First, a taxonomy
Traditional Enterprise Management Stack

Cloud Orchestration Solutions

- Build Power Systems private clouds
- Quickly capture and deploy VMs
- Virtual machine resiliency and more...

Cloud and Virtualization Management

- OpenStack solutions

Platform Management

- PowerVM infrastructure configuration and management
- Hardware and firmware configuration
- Service, support and update management

Enterprise Power

- HMC focus going forward

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Cloud Management Stack

- Cloud Orchestration Solutions
  - VMware vRealize
  - IBM Cloud private
  - Terraform
  - LVM

Cloud and Virtualization Management
- Build Power Systems private clouds
- Quickly capture and deploy VMs
- Virtual machine resiliency and more...

OpenStack-aligned Management
- Alternate OpenStack solutions

IBM PowerVC

Enterprise Power
- OpenPOWER
- KVM
- OpenStack
- vRealize
- IBM Cloud private
- Terraform
- LVM

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Power Systems Cloud Management Stacks
IBM Cloud Private (ICP)

Best Price-Performance Container Cloud for ‘Open Centric’ Clients
- ISV Workloads
  - Open Source Workloads
  - IBM MW Workloads
  - ICP Core Platform and Services

Easiest route for existing clients to add/Modernize Apps with Cloud Native
- ISV Workloads
  - Open Source Workloads
  - IBM MW Workloads
  - ICP Core Platform and Services

Fastest route to an Integrated, Easy to Operate Cloud with Containers
- ISV Workloads
  - Open Source Workloads
  - IBM MW Workloads
  - ICP Core Platform and Services

IaaS Integration:
- At GA User Manually Provisions VM’s and then launches ICP Installer
- Dec Target to Integrate ICP/CAM to IaaS for auto install and Scaling via ICP GUI
  - Nutanix
  - PowerVC
  - Openstack/KVM TBD

Install/Manage
- Power IaaS – Openstack/KVM, Redhat
- Openpower LC

Install/Manage
- Power IaaS – PowerVC
- Enterprise Power Scale-Up and Scale Out

Install/Manage
- Power IaaS – Nutanix
- Nutanix Models of Openpower LC
Icon Roadmaps
NPS & Enhanced UI
Client Experience Transformation Through Net Promoter Score (NPS)

- IBM is partnering with Medallia, best in class in helping manage client experience feedback.
- Medallia has helped companies including Apple, Citigroup, Delta Airlines, GE Healthcare, Marriott Hotels, Mercedes Benz, Toyota, and hundreds more.

A catalyst for change includes a new digital client experience management platform, powered by Medallia, designed to gather feedback where it matters most - at the point where clients interact with IBM.

Clients will see short, more targeted surveys across multiple touchpoints, and across a class of users – IT, Developers, Data Scientists, DBAs.

Feedback is immediately routed to IBMers who drive action and close the loop with the client – triggering new ways of working.
New HMC Post-Login NPS Survey – R8.7.0 SP1

First feedback prompt at 30 days after initial login
Subsequent prompts every 180 days
Timer persisted on HMCs
Question / Comments? Contact Charles Thiel (cthiel@us.ibm.com)
PowerVM Simplification Enhancements

- Setup Virtualization Environment
- Provision Virtual Machines
- Monitor Virtual Environment
- Ongoing Performance and Capacity Planning
- Serviceability

**Simplified Deployment of Virtualization Infrastructure using Templates**
- System and Partition "starter" templates can be easily tailored to customer's environment
- Deploy System Template wizard guides user through simple set up to reduce time to value
- Capture function saves existing configurations as a Template

**Simplified Virtualization Management and Partition Provisioning**
- Single point of management for all PowerVM configuration, including VIOS
- Integrated virtual I/O management for quicker virtual machine provisioning
- One-touch VIOS deployment

**Integrated Performance & Capacity Metrics**
- Performance dashboard for quick visualization of system and partition capacity metrics
- Custom sample rates and historic data for performance trend views
- Virtual I/O performance metrics for easy monitoring of virtual environment status / health

**Full PowerVM REST-API**
- Use-case driven programmatic APIs to enable Cloud Solutions
- Provide access to all PowerVM function, including the VIOS
- Provide access to PowerVM performance and capacity metrics

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Enhanced UI – Battle for Hearts and Minds!

HMC V8R860 SP1 - Superb
I've updated a couple of HMCs to SP1 and I have to say it’s very good.

The new login screen is very funky and I like the way it defaults to Enhanced GUI but allows the Luddites to easily change to Classic.

The experience is smoother and faster and makes the Enhanced GUI much more usable. No going back to Classic now.

