Free SoftLayer starter pack (12 server months)
  - Flexibility to run capacity On Premises or in SoftLayer

## Free Built-in Cloud Deployment Service Options

- Design for Cloud Provisioning and Automation
- Build for Infrastructure as a Service
- Build for Cloud Capacity Pools across Data Centers
- Design for Hybrid Cloud with BlueMix
- Deliver with automation for DevOps
- **Deliver with Database as a Service**

Note: Yellow text indicates new content in addition to packaging

Increasing business Options

PowerVC

**Standard Edition  
Advanced Virtualization  
Management**



## Manage Virtualization

- Simple UI and Setup
- Resize VMs and Migration
- Capture & Deploy VMs
- Policies for placement
- Manages PowerVM & PowerKVM

**Private Cloud  
Focused On Power**

**IBM Cloud  
PowerVC  
Manager**

**New**



## Basic Cloud

- Self-Service Portal with Process Automation
- Catalog of VMs and Images
- Open access to OpenStack APIs
- Metering Data
- Private Cloud

**Hybrid Cloud Power Focus  
+ Heterogeneous**

*ISV Solutions – VMware vRA*

**IBM Cloud Orchestrator**

**Cloud as a Service**

**IBM Cloud Managed Service  
New IBM BlueBox (PowerKVM)**

## Advanced Cloud

- Self-service Portal with image catalog
- Capacity Management & Advanced usage metering/accounting
- Virtual system and application patterns
- Runbook Automation
- Manages Hybrid Private/Public Clouds

Increasing Automation & Function

# OpenStack-based Cloud Management for Power Systems

*OpenStack: integrated, easy to use, and simple to deploy with PowerVC*

## Manage Virtualization

- Simple UI and Setup
- Resize VMs and Migration
- Capture & Deploy VMs
- Policies for placement
- Manages up to 5,000 VMs & 200 hosts

## Cloud Management

- Self-Service Portal with Process Automation
- Catalog of VMs and Images
- Open access to OpenStack APIs
- Metering Data

## Advanced Cloud (Optional)

- Self-Service Portal with image catalog
- Capacity Management & Advanced usage metering/accounting
- Advanced Orchestration Patterns or Blueprints



Simple  
upgrade



## IBM and Other Vendors Options

- IBM Cloud Orchestrator
- Urban Code Deploy
- VMware vRealize Automation

Increasing Automation & Function



# Open source cloud automation and configuration tooling for AIX

IBM expanded commitment to **keep key packages updated** and provide timely **security fixes** – enabling clients to leverage open source skills

## Cloud Automation

**chef** automation for configuration, deployment, and management. Chef-client for AIX is now enhanced with new recipes in the AIX cookbook.  
**<https://supermarket.chef.io/cookbooks/aix/>**



**yum** package management now available, with repository access from both ftp and https protocols. rpm is also updated to allow automatic dependency discovery.



***New ability to automate installation and updates.***

**cloud-init** and all dependencies now available in the repository, and support for licensed AIX users.  
***Easy virtual machine customization for the cloud.***



## Development Packages and Utilities

Languages, Compiler, debugger, etc.

