

IBM Cloud Management Console and Enterprise Pools 2.0

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Systems Management Architecture (HMC/CMC)



Agenda

- See the details of the platform
- Learn what apps are, and can be, delivered
- Enterprise Pools 2.0

IBM Cloud Management Console for Power Systems

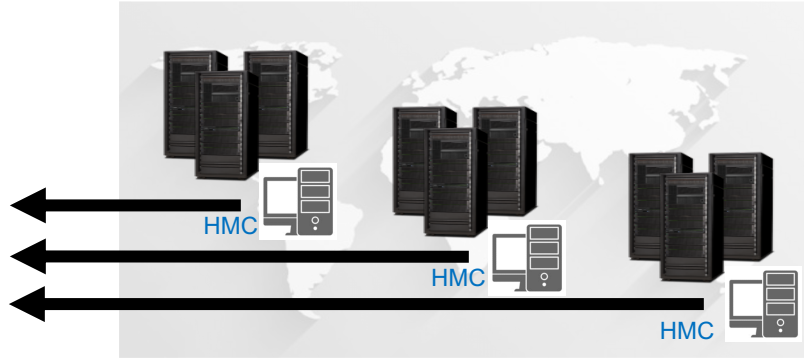


Minimal On Prem Setup

POWER



- Cloud connector ships with HMC
- Configuration established at cloud platform / portal
- No need to manually sync cloud connector



Secure Cloud Storage



- Secure, continuous, one-way push of data from cloud connector to cloud
- Supports proxy servers
- Company admin configures cloud connector and users' data access
- IBM ID for authentication
- Multi-tenant model based on customer-unique key
- At-rest encryption

Services



- Data visibility + insights
- DevOps delivery / decrease TTM
- Future intentions for predictive analysis & actionable insights

Apps aligned with customer use cases

Inventory



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

Capacity Monitoring Log Trends



- Aggregated performance views across your Power enterprise
- Shared Processor Pool metrics
- Thresholds
- Alerts/Notifications



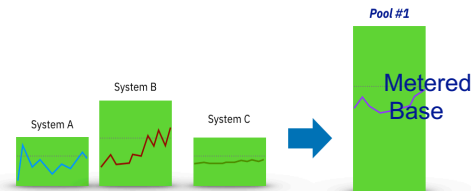
- Log aggregation
- Telemetry

Patch Planning



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

Power Enterprise Pools 2.0



- Seamless multi-system resource sharing and flexibility for clients deploying a private cloud infrastructure
- Shared Utility Capacity across a pool of Power 9 systems

App store User Experience

IBM Cloud Management Console for Power Systems

CM Capacity Monitoring

Monitor performance for your entire Power environment, including core, memory, network, storage and power utilization. View pertinent, real-time and historical performance data to immediately address critical problems and to better plan for capacity.

EP Enterprise Pools 2.0

Enterprise Pools 2.0 managed in the Cloud

In Inventory

Monitor the health status of all the resources in your Power infrastructure. Search your resource and hardware inventory to find what you need. Select any resource to filter the status information for that resource.

PowerVC

Access your PowerVC applications

[Learn More](#)

Lo Logging

Use the Logging application to get insights into your data center PowerVM Virtualization actions such as Live Partition Mobility (LPM), Remote Restart (RR), and Partition Lifecycle.

PP Patch Planning

Consolidated, easy-to-navigate views of code levels across your Power environment and available updates. Create and share patch plans with all stakeholders.

PowerHA

Access your PowerHA applications

[Learn More](#)

A group of people are gathered around a desk in a meeting room, looking at computer monitors and a tablet. The monitors display software interfaces with blue and white themes. One monitor shows a page titled "The Agile Platform for Agile Teams". The tablet also displays a software interface with various charts and data points. The scene is dimly lit, with the primary light source being the screens.

CMC Apps and features

Inventory



Aggregated & Centralized Inventory view across data centers

Dashboard for a quick status view

Full inventory including, but not limited to,

Full inventory including, but not limited to,

- IO Inventory
- Fan/Power supply status on supported systems
- Shared processor pool info

Easy filtering by State, firmware levels

Ability to create & manage tags

Easy to group systems into categories for monitoring

Managed Systems and HMCs Partitions and Virtual I/O Servers Shared Storage Pool Clusters Managed Systems and HMCs Partitions and Virtual I/O Servers Shared Storage Pool Clusters