For 12 months, I've only used HMC Enhanced+ GUI
Now with 860+ it is excellent & fast
Classic view=good in its day but now so old & clunky!
Enhanced UI Roadmap

HMC V8 R8.2.0
Tech Preview

HMC V8 R8.4.0
Storage Topology
SSP Tiers & Failure Groups

HMC V8 R8.5.0
SRIOV & Virtual NIC
topology diagrams
Tablet Support

HMC V8 R8.6.0
Topology Diagram Enhancements
Task Pod (Tasks Log)
New option to create partition

HMC V8 R8.6.0 SP1
New Login Page

HMC V8 R8.7.0
Classic Login Removed
System Plan
IBMi I/O Hosting

Performance
Improvements
Performance Approach and Targets

• Analyze end-to-end flow

• Customized REST API’s (query parameters, search parameters, filters) for UI usage
  – Identify and remove redundant / duplicate API invocations

• Performance at scale

• Focus on
  – ppc64le
  – partition creation & deploy
  – Manage Partition – virtual network & storage
### HMC Version Format Today – V8 R870 M1

<table>
<thead>
<tr>
<th>V(ersion)</th>
<th>R(lease)</th>
<th>M(aintenance)</th>
<th>F(ix)</th>
</tr>
</thead>
</table>
| ▪ Power family  
  ‒ ex. POWER8 | ▪ Corresponding firmware release  
  ‒ ex. 860 | ▪ aka Service Pack  
  ‒ ex. SP1 | ▪ Not currently used |

- A release is supported for two years
  - This includes Service Packs and PTFs
  - There are four to five releases in support concurrently at any given point in time. Providing support for all these releases has proved challenging for IBM, and **clients have perhaps experienced some unfortunate quality escapes**.

- Many clients have strict processes and procedures in place that prevent upgrading to a new release in cadence with when IBM GAs it.
  - It’s not always possible to obtain the latest functional fixes and enhancements as they’re typically issued on the latest release stream.

- From the perspective of security alone in how often, and with what severity, vulnerabilities are disclosed, the above two points are proving to be more and more of an issue.
HMC Version Format Tomorrow – V9 R1 M910

**V(ersion)**
- Power family
  - ex. POWER9

**R(elease)**
- Only increment on major revisions
  - ex. base OS upgrade
  - much less frequency than today

**M(aintenance)**
- Corresponding firmware release
  - ex. 910
- Must be greater than or equal to the level this HMC is managing
- Last digit indicates Service Pack

**F(ix)**
- aka PTF
- Ishmc output will show “MH” mapping

- A release is supported for two years, same as today.
- Maintenance releases will be supported until they're superseded by the next subsequent maintenance level
- The cadence with new firmware releases and Power system models will remain unchanged.
  - Rather than receiving a new HMC release, (more often than not) there will be a new HMC maintenance level.
  - When there's no new firmware or Power system model, there can still be a new HMC maintenance level.
- Less releases allow freedom to update to the latest maintenance level without worrying about stack (VIOS, firmware, OS) compliance.
- Easier to stay current with functional fixes and enhancements. IBM can focus mostly on the current release (because there will be less releases) and making sure each maintenance level is delivered with increased quality.
HMC V9 R1.910 Highlights

Server Management

- Support for 914, 922, and 924 systems
- **No POWER6 support**
- Custom DHCP ranges

Virtualization Management

- Mobility
  - Automatic VIOS data collection upon abort
  - Override for page table size & affinity loss to preserve SAP HANA workload performance across migrations
  - Maintain resource roles across migrations
- Remote Restart override to use LPAR’s minimum resources
- SR-IOV
  - Max capacity / bandwidth setting
  - Enable / disable SR-IOV logical port
- Enhanced UI
  - Cleanup disk mappings on LPAR deletion
  - Add multiple LPAR veth adapters on the same virtual network
  - Improve progress messages during System Template deployment
  - Add multiple physical volumes to an LPAR at once
  - Persist user preferences (ex. column width)
  - Copy WWPNs to Clipboard
- Templates
  - Support for VIOS rules

Console Management

- vHMC-on-Power support for MPIO
- Display NTP status
- HMC NPS survey option
- FFDC logging enhancements
- Language Translation Update
HMC V9 R1.920 Highlights

Server Management

• Support for 950 and 980 systems

Virtualization Management

• Configure AIX secure boot
• NX Accelerator apportionment
• Mobility
  – MES upgrade support – LPM between two servers with same serial number
  – encryption and compression of transferred data
• Enhanced UI
  – iSCSI support
  – client adapter slot ID
  – PCM REST API for SSP SSD caching metrics
  – deploy VIOS images from USB

Console Management

• Upgrade and backup restore across platform (e.g. x86 and ppc64le) and hardware appliance / vHMC
• PowerSC MFA support
• vHMC
  • DLPAR and LPM
  • BigFix / ILMT inventory reporting
• Ethernet failover capability
• Data replication CLI
• Specifiable certificate expiration
• Multiple Base DN support for LDAP
• Language Translation Update
HMC Management of OpenPOWER
Hardware and Service Management – Enterprise vs OpenPOWER