### Open source package repository for AIX

<http://www.ibm.com/systems/power/software/aix/linux/toolbox/>

**80+** packages  
updated this year

**github** community to create and collaborate on open source projects for AIX

**<http://github.org/aioxss>**

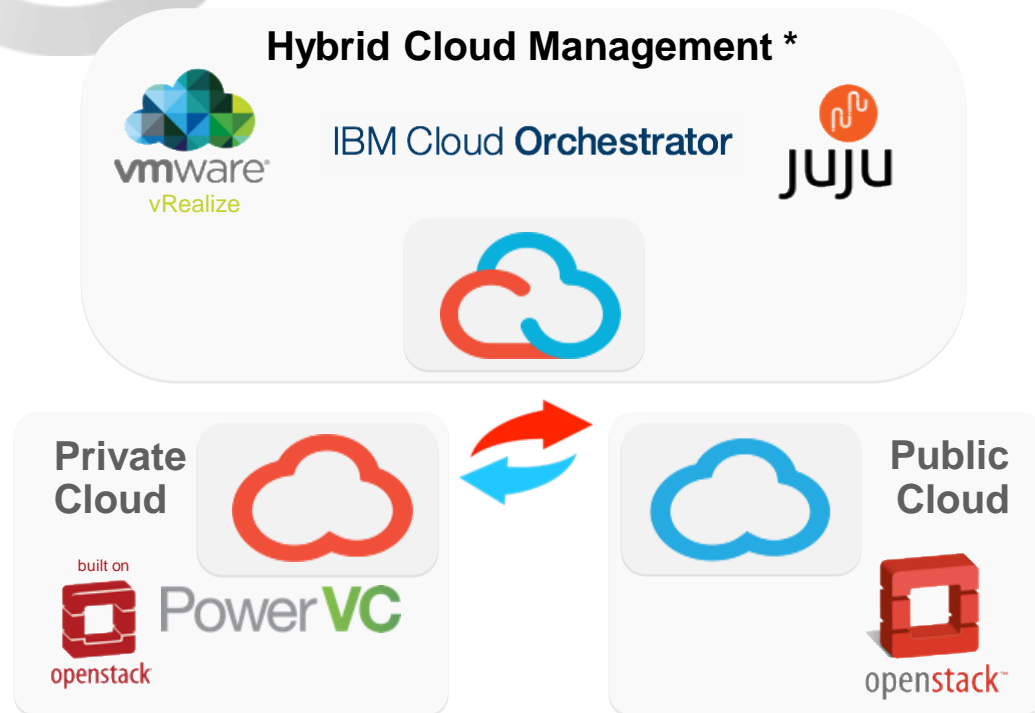


**node.js** popular event driven Javascript, optimized for Power Systems on AIX  
**<https://nodejs.org/en/download/>**



# Integrated Management – Leveraging OpenStack APIs

*For heterogeneous management across on and off-premises clouds*



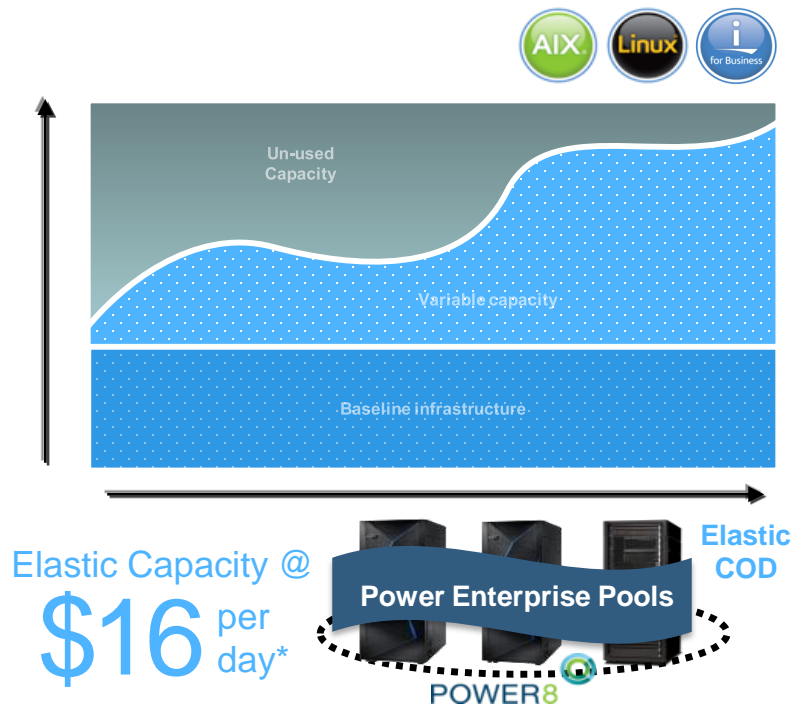
- Placement for optimized performance based on workloads characteristics and needs
- Standards based infrastructure management for on and off premises resources
- Container and VM mobility
- Data and compute co-location for optimized performance

\* Available today from IBM Cloud Orchestrator, VMware Services, or other 3<sup>rd</sup> party providers

# On-premises Private Cloud Capacity as a Service

*The flexibility and cost of a public cloud in the security and convenience of your data center*

- Build **the most economically efficient** capacity consumption model based on a client's business needs
- **Flexible acquisition strategy** that addresses both CapEx and OpEx requirements
- Deploy projects and workloads by converting and upgrading existing capacity. **No need to acquire infrastructure on a project basis**; flexible capacity is available day one
- **Instant elastic capacity** to accelerate deployment of new services and dynamically respond to business changes
  - Non-disruptive capacity growth as your business grows
  - Manage periodic spikes in demand with Elastic COD
  - Insurance against unexpected growth
- **Move capacity within your enterprise**: between systems and across data centers



\* buys one core of POWER8 performance - a 4 GHz processor core & 8GB of memory on an IBM Power E870 running AIX using *Elastic Capacity on Demand*.

## IBM HMC Apps as a Service

*Cloud-based micro-services that can be accessed securely, anytime, anywhere for your complete enterprise*

As data centers scale out and up, there's an increasing need for a complete view of the infrastructure.



### Inventory Aggregation

- Power Systems, HMCs, LPARs, etc.
- Health and state
- Geo-tagging

### Performance Monitoring

- Aggregated view
- Threshold alerting



**With a roadmap to include features like:**

- Predictive trends in performance and utilization
- Capacity On Demand compliance monitoring and billing
- Visual topology
- Capacity planning

# Apps Aligned with Customer use cases and needs

## Inventory Aggregation



- View all Power Systems, HMCs, LPARs, etc. across your entire enterprise
- See basic health & state
- Resource grouping
- Hardware inventory

## Performance Monitoring



- Aggregated performance views across your Power enterprise
- Energy monitoring
- Threshold alerting

## Patch Management



- Patch compliance reports, showing what firmware, HMC, NovaLink, VIOS, and OS updates are missing
- Scheduled maintenance plan management

## Logging & Auditing



- Log aggregation
- Telemetry

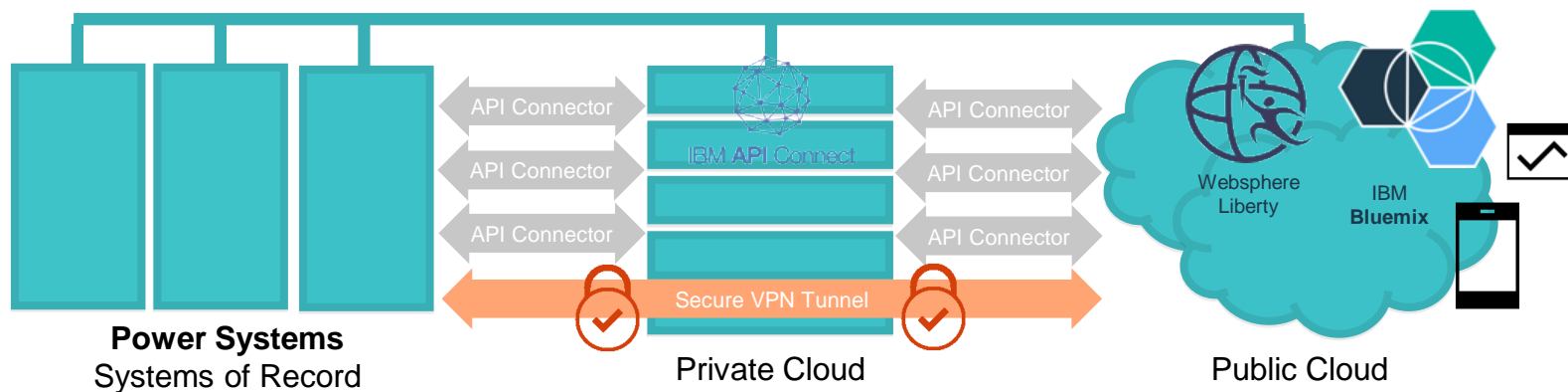


## Hybrid Cloud is the New Norm

9 out of 10

front runners say hybrid cloud gives them greater ROI than either an all-traditional or all-cloud environment

- Centrally manage private, public, or dedicated cloud resources with a **single management tool**
- **Securely connect** traditional workloads with cloud-native apps (SoE-SoR Integration)
- **Build and deploy applications** quickly with optimized utilization of resources
- Leverage off-premises resources for **disaster recovery in the cloud**
- Opportunistic use of public cloud for **flexible capacity**



## Power Systems Connect to Cloud\*

*Quickly, easily, and safely connect core business data to born-on-the-cloud mobile applications and services*