Filter by

STATE

- Error 16
- Not activated 144
- Open firmware 45
- Running 191

TYPE

- AIX/Linux 322
- IBMi 6
- Virtual IO Server 68

OS VERSION

- AIX 6.1 6100-09-12 5
- AIX 71 7100-05-04 2
- AIX 71 7100-05-05 1

Showing 396 result(s):

| <input type="checkbox"/> | <input type="checkbox"/> | NAME | TYPE | OS VERSION | |
|--------------------------|-------------------------------------|-------------|-----------|-------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | dummy103par | AIX/Linux | Unknown | - |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | test_ibmi | IBMi | Unknown | - |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | rajtab01 | AIX/Linux | AIX 7.2 7200-04-02-2028 | - |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | rajtab02 | AIX/Linux | AIX 7.2 7200-04-02-2028 | - |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | ball20 | AIX/Linux | AIX 7.2 7200-04-02-2016 | - |

Filter by

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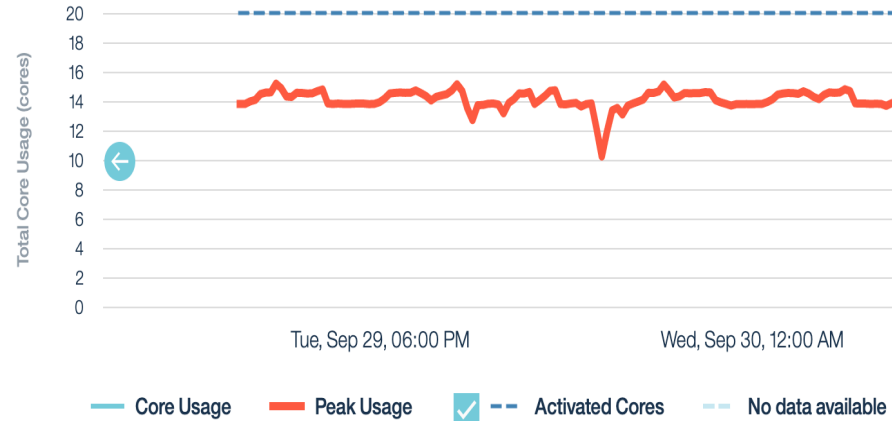
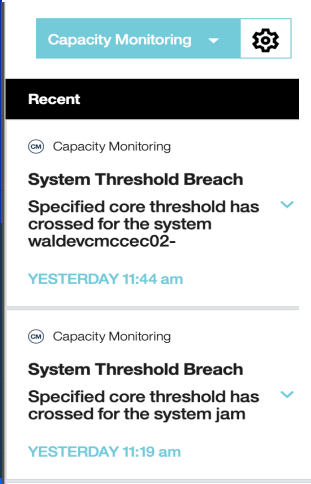
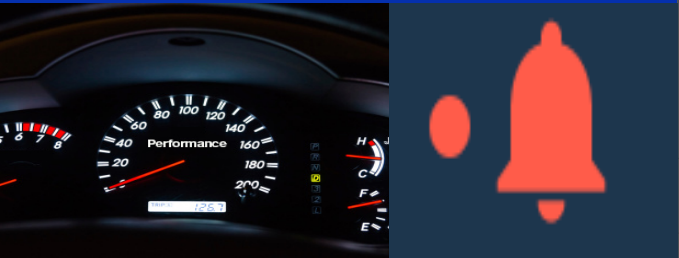
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| <input type="checkbox"/> | <input checked="" type="checkbox"/> | rajtab02 | AIX/Linux | AIX 7.2 7200-04-02-2028 | - |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | ball20 | AIX/Linux | AIX 7.2 7200-04-02-2016 | - |

Capacity Monitoring



- ✓ Aggregated Performance Views
- ✓ System Inventory & Performance view
- ✓ Partition Inventory & Performance Views
- ✓ Shared Processor Pools (SPP) views
- ✓ Want to know when utilization of partitions or systems goes above a certain limit?
- ✓ Use Capacity Monitoring app to set thresholds for
 - ✓ Core Usage (System & Partition)
 - ✓ Memory Allocation (System & Partition)
 - ✓ Shared Processor Pools

Capacity Monitoring – Settings & Alerts



- Edit settings to change the page refresh option.
- Set one or more system core and memory thresholds.
- Set thresholds for the partition core and shared processor pool core usage.
- Set thresholds for the group of resources or for the tagged resources.
- Edit alerts setting to enable in-app, email and SMS notifications.
- Bell icon at the right corner of the app shows the alerts.
- Notification gives the info on systems crossed threshold settings.
- Historical notifications messages can be loaded in the app (up to last one month)

Capacity Monitoring

In-App Notifications

Enabled

Email Address

Phone number

Language

English

[Test Email and Text](#)

Notifications

Capacity Monitoring

Recent

Capacity Monitoring

System Threshold Breach

Specified memory threshold has crossed for the system mac17

8:22 pm

Capacity Monitoring

System Threshold Breach

Specified core threshold has crossed for the system mac17

7:17 pm

Capacity Monitoring

System Threshold Breach

Specified core threshold has crossed for the system mac8fp1

7:17 pm

[Load History](#)

