IBM Cognitive Systems

Power Private Cloud with Dynamic Capacity

Infrastructure built for business with hybrid cloud agility

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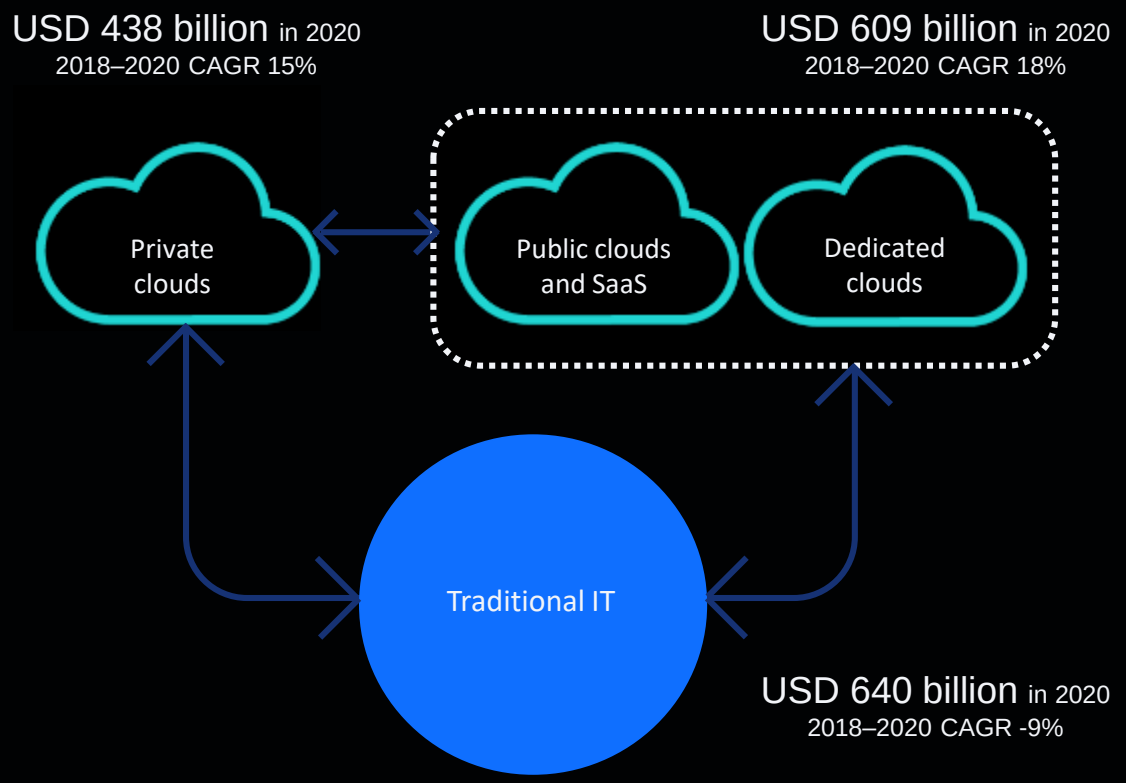
Today Hybrid and Multicloud is the New Normal with our Clients



A real-world look at multicloud

94% Share of enterprises using a mix of cloud models

67% Share of enterprises using more than one public cloud provider

Sources: IDC Cloud Forecast; BCG & McKinsey

IBM Cognitive Systems

Infrastructure built for business with hybrid cloud agility

Hybrid Cloud

Extend core data, processes and operations to Power in IBM Public Cloud with AIX / IBM i and Enterprise Linux

Enterprise Linux

Drive growth by capitalizing on RHEL with OpenShift & Cloud Paks and expanding SAP HANA, SAS Viya reach

AIX / IBM i

Optimize infrastructure for efficiency, agility and digital transformation through IT and application modernization

Cloud Innovation

Agility, flexibility and automation across private and public Cloud

Application Modernization

Enterprise AI, advanced analytics, containerization, extension via microservices

Resilient, Scalable & Secure

Architectural strength and superiority

IBM Cognitive Systems

Infrastructure built for business with hybrid cloud agility

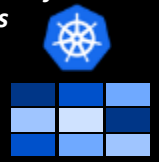
Db2 / Oracle Workloads | **SAP HANA / SAS Viya** | **ISV Solutions** | **IBM Cloud Paks**