**Entitles customers to the following offerings:**



### **IBM Connect to Cloud\*\***

Enterprises currently using IBM's on-premises WAS software are entitled to a suite of Connector services for the remainder of 2016



### **IBM Cloud Starter Pack**

Customer is entitled to one year of a POWER8 Linux Bare Metal system and related services



### **Bluemix Driveway for Power**

1.5 day event for Power developers to learn about API Connector Services Starter session to prep for Bluemix Garage



### **Bluemix Design Workshop**

Get your hybrid cloud jump-started with a Bluemix Design Services workshop to blueprint Bluemix integration services

\*Available through December 31, 2016 for customers who purchase a POWER Scale Up System

\*\* Available at no charge through December 31, 2016, See [Connect Offering Cloud Campaign](#) page for specific program pre-requisites

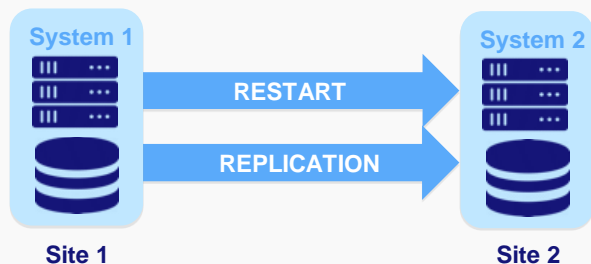
# Geographically Dispersed Resiliency for Power

## Disaster Recovery Made Simple

**DRaaS in the IBM cloud provides** Automated Disaster Recovery management, Economics of eliminating redundant software resources, and is Easy to deploy

### GDR for Power (Client datacenters)

- Automates disaster recovery operations
- Restart VMs at a secondary site
- Single point of control for ease of management
- Co-exists with PowerHA, PowerVC and LPM environments
- E870/E880 capacity back up (CBU) for significant savings

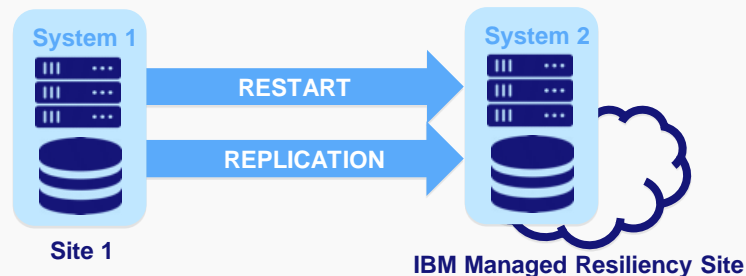


Support for heterogeneous guest operating systems:  
AIX, RedHat, SUSE, Ubuntu (IBM i 2017)

EMC Storage support initially, additional storage options in 2017

### IBM DRaaS (IBM hosted, available in 2017)

- IBM managed and/or hosted resiliency services
- Reduce total cost of ownership by reducing infrastructure costs
- Faster, agile recovery, using a managed cloud in your private, hybrid or public cloud environment
- Continuous monitoring by IBM insures that your disaster recovery environment is always ready



All plans subject to change at the discretion of IBM



## Accelerate your cloud transformation

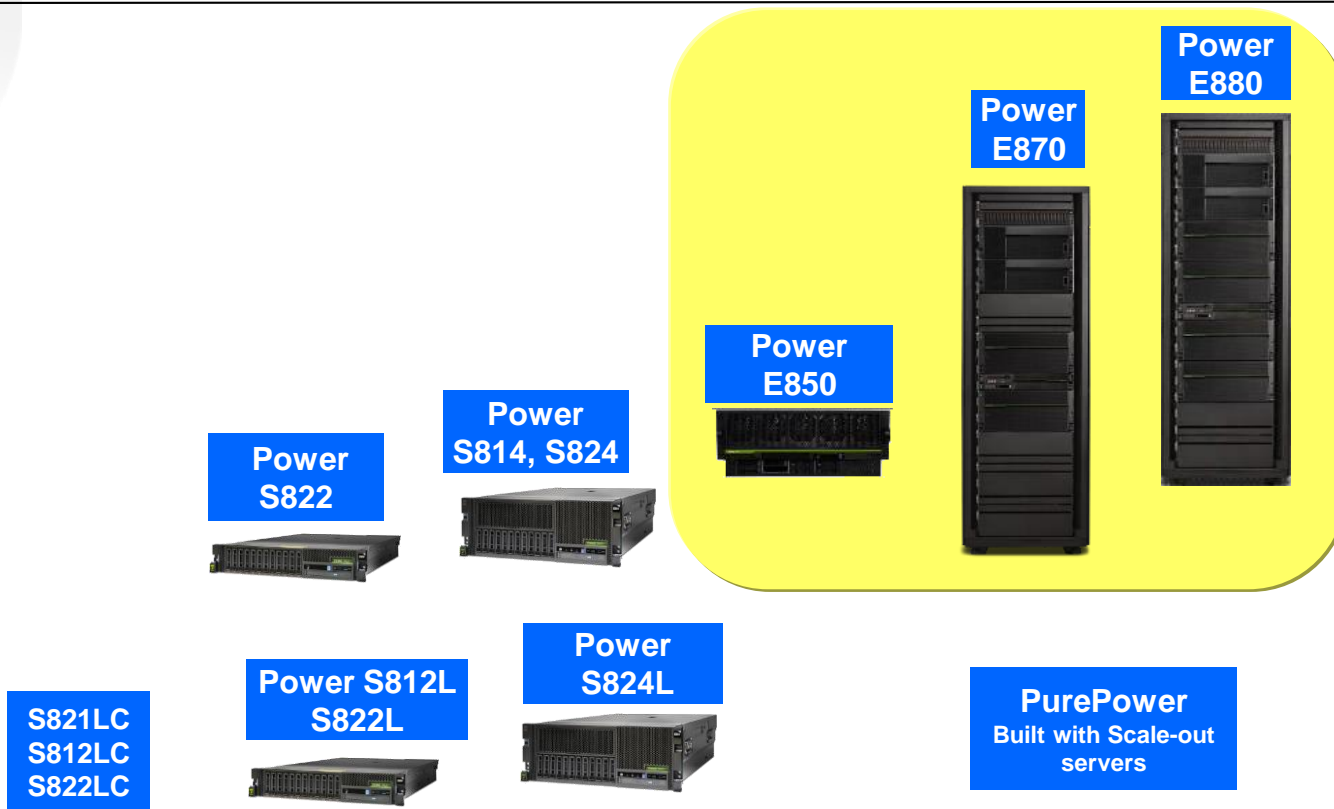
- Adaptable to your architecture: runs AIX, IBM i and Linux workloads
- Supports Private and Hybrid or On-prem and off-prem clouds
- Built-in OpenStack based Management
- New IBM Power to Cloud Rewards provides Complementary Cloud deployment services