Logging

- ✓ Use cases...
- ✓ Want to know what's happening in your data center for Live Partition Mobility (LPM)/Remote Restart (RR)/Partition lifecycle operations ?
- ✓ Want to understand time taken for evacuation or DR based on LPM/RR? – Use Heuristic data from logging app

- ✓ Provides aggregated view of Operations
- ✓ Failure codes
- ✓ Time taken for each operation
- ✓ Detailed stats for LPM operations



Filter by

[Edit Filter](#) [Click "Edit Filters" to change filters](#)

PARTITION NAME

Partitions

TIME RANGE

All

TYPE

- Active LPM 140
- Active LPM Validate 44
- Inactive LPM 11
- Inactive LPM Validate 11

SYSTEM NAME

- * 90
- ACP_8247-21L-SN212 25
- ATS-8924-8288-42A 52
- ATS-8922-9009-22A 41
- ATS_740C 4
- ATR_7401 1

Failed Operations 355

All LPM & RR Operations* 68761

All LPM & RR Partitions 206

Fail Codes / Count

| | |
|-----------|-----|
| HSLCLA339 | 298 |
| HSLCLA670 | 1 |
| HSLCLA340 | 8 |
| HSLCLA620 | 181 |
| HSLCLA223 | 8 |

*37% Remote HMC Operation, 63% Local HMC Operation

Showing 68761 operation(s) aggregated by type: [🔍](#)

| TYPE | Name | SYSTEM PAIR | FAIL / SUCCESS / ALL | LAST OPERATION |
|---------------------|--------------------------------|---|----------------------|-------------------|
| Active LPM | H4rawLLS | ATS_780 to ATS_740C | 0 / 1 / 1 | 9/18/18, 1:29 PM |
| Active LPM | acpstage-6b69864c-000000fe | * to * + 1 more | 0 / 2 / 2 | 1/1/18, 5:30 AM |
| Active LPM | ICP01_MasterB-320628d-00000233 | * to * | 1 / 0 / 1 | 1/1/18, 5:30 AM |
| Active LPM Validate | rdc4pcc0pr1-d283c458b-00002a8 | Server-9080-M9S-SN78191B8 to Server-9119-MME-SN100CE45 + 1 more | 4 / 2 / 6 | 12/7/18, 4:05 PM |
| Active LPM | rdc4pcc0pr1-d283c458b-00002a8 | Server-9080-M9S-SN78191B8 to Server-9119-MME-SN100CE45 + 1 more | 3 / 1 / 4 | 6/6/18, 5:39 PM |
| Active LPM | rdc4pcc0pr15 | Server-9080-M9S-SN78191B8 to Server-9119-MME-SN100CE45 + 1 more | 11 / 629 / 640 | 11/21/18, 5:12 AM |
| Active LPM | rdc4pcc0pr10 | Server-9080-M9S-SN78191B8 to Server-9119-MME-SN100CE45 + 1 more | 3 / 926 / 929 | 9/25/19, 2:01 AM |

Patch Planning

- ✓ Use cases...
- ✓ Get to know sub-systems requiring update/upgrades at one place
- ✓ Create plans with schedule & e-mail to your team for approvals

Provides current and latest update/upgrade for

- ✓ Firmware
- ✓ HMC
- ✓ IO Adapter
- ✓ AIX/IBM i/Linux

Ability to create patch plans



Navigation: Patch Planning / Inventory Plans

Need Update 154

Up-to-date 513

All 667

TYPE

- AIX 8
- FW 10
- HMC 1
- VIOS 6
- ADAPTER 129

DESCRIPTION

- Power 740 IOC+ 2
- Power 750 23
- Power 710/730 23
- + 8 more

CURRENT LEVEL

- 2.2.6.31 3
- 3.1.1.10 1
- 2.2.5.00 2
- + 37 more

Search [] [] Add a Tag Add to Plan

| NAME | TYPE | CURRENT LEVEL | LATEST UPDATE |
|-----------------------------------|---------|---------------|---------------|
| drogonv1 | VIOS | 2.2.5.00 | 2.2.5.60 |
| waldevcmvio03 | VIOS | 2.2.6.31 | 2.2.6.65 |
| waldevcmvio04 | VIOS | 2.2.6.31 | 2.2.6.65 |
| dongshan9-11st.aus.sglabs.ibm.com | HMC | V9 R1 SP940 | V9 R1 M941 |
| ent0 | ADAPTER | 010522 | 020123 |
| ent1 | ADAPTER | 010522 | 020123 |
| ent10 | ADAPTER | CL0170 | CL0210 |
| ent11 | ADAPTER | CL0170 | CL0210 |

Utility based pricing model – Power Enterprise Pools 2.0

Private Cloud with Shared Utility Capacity: On-Prem flexible consumption



Deploy a Power Private
Cloud system
Infrastructure with shared
Utility capacity across a
collection of Power
systems