Fit for purpose in Hybrid Cloud

Deploy where you want
across VM's & Containers
On-Prem and in the Public Cloud

PowerVM Applications

Orchestration of Containerized Applications



Red Hat Open Shift & ***IBM Cloud Paks***

Automation with Red Hat Ansible

Consistency, Skills & Simplicity

Automate common tasks across multiple endpoints & infrastructures without deep system skills

Cloud Management Console (CMC) *Cross-datacenter monitoring & automated capacity management*

Power Server Standalone

Traditional infrastructure deployment

Consume entire server as an application platform

Power Private Cloud with Dynamic Capacity

Pay only for what you use

Cloud capabilities & advanced monitoring

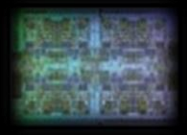
Power Virtual Server (Power VS) on IBM Cloud

Burst to public cloud

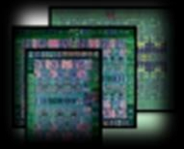
Same mission critical infrastructure as on-prem, for Dev/Test, HA/DR, Modernization

Built on the **POWER Processor** providing superior **integration, performance**, and **security** across systems and software

2010 *POWER7 45nm*

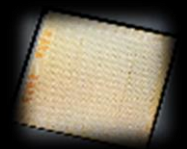


2014 *POWER8 22nm*



2017 *POWER9 14nm*

2021 *POWER10 7nm*



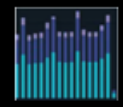
202x *POWERnext*

IBM Cognitive Systems