## Reduce Total Cost of Ownership

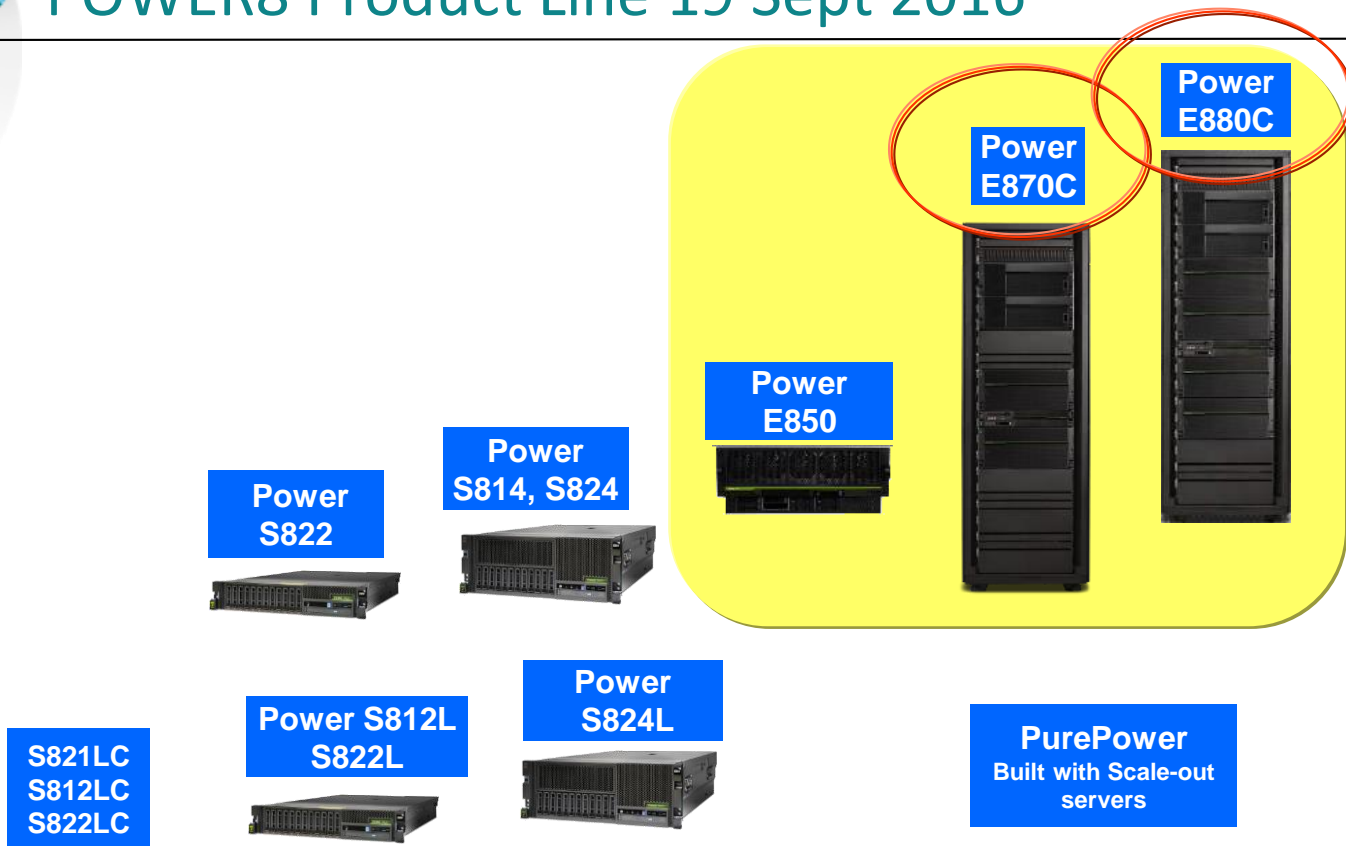
- New capacity consumption pricing model
- 1.7 x Performance guarantee per core vs. POWER7
- Cut operating costs by as much as 50% (over max 5 years)