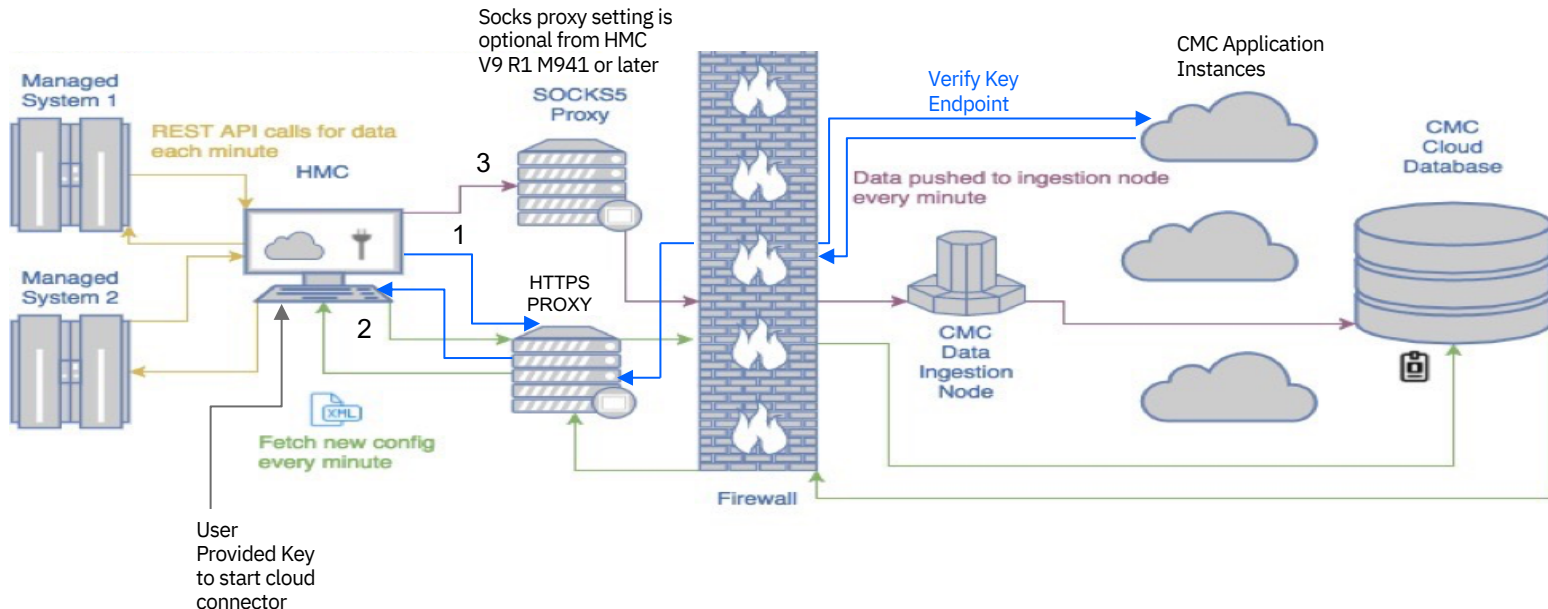


Enables enhanced
multisystem resource
sharing and offers fully
active, by-the-minute
consumption of on-
premises compute
resources



Monitored & Metered
via IBM Cloud
Management Console
with granular, real-time
& historical views of
resource consumption
by Partitions & System

CMC Cloud Connector Data Flow



- Cloud connector
 1. Establishes trust with cloud portal using the user provided key and gets credentials for pulling cloud connector configuration and SSL certificates
 2. Retrieves configuration file and SSL certificates/key to secure the data flow pipeline
 3. Creates a secure channel to the data ingestion node. Connection from cloud connector to CMC can be
 - Direct outbound connection
 - https proxy (HMC V9 R1 M941 or later is required)
 - https proxy and socks proxy
- See [Cloud Connector Security Whitepaper](#) for more details

Cloud connector Diagnostics



- Diagnose HMC-CMC connectivity problems
- Command is available from V9R1921
- Command helps to check if the cloud connector is reachable to :
 - Data Ingestion node
 - Cloud Storage
 - Customer portal

```
[root@vhmccloudvm91 ~] # lssvc -s cloudconn
state=active,socks_proxy=,http_proxy=9.3.103.11:3128
[root@vhmccloudvm91 ~] #
[root@vhmccloudvm91 ~] # diagcloudconn
```

```
** Validating Cloud Connector status
Cloud connector state=active
```

```
** Validating if HTTP proxy server is reachable
HTTP proxy config:: 9.3.103.11:3128
HTTP Proxy 9.3.103.11:3128 is reachable
```