- Scale up systems
  - 'L' systems with OPAL
  - OpenPOWER Systems with KVM

- Scale out systems
  - 'L' systems with PowerVM

- No IBM provided solutions

- HMC (Optional)
### HMC Support for OpenPOWER – May 2018

#### Supported Functions¹

<table>
<thead>
<tr>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event alerts with SNMP traps</td>
</tr>
<tr>
<td>Event polling</td>
</tr>
<tr>
<td>REST and CLI support for creating and reporting events</td>
</tr>
<tr>
<td>REST and CLI support for BMC configuration</td>
</tr>
<tr>
<td>Support for calling home BMC events</td>
</tr>
<tr>
<td>Limited Repair and Verify function</td>
</tr>
<tr>
<td>Launch Local BMC WEB UI from Console²</td>
</tr>
<tr>
<td>Launch managed system BMC WEB UI from Console</td>
</tr>
<tr>
<td>View sensor data and view/delete service event logs</td>
</tr>
<tr>
<td>Periodic call home with VPD, sensor, etc</td>
</tr>
<tr>
<td>Limited Hardware management function (power on/off, LED, etc)</td>
</tr>
</tbody>
</table>

#### Targeted for LC9* systems
- POWER8 LC support will follow in 2H2018

#### Support will go into x86 & ppc64 HMC and vHMC
- Manage both enterprise and OpenPOWER from the same HMC / vHMC
  - Non-supported functions will either be inaccessible or give appropriate error messages
- 911 release

#### Future roadmap includes
- Additional event handling such as log analysis, event duplication, problem report generation, and call home management
- Fully guided service procedures based on FRU call out for BMC
- Dump management
- FRU status
- Inventory/performance call home

¹existing HMC functions for Enterprise
²not applicable for vHMC
Cloud Management Console
IBM Cloud Management Console for Power Systems

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
- Hardware Inventory

Log Trends
- Log Aggregation
- Telemetry

Patch Planning
- View current code levels and available updates
- Create update plans for collaboration

Performance Monitoring
- Aggregated views across Enterprise
- Energy Monitoring

With a roadmap to include features like:
- Codestack Compliance Checker
- Thresholds & Alerts
- Pay-Go Capacity on Demand for Enterprise Pools
- Predictive Trends
- Recommendation Engine
### IBM Power Systems Usage Statement

**Select Statement Cycle:**
- Current (Jan 1, 2017 - Today) $1553.00

#### System Types

<table>
<thead>
<tr>
<th>OS Type</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td>$10</td>
<td>$5</td>
<td>$5</td>
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<tr>
<td>IBM i</td>
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<td>$5</td>
<td>$5</td>
<td>$20.00</td>
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<tr>
<td>IFL</td>
<td>$10</td>
<td>$5</td>
<td>$5</td>
<td>$20.00</td>
</tr>
<tr>
<td>AIX + IBM i</td>
<td>$10</td>
<td>$5</td>
<td>$5</td>
<td>$20.00</td>
</tr>
<tr>
<td>IFL</td>
<td>$10</td>
<td>$5</td>
<td>$5</td>
<td>$20.02</td>
</tr>
</tbody>
</table>

#### OS/Software Licenses

<table>
<thead>
<tr>
<th>License Minutes</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>Total</th>
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<tbody>
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<td>AIX</td>
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<td>$50</td>
<td>$50</td>
<td>$150.00</td>
</tr>
<tr>
<td>IBM i</td>
<td>$50</td>
<td>$50</td>
<td>$50</td>
<td>$150.00</td>
</tr>
</tbody>
</table>

#### Total

- Current (Jan 1, 2017 - Today) $1553.00

---

**Current Remaining Balance:** $1008

**Current Expenses:**
- $1834.17 Jan 1, 2017 - Today
- $1392.09 Jul 1, 2016 - Feb 29, 2016
- $1724.98 Apr 1, 2016 - Jun 30, 2016

**Order History:**
- $500 Order (Order Number) Oct 24, 2018
- $500 Order (Order Number) Sep 12, 2016
- $500 Order (Order Number) Jul 29, 2016
Nigel’s Enhanced UI Videos

https://twitter.com/mr_nmon/status/902448239894462464
Other Enhanced UI Resources


And visit https://www.ibm.com/developerworks/community/forums/html/forum?id=45c57f22-9da9-4e3c-bb9b-75a5c9d177a0 to ask us further questions.
How to Get Started With CMC

Your Education: Document #POP04049USEN Sellers (SSI) / Business Partners (PW)


Prepare the Datacenter: Review the Cloud Connector Security Whitepaper for more information on firewall changes that should be requested and HMC code updates

Purchase:

- C Model Clients: Send an email to powercmc@us.ibm.com with server serial number, primary administrator IBM ID email address and preferred subdomain name
- All other systems: $50 USD per managed server, per month Purchasable in Passport Advantage SaaS Catalog (D1SNQLL)

Help? Contact Ashok sashok@us.ibm.com