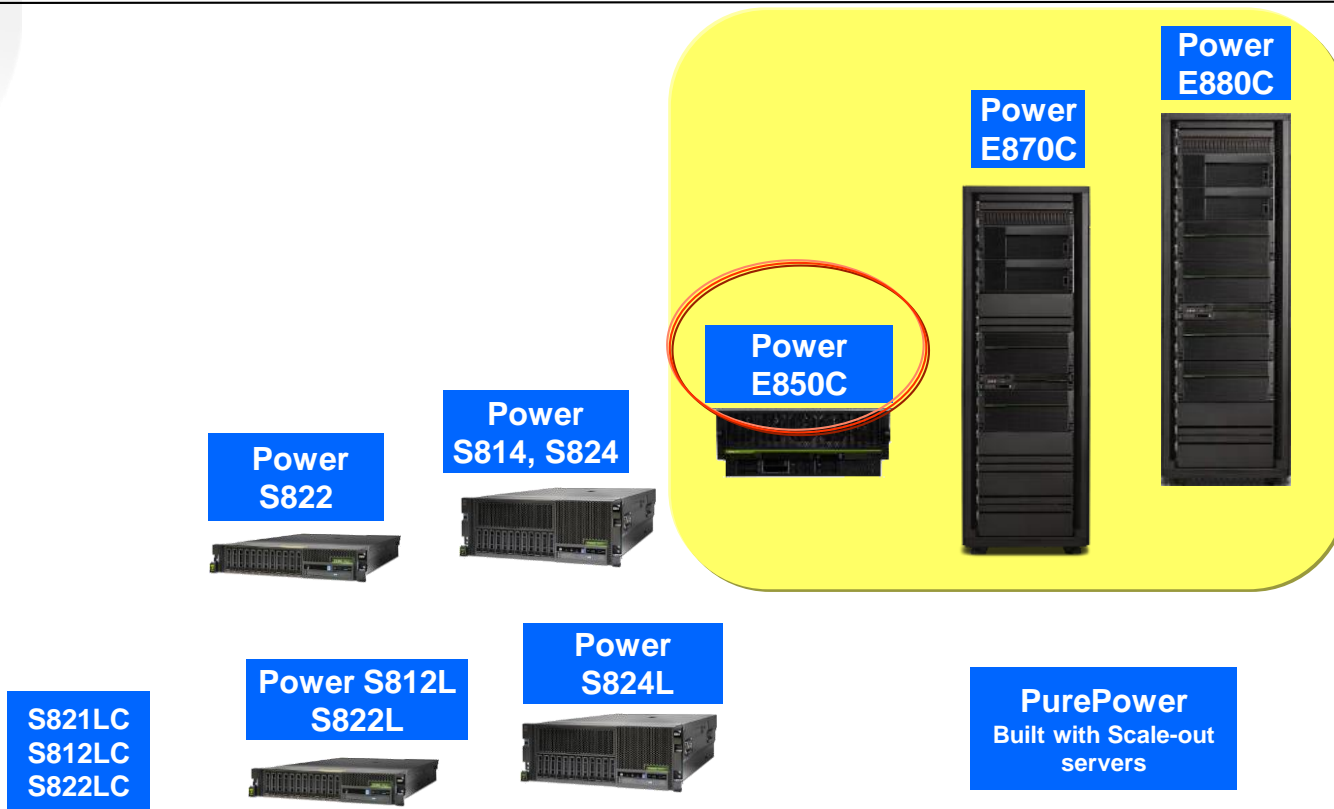


**Cut operating costs by as much as 50% (over max 5 years)**











# Power Enterprise Cloud Models – What's Included

## E850

## E850C

## E870, E880

## E870C, E880C

Starter Pack for  
SoftLayer  
IBM Cloud HMC apps

Starter Pack for  
SoftLayer  
IBM Cloud HMC apps

IBM Cloud PowerVC  
Manager Lic &  
SWMA (1yr) 5765-  
VCC

IBM Cloud PowerVC  
Manager Lic &  
SWMA (1yr) 5765-  
VCC

IBM Cloud PowerVC  
Manager Lic &  
SWMA (1yr) 5765-  
VCC

IBM Cloud PowerVC  
Manager Lic &  
SWMA (1yr) 5765-  
VCC

IBM Power-to-Cloud  
Rewards

PowerCare

IBM Power-to-Cloud  
Rewards

PowerVM SWMA  
1 or 3yr – 57xx-xxx

PowerVM SWMA  
1 or 3yr – 57xx-xxx

PowerVM SWMA  
1 or 3yr – 57xx-xxx

PowerVM SWMA  
1 or 3yr – 57xx-xxx

PowerVM License  
5765-PVE

PowerVM License  
5765-PVE

PowerVM License  
5765-PVE

PowerVM License  
5765-PVE

Power E850  
8408-E8E  
3y 24x7 Services  
included

Power E850  
8408-**44E**  
3y 24x7 Services  
included

Power E870, E880  
9119-MME/MHE  
1y 24x7 HWMA

Power E870/E880  
**9080**-MME/MHE  
1y 24x7 HWMA



= Base, included in HW\$



= Part of base offering, separately priced



= Optional product

# The Power E850C ... the most agile and economically efficient 4-socket system in the market

**Designed for business agility – rapidly adjust to demands of a changing business climate with flexible capacity and guaranteed utilization**



Permanent  
Elastic (on/off)

PowerVM

POWER8



**Increase efficiency and reduce operations costs by consolidating workloads and leveraging flexible growth**

- High-performance, POWER8 4-socket system with up to 4 TB \*
- Compact, space & energy-efficient 4U form factor
- Flexible Processor and I/O growth  
(2 to 4 sockets & up to 4 PCIe I/O Expansion drawers)

**Enhanced resiliency and serviceability**

- Hot Plug Disk and PCIe adapters
- Redundant, hot swap power supplies and cooling
- Increased resiliency with phase redundant, sparing power regulators for processors, memory, disk and I/O

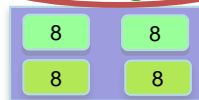
- 24 to 48 active cores at 3.65 GHz
- 20 to 40 active cores at 3.95 GHz
- 16 to 32 active cores at 4.22 GHz
- Small Software tier
- 3 years of service\*\*

**NEW!**

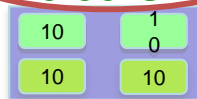


\*Statement of Direction for 4TB of memory on Power E850 All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

\*\* Service terms varies by country

**3.7 GHz**

16 – 32 core system  
2, 3 or 4 sockets  
8-core processor  
modules

**3.35 GHz**

20 – 40 core system  
2, 3 or 4 sockets  
10-core processor  
modules

**3.0 GHz**

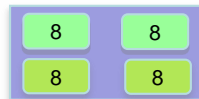
24 – 48 core system  
2, 3 or 4 sockets  
12-core processor  
modules

Min active cores = **50%** of system max  
“System max” = 32-, 40- or 48-cores

Plus flexibility of Capacity on Demand  
Plus can leverage price performance of Power IFL

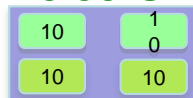


**4.22 GHz**



16 – 32 core system  
2, 3 or 4 sockets  
8-core processor  
modules

**3.95 GHz**



20 – 40 core system  
2, 3 or 4 sockets  
10-core processor  
modules

**3.65 GHz**



24 – 48 core system  
2, 3 or 4 sockets  
12-core processor  
modules

Min active cores = **25%** of system max  
“System max” = 32-, 40- or 48-cores

Plus flexibility of Capacity on Demand  
Plus can leverage price performance of Power IFL