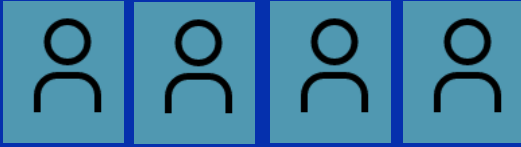
```
** Validating if SOCKS proxy server is reachable
SOCKS proxy config:: NoSocksProxy:NoSocksProxy
No SOCKS proxy defined
```

```
** Validating if the portal is reachable
Portal is: cmctestrelease-powercloud.mybluemix.net
Portal is reachable (ret code: 200)
Xsrf-Token: 1mP2kXsP-1KoV44lvm8MUH5Y3OBEujVDwC9Y
```

```
*** Validating if Logstash is reachable
Logstash config: 169.61.129.115:5044
Logstash 169.61.129.115:5044 is reachable
```

```
[root@vhmccloudvm91 ~] #
```

Manage CMC Users



- Add/remove CMC users.
- CMC admin gets all app access.
- Grant different app access to the non admin users.
- Edit the user roles of the non admin users.

Settings / Manage Users Manage Resource Roles Apps Cloud Connector

PcsTestAdm User pcstest1@mailinator.com

Showing 2 user(s) Add User +

| Name | Apps | Actions |
|------------------------|----------------|--------------------|
| harimura@in.ibm.com | CM IP In Lu PP | Search Edit Delete |
| manjunathns@in.ibm.com | CM IP In Lu PP | Search Edit Delete |

Add New User

IBM ID *
sashok@us.ibm.com

Email Address *
sashok@us.ibm.com

Resource Roles *
Admin Role

Admin

Capacity Monitoring Enterprise Pools 2.0

Inventory Logging

Patch Planning

Edit User Resources

Current Resource Role Name
Admin Role

Resource Roles
TestRole
Admin Role

Cancel Save

Edit User

IBM ID: harimura@in.ibm.com
Email Address: harimura@in.ibm.com
First name:
Last name:

Admin

Capacity Monitoring Enterprise Pools 2.0

Inventory Logging

Patch Planning

Cancel Save

Manage resource roles

- Create new resource role with different System, Partitions and VIOSs.
- Create resource role based on existing roles.
- Default Admin Role will have access to all the resources.
- Panel provides add, remove, rename, edit resource roles.
- Resource role can not be deleted if it is associated with any user.

The screenshot displays the 'Manage Resource Roles' interface. At the top, there are navigation tabs: Settings, Manage Users, Manage Resource Roles (active), Apps, and Cloud Connector. Below the navigation is a search bar and an 'Add Resource Role +' button. The main content area shows a table with two rows of resource roles:

| RESOURCE ROLES | ACTIONS |
|----------------|--|
| TestRole | Edit Delete Rename |
| TestRole1 | Edit Delete Rename |

Two modal windows are shown below the table, with red arrows pointing to them from the 'Add' and 'Edit' buttons in the table. The 'Add Resource Role' modal has the following fields and options:

- Resource Role Name*: TestRole3
- Based on Resource Roles: Admin Role (dropdown)
- Select live resources from the inventory data for the resource role. Clear the stale restricted resources that you want to remove.
- Search: [Search bar]
- Live data: (expanded)
 - z2230ae
 - Partitions (41)
 - Virtual I/O Servers (2)
 - z2230be
 - Partitions (11)
 - Virtual I/O Servers (2)
 - z2432ae
 - Partitions (8)
 - Virtual I/O Servers (4)
 - z2432ae
 - Partitions (25)
 - Virtual I/O Servers (7)

The 'Edit Resource Role' modal has the following fields and options:

- Resource Role Name: TestRole
- Select live resources from the inventory data for the resource role. Clear the stale restricted resources that you want to remove.
- Search: [Search bar]
- Live data: (expanded)
 - z2230ae
 - Partitions (41)
 - Virtual I/O Servers (2)
 - z2230be
 - Partitions (11)
 - Virtual I/O Servers (2)
 - z2432ae
 - Partitions (8)
 - Virtual I/O Servers (4)
 - tab_1
 - Partitions (25)
 - Virtual I/O Servers (7)

Manage power software links

- Provides option to add other power software links.
- One or more such links can be added.
- Learn More link will launch the IBM Market Place of the power software products.
- Saved links can be launched from the CMC dashboard or from the navigation menu.

The screenshot displays the 'Manage Resource Roles' page in the IBM Cloud Connector interface, specifically the 'Apps' section. The page title is 'Enable or Disable Applications'. It features a grid of application cards, each with an icon, a name, a brief description, and an 'Enabled' toggle switch. The applications shown include Capacity Monitoring, Enterprise Pools 2.0, Inventory, Logging, Patch Planning, PowerVC, PowerHA, PowerSC, PowerSC MFA, and VM Recovery Manager For HA. A modal dialog box titled 'Edit PowerHA Links' is open in the foreground, allowing the user to edit the links for the PowerHA application. The dialog has fields for 'Name' (containing 'mypowerha1') and 'Link' (containing 'https://mypowerha1.ibm.com'). A red box highlights the 'Edit Links' button in the PowerHA application card, with a red arrow pointing to the dialog box. The dialog also includes '+ Add a link', 'Cancel', and 'Save' buttons.