Infrastructure built for business with hybrid cloud agility

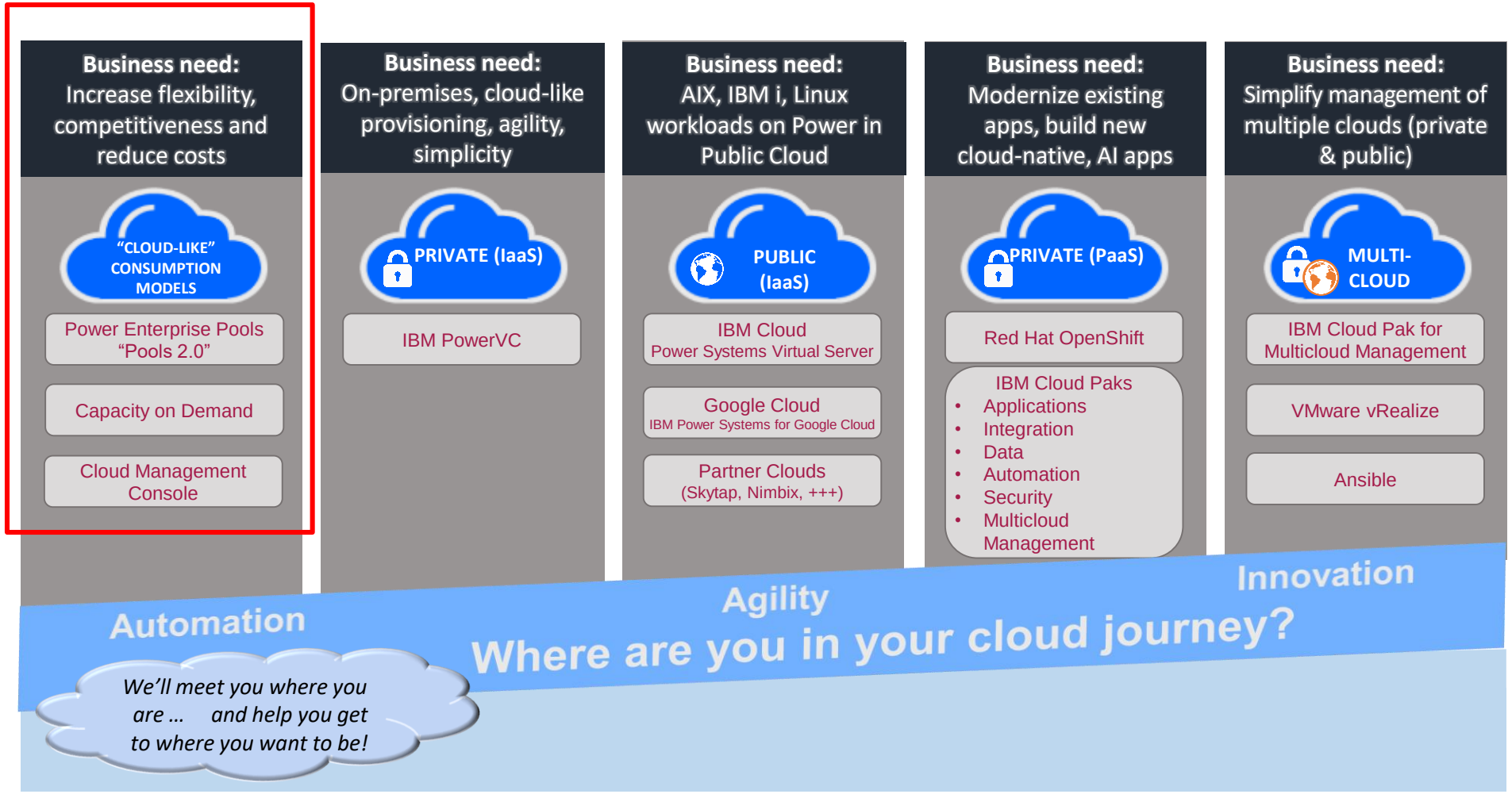
Sell Infrastructure as a Service

Flexibility in deployment, management, and payment options

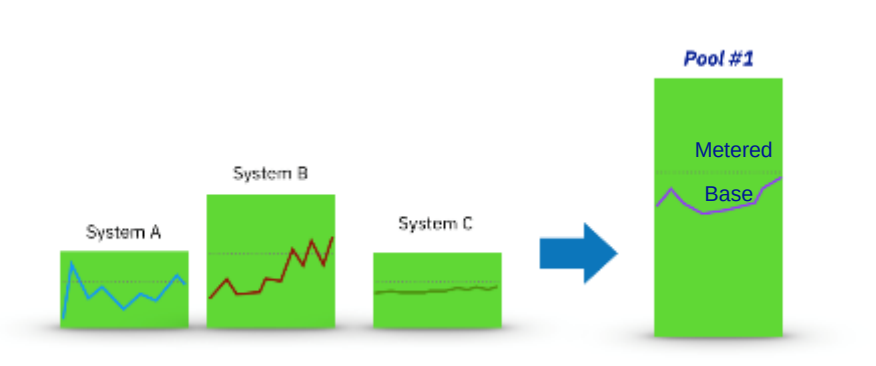
	Power Server Standalone 	**Power Private Cloud with Dynamic Capacity** 	**Power Virtual Server on IBM Cloud** 
	Traditional Infrastructure Deployment *Consume entire Server as an application platform*	Pay only for what you use *Cloud Capabilities & Advanced Monitoring*	Burst to Public Cloud *Same mission Critical Infrastructure as on-prem, for Dev/Test, HA/DR, Modernization*
Revenue Generating Event	• System Purchase / Upgrade	• System Purchase (Base) • Capacity True-up (Metered)	• IBM Cloud Subscription Purchase • Monthly Usage Billing
Frequency	• 3 – 5 years	• Quarterly	• Monthly
Margin	• BAU Reselling Margins	• BAU Reselling Margins for both Base & Metered capacity	• IBM Cloud Margin tiers based on billed monthly usage
Contract Options	• BAU Reselling T&C's • Systems Embedded Services Agreement (ESA)	• BAU Reselling T&C's • Systems Embedded Services Agreement (ESA)	• IBM Cloud Subscription (PWR VS one of over 190 Cloud services) • IBM Cloud Embedded Services Agreement (ESA) • IBM SQO and VAD 3PM Routes