# Migrate to POWER8 and save over 50% within 3 years

*Over 2X more performance/core*



**POWER7 770**  
64 cores @ 3.1 GHz  
1 TB Memory  
rPerf = 579  
rPerf/core = 9.2



**POWER8 E850C**  
32 cores @ 3.95 GHz  
1 TB Memory, I/O\*\*  
rPerf = 613  
rPerf/core = 19.16

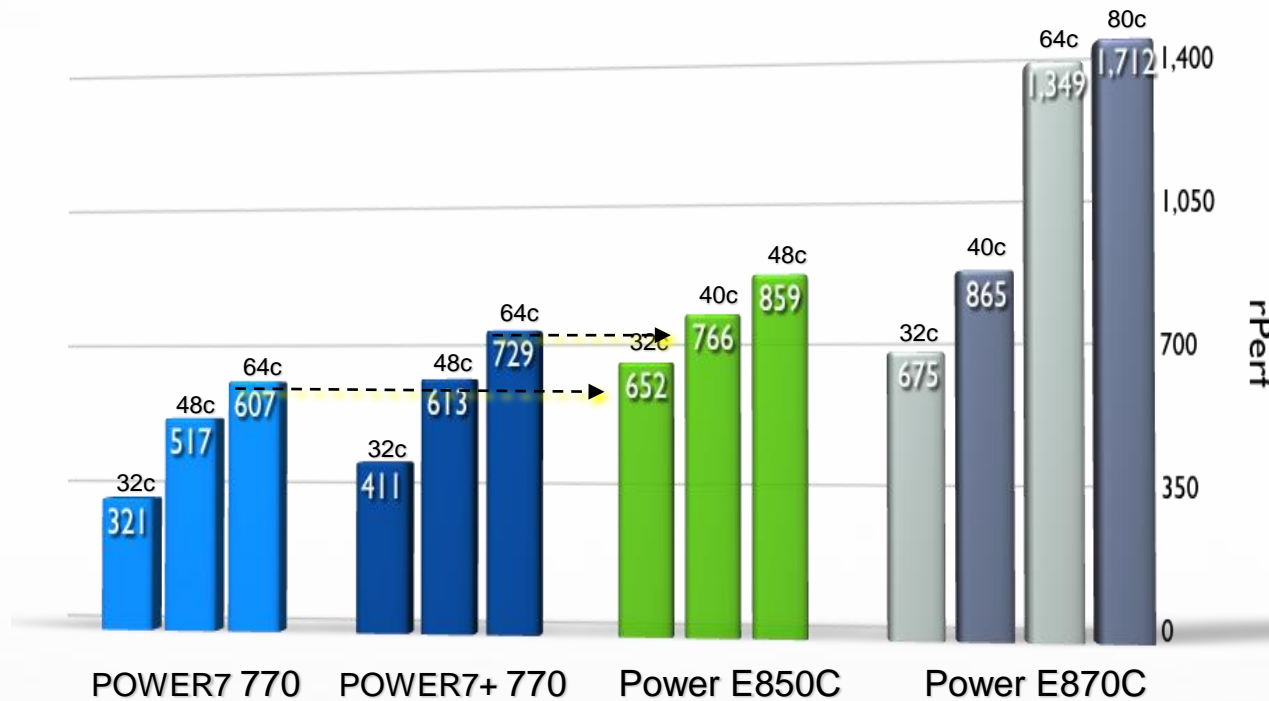
	\$US List
Hardware List	\$ 0K
Software License <sup>1</sup> List	\$ 0K
HW Maint.(3yr 24x7) List	\$ 230K
SW Maint. List (3yr 24x7 <i>Medium</i> )	\$ 190K
Total <b>Net</b> ( @ 25% Discount)	<b>\$315K</b>

<sup>1</sup>AIX Enterprise Edition, PowerVM Enterprise Edition

	\$US List
Hardware List	\$161K
Software License <sup>1</sup> (transfer AIX) List	\$ 0K
HW Maint. List ( <i>3yr 24x7 included</i> )	<i>Included</i>
SW Maint. List (3yr 24x7 <i>Small</i> )	\$ 36K
Total <b>Net</b> ( @ 20% Discount)	<b>\$157K</b>

\*\*I/O includes the split storage backplane, 4 x 300GB  
15K RPM SAS SFF drives, 3 x PCIe3 2-port 16GB Fibre,  
4 x PCIe3 4-port 10Gb SR Ethernet

*For IBM & Business Partner Education use only. Prices are for illustration only and will vary based upon client-specific configuration of cores, memory & I/O installed & purchased.*



**Power E870:**

- 8 to 80 cores @ 4.19 GHz
- 8 to 64 cores @ 4.0 GHz
- 256 to 16TB Memory
- 1 or 2 nodes per system



Add 1Q2016

**Power E880:**

- 8 to 128 cores @ 4.35 GHz
- 8 to 160 cores @ 4.19 GHz
- 8 to 192 cores @ 4.02 GHz
- 256 to 32TB Memory
- 1 to 4 nodes per system





### Power E870:

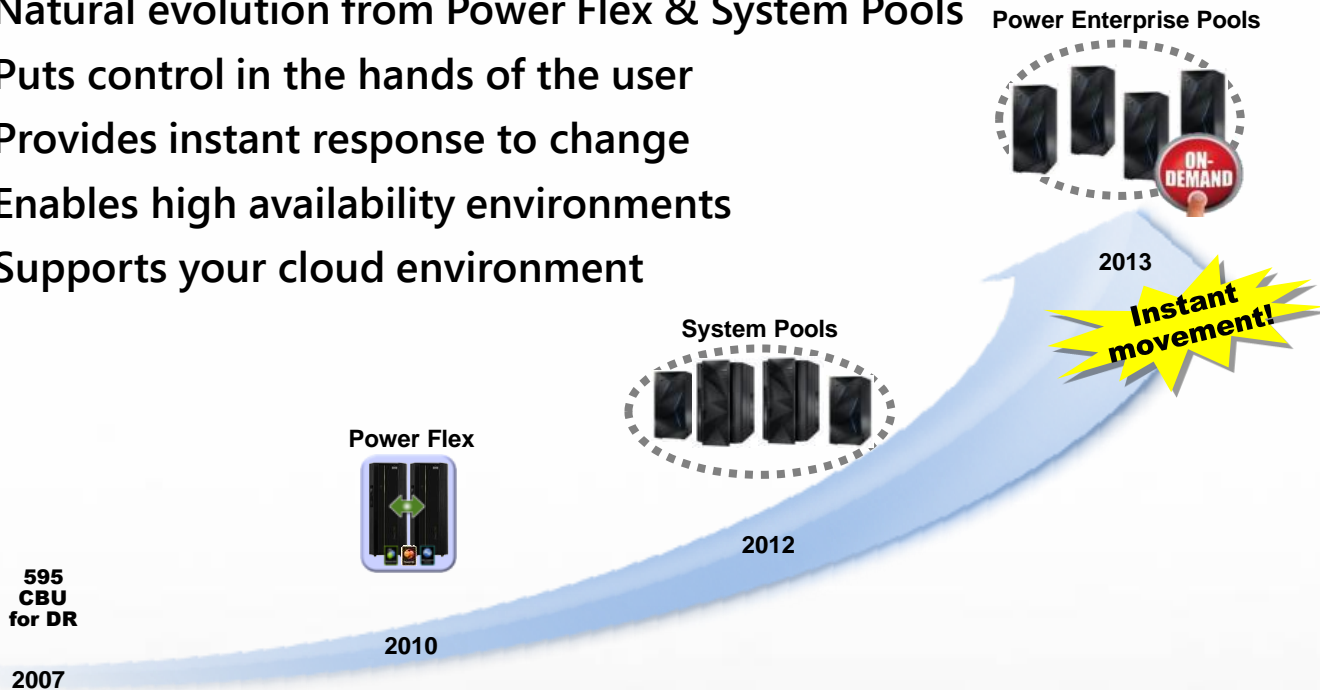
- 
- 8 to 64 cores @ 4.02 GHz
- 256 to 16TB Memory
- 1 or 2 nodes per system