F.A.Q.

- **Where will this platform be hosted?**

- IBM Cloud - US South Bluemix & Frankfurt regions. There are future plans to expand to other geos.

- **Do I have to install anything?**

- All apps are delivered 'As A Service'. Fixes and updates will be automatically rolled out. All that's required is to enable cloud connectors on HMCs.

- **How much does it cost?**

- Pricing will be on a per-socket, per-month basis. POWER8 'C' & Power 9 scale up models can be monitored for no additional costs for the built-in entitlement period

- **Can I manage my systems from the apps?**

- No. The initial goal is to provide read-only views of data. The datacenter pushes data to the cloud.
- For Enterprise Pools 2.0, management of the pools including creation, metering, tracking is done with CMC.

F.A.Q.

- **Is data encrypted at transit and at rest?**
 - Yes.
- **Is application continuously patched and updated for security fixes?**
 - Yes, IBM has a very strong PSIRT process and CMC follows the same. Security Vulnerabilities are tracked, fixed and updates are rolled out automatically.
- **Can certain data fields be restricted from being streamed off prem?**
 - You can filter out the system/partition IP address from being sent to CMC (minimum required HMC level is V9 R1 M940) . We'd like to hear your thoughts on this!
- **What is the authentication mechanism used to login to CMC?**
 - CMC uses IBM id based authentication.



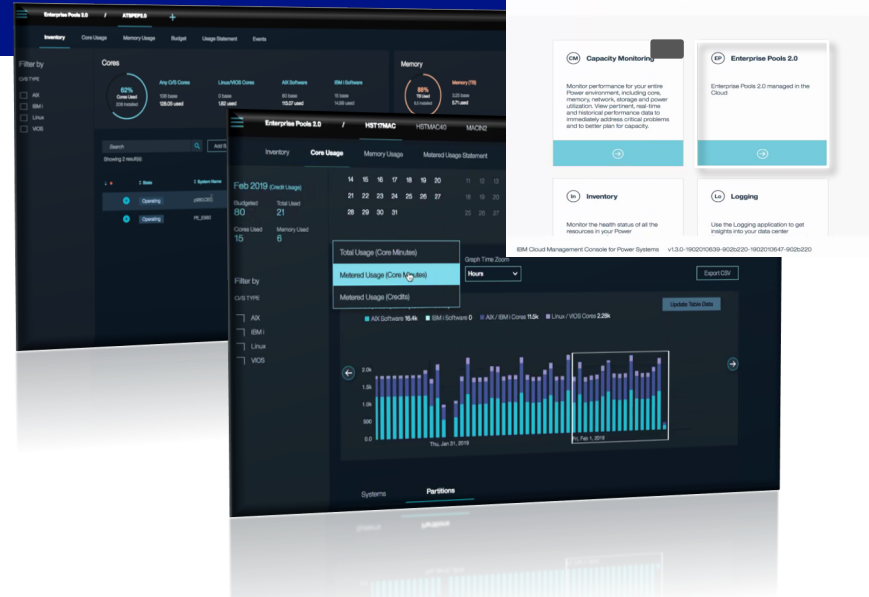
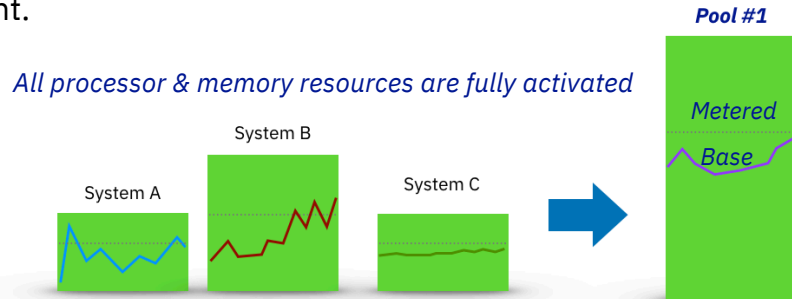
Power Enterprise Pools 2.0

Shared Utility Capacity

Fully active, metered by the minute

Deploy *Shared Utility Capacity* across a pool of Power E980, E950 or S922/S924 systems

- One machine type supported per pool
- Purchase servers with Base capacity, which is aggregated and shared across the pool
- Remaining capacity on each server is activated and made available for use when the pool is started
- IBM Cloud Management Console with HMC automatically meters resource use that exceeds the pool's Base capacity, and debits minutes real-time against Capacity Credits on account.