New Revenue & Margin Services Potential

Hybrid Multicloud Solutions on IBM Power Systems



...vate Cloud



What clients are asking for in a private cloud*

Infrastructure scalability and agility

✓ Ability to quickly add and scale compute and/or storage resources

Total cost savings

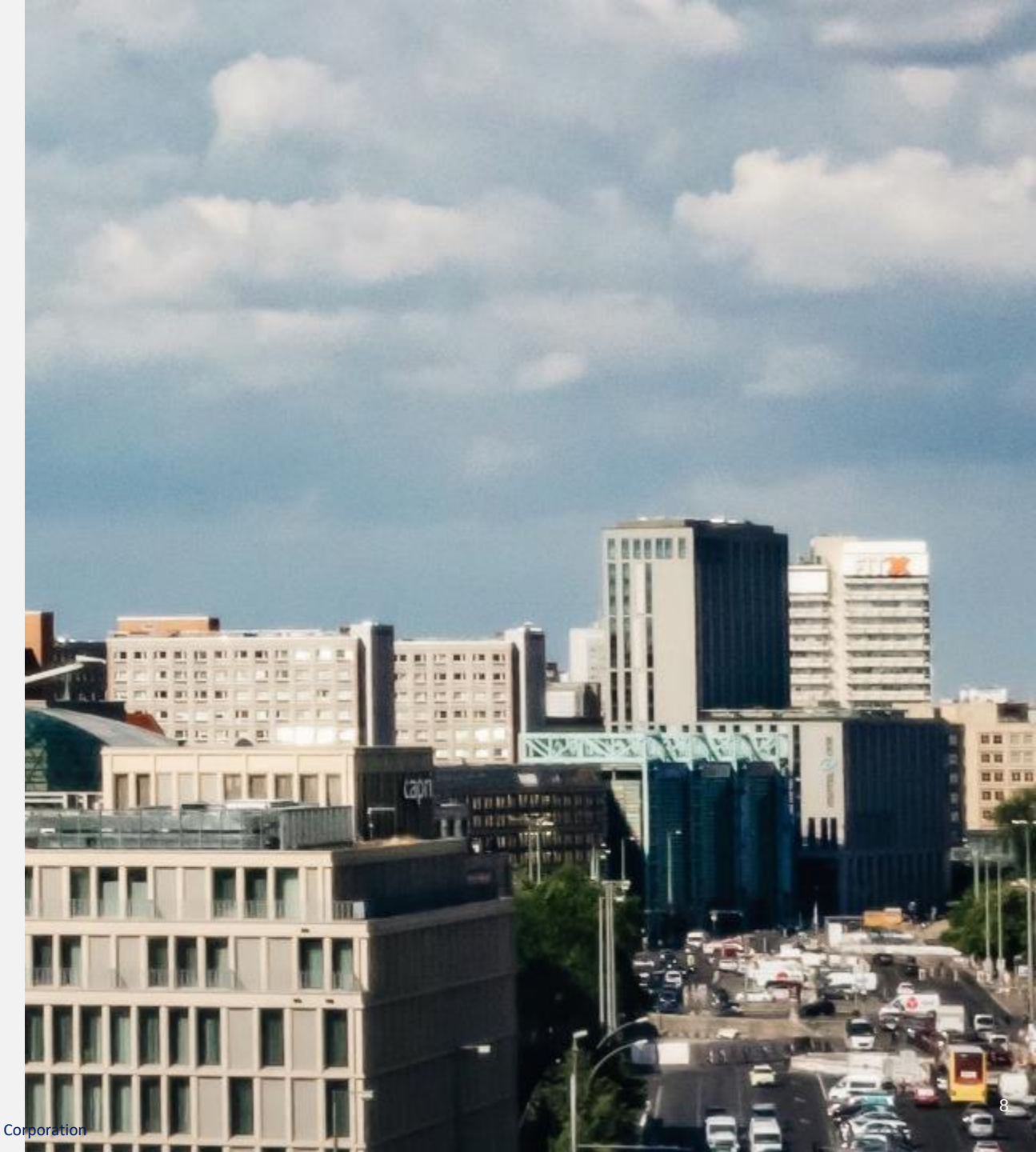
✓ Compared to both Traditional IT infrastructure and public cloud

Cloud experience with Central IT control

✓ Enable Central IT to provide a well governed on-premises cloud operating experience