### Power E880:

- 8 to 128 cores @ 4.35 GHz
- 8 to 160 cores @ 4.19 GHz
- 8 to 192 cores @ 4.02 GHz
- 256 to 32TB Memory
- 1 to 4 nodes per system

- Reflects years of experience
- Natural evolution from Power Flex & System Pools
- Puts control in the hands of the user
- Provides instant response to change
- Enables high availability environments
- Supports your cloud environment



***Power Enterprise Pools enable you to move processor and memory activations within a defined pool of systems, at your convenience.***

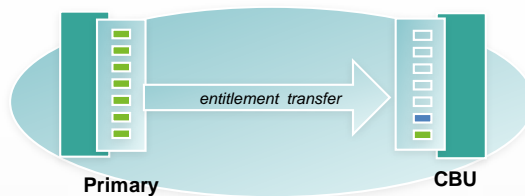


**Instant  
Movement !**

- ❖ **Mobile activations for both processor and memory**
- ❖ **Mobile activations can be used for systems within the same pool**
  - *One pool type for Power E880 & POWER7+ 780 & Power 795 systems*
  - *One pool type for Power E870 & POWER7+ 770 systems*
  - ***Power E880C and E870C can participate in either of these pools***
- ❖ **Activations can be moved at any time by the user without contacting IBM**
- ❖ **Movement of activations is instant, dynamic and non-disruptive**



- New offering replaces the Capacity Backup for PowerHA offering
  - More flexible than previous offering
  - Eliminates many of the configuration requirements
  - Provides support for the Power E870 and new Cloud models
  - Provides lower hardware and hardware maintenance pricing for clients looking for HA/DR solution
  - Fast failover to **active** memory on the CBU
    - To add 256GB of memory to the partition it can take 3 or 4 minutes, the more being added the longer the time



# New and Enhanced solutions for all your HA and DR needs

## Disaster Recovery Made Simple with GDR for Power

- Automates disaster recovery operations
- Restart VMs at a secondary site
- Single point of control for ease of management



Support for heterogeneous guest operating systems:  
AIX, RedHat, SUSE, Ubuntu (IBM i 2017)

EMC Storage support initially, additional storage options in 2017

## Automated VM Remote Restart with PowerVC 2.2.5

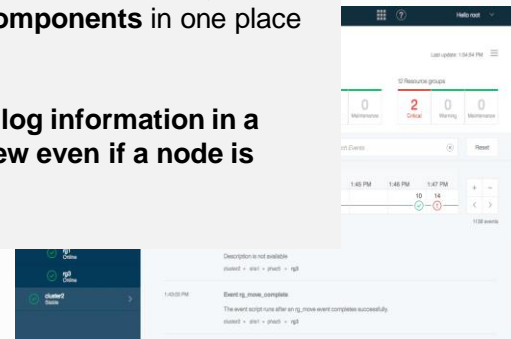
- Fast recovery if system fails to local, healthy system**
- Supported on PowerVM (NovaLink and HMC)
- Can be enabled/disabled at host group, host and VM level
- VMs are placed based on the host group's placement policy
- Works on AIX, Linux and IBM i VMs; requires Power 8

## New User Experience for PowerHA

*Designed interactively with customers*



- View the health and status of physical and virtual HA components** in one place and in real time.
- Access relevant log information in a single filtered view** even if a node is down.