Base and Metered Capacity

- Processor activations
- Memory activations on E950 & E980
- AIX and IBM i licenses

Usage of each resource is tracked *by the minute* via CMC

Power Private Cloud with *Shared Utility Capacity*

Cloud-like agility and economics with leadership business continuity and security

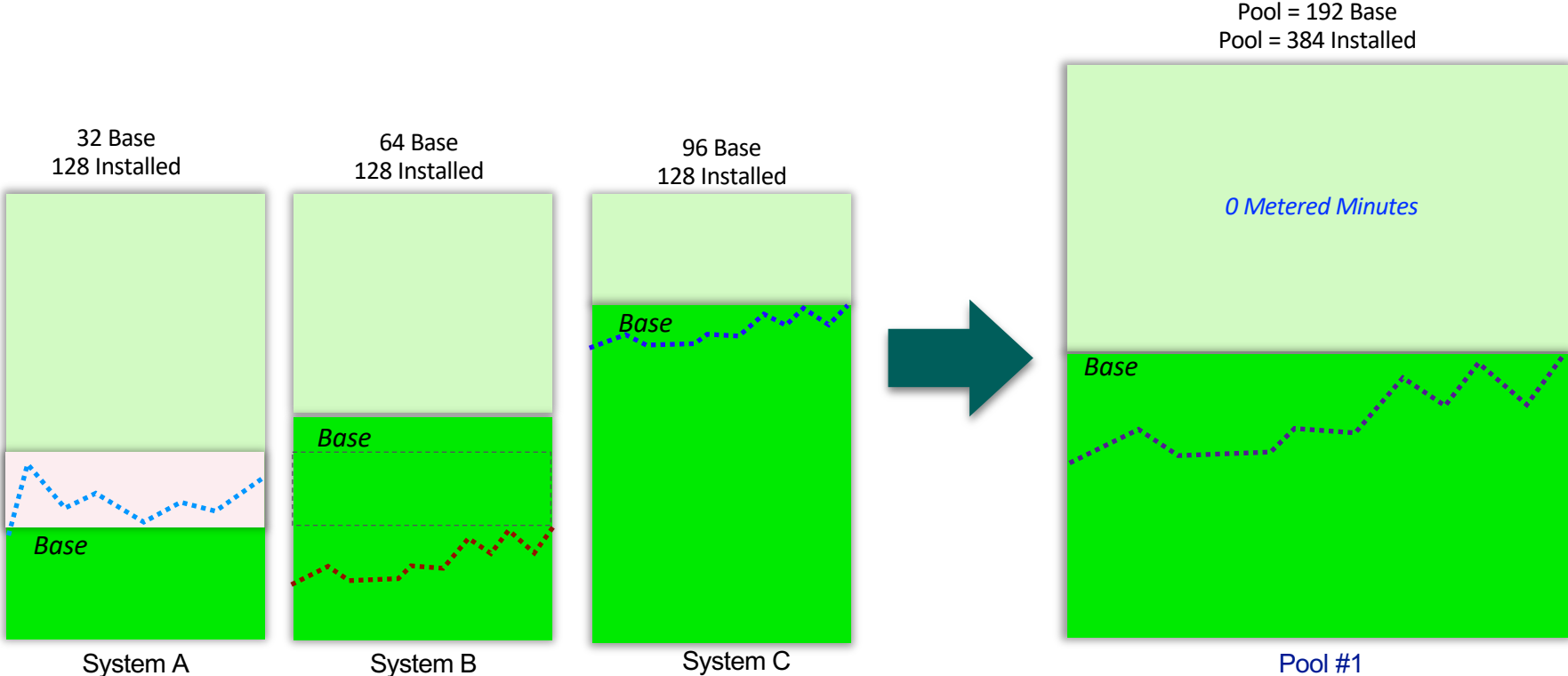
Expanding Power Enterprise Pools 2.0



- Deploy a Power Private Cloud infrastructure with *Shared Utility Capacity* across a collection of Power E980, E950 or S922/S924 systems
- *New, minimal system purchase/lease option as low as 1 core, 256GB active, with pay-per-use on balance of fully active capacity by the minute*
- Industry-leading monitoring and metering via *IBM Cloud Management Console* with *granular, real-time & historical views* of consumption by resource by VM & system
- Dedicated processor partition support in 4Q20 with HMC 950 and FW 950
- Increased scaling to 1500 partitions/48 systems in 4Q20