Improved time to market

✓ Accelerate application development and delivery

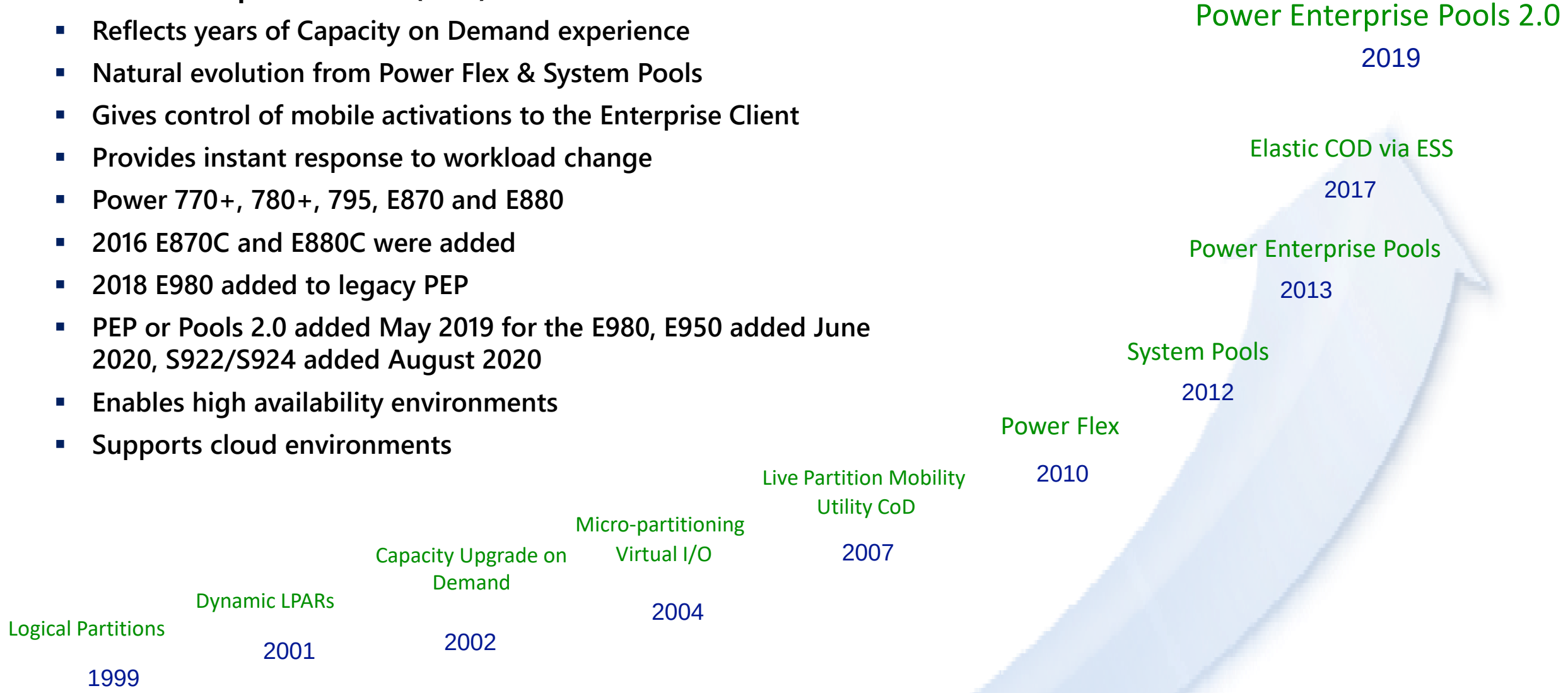


* IDC - Insights into Private Cloud Deployment Drivers and Infrastructure Demands Dec. 2019

Evolution of Power Systems Pooling

Power Enterprise Pools (PEP)

- Reflects years of Capacity on Demand experience
- Natural evolution from Power Flex & System Pools
- Gives control of mobile activations to the Enterprise Client
- Provides instant response to workload change
- Power 770+, 780+, 795, E870 and E880
- 2016 E870C and E880C were added
- 2018 E980 added to legacy PEP
- PEP or Pools 2.0 added May 2019 for the E980, E950 added June 2020, S922/S924 added August 2020
- Enables high availability environments
- Supports cloud environments



Legacy Power Enterprise