## IBM Cloud Storage Solutions for i

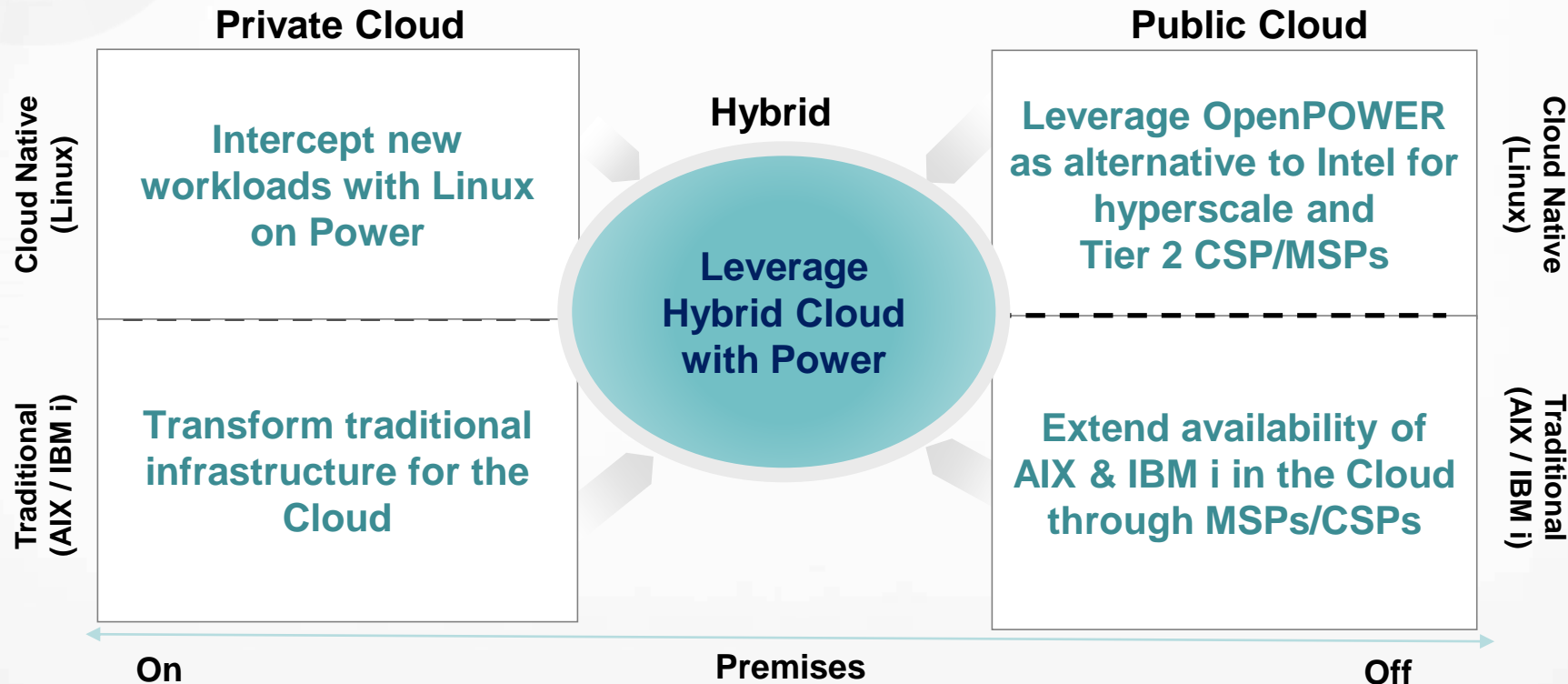
- Automates** archiving and backup operations for Entry client with < 1 TB of storage
- Object based storage to a cloud**
- Initial Cloud providers are **SoftLayer** or MSPs supporting the SoftLayer interface



TCP/IP

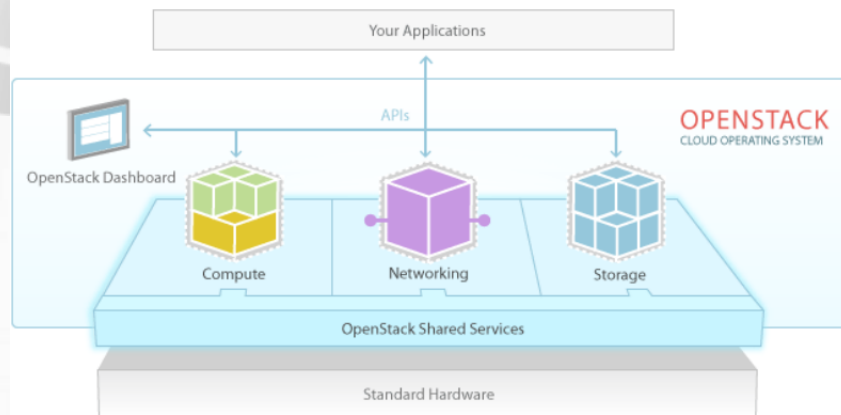
SoftLayer, Private Cloud

# Power Cloud Offerings – *Hybrid cloud-ready solutions on scale up or scale out infrastructure for private and Service Provider clouds*



# Questions ?





Rapid provisioning and management of VMs/LPARs on Power Systems using an intuitive Web interface

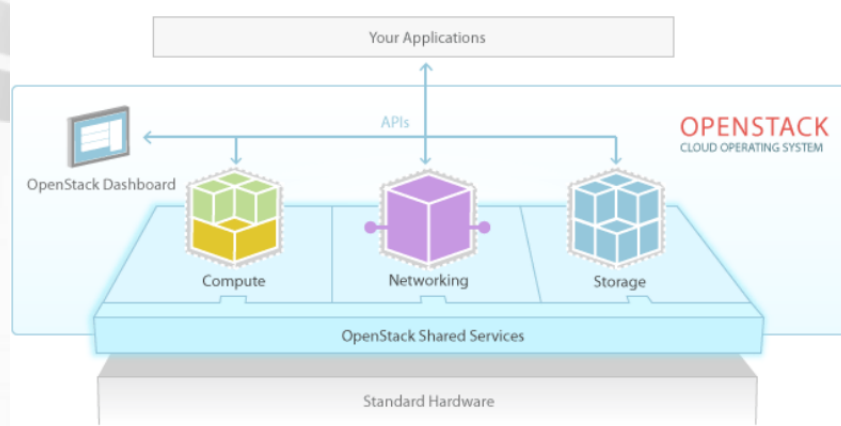
## Base provisioning and virtualization

- Rapid LPAR provisioning and deprovisioning
- Storage provisioning
- Virtual network configuration
- Physical and virtual resource discovery
- LPAR resize (dynamic LPAR changes)
- LPAR migration (Live Partition Mobility)
- Host Maintenance Mode
- Image capture
- Image repository and authentication services

## Advanced capabilities

- Compute templates (“t-shirt sizes”)
- Storage templates
- Storage Connectivity Groups
- Host Groups
- Placement policies
- Collocation rules
- SAN volume create/delete
- Remote restart
- Switched HMC support
- Dynamic Resource Optimization (DRO)





Self-service entry cloud solution

## Capabilities

- Self-service portal
- Projects
- Image templates
- Approvals
- Metering

Plus all PowerVC Standard Edition Capabilities

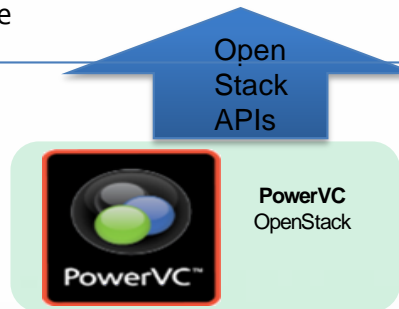


# Power Systems & Cloud using PowerVC

Orchestration  
Cloud Management



Automation & Virtualization  
Management PowerVC



- ✓ Improve resource utilization to reduce capital expense and power consumption
- ✓ Increase agility and execution to quickly respond to changing business requirements
  - ✓ Increase IT productivity and responsiveness
  - ✓ Manage scalability without adding complexity
  - ✓ Dynamically adjusts workloads to ease burden on systems management

Managed-Through  
Components  
+  
Managed Servers