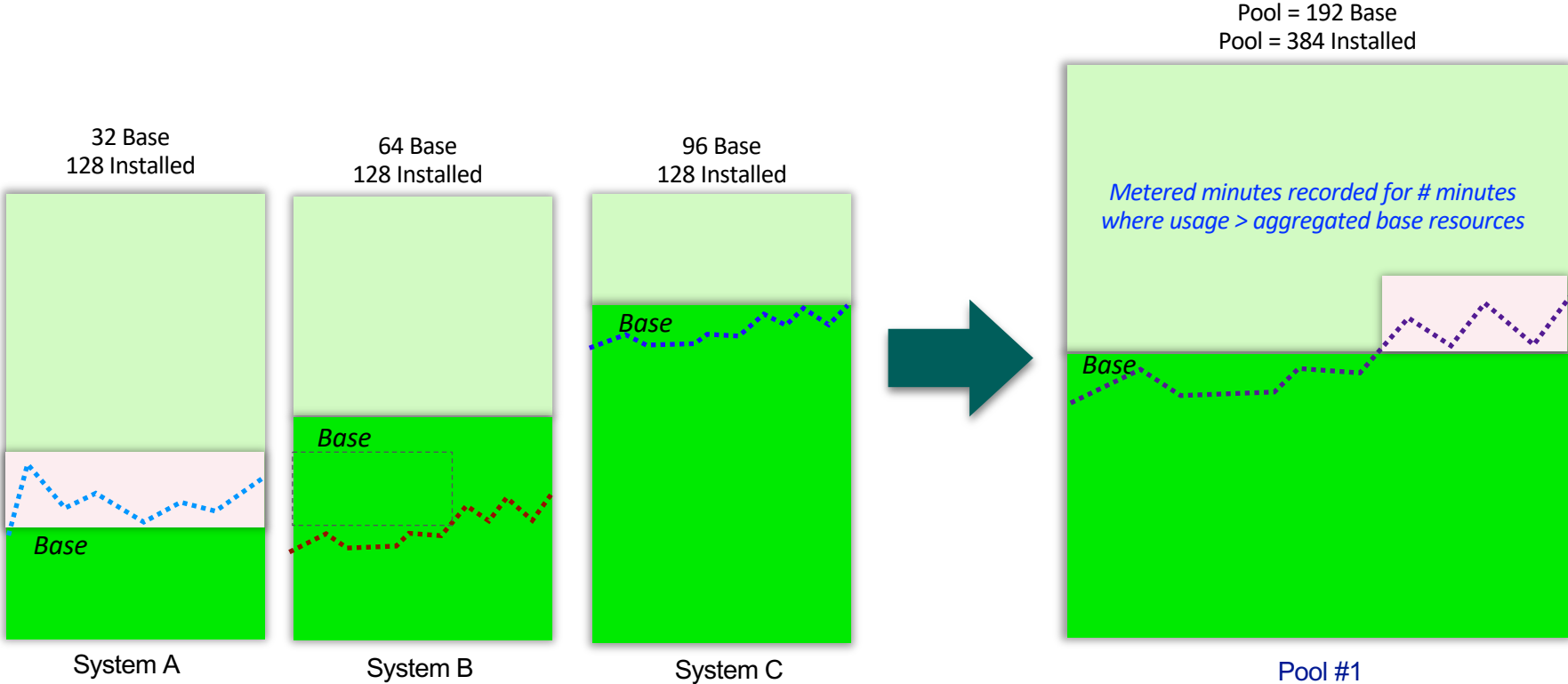
Power Enterprise Pools 2.0 processor example

Pool has 1 system using more than its base processor activations, but another system is idle, using less than its base processor activations at the same time, so 0 metered processor usage is recorded



Power Enterprise Pools 2.0 processor example

Processor usage > the aggregate of base processor activations across the pool, so metered processor minutes are recorded and capacity credits are debited accordingly



Enterprise Pools F.A.Q.

- What happens when my remaining credit balance reaches 0?
 - Usage will continue as is, and as metered usage accrues your remaining credit balance will go negative. If your balance is not replenished after 30 days, processor throttling is initiated on the servers in the pool.
- Can shared processor pools still be configured on servers in a pool?
 - Yes. EP 2.0 has no effect on shared processor pools, and shared processor pools remain an important tool in managing software licensing.
- Can I limit the number of cores available for use on a server in a pool?
 - Not through EP 2.0, but you can configure shared processor pools and the maximum number of cores each partition can use to provide limits.
- Can I migrate partitions in and out of a pool?
 - Yes, EP 2.0 places no restrictions on partition migration, remote restart, or DR. There is a benefit if you choose to migrate a partition from one server to another server in the same pool, because you get a break on usage. Even though core and memory resources are in use on both servers at the same time during a migration, you are only charged for the resource usage on one of the servers.
- Can I increase the base activations?
 - Yes, base activations can be increased by buying more base capacity.

Useful Links

- For CMC Activation Form : Go to [ESS](#) -> Help -> CMC Activation form
- Want to try CMC ? See [CMC Hosted Trial](#)
- For more Information on CMC features, see [CMC Articles](#)
- For detailed info on Enterprise Pools 2.0, See [Enterprise Pools 2.0 Redbook](#)
- For details on HMC to CMC connectivity, see [CMC Security Whitepaper](#)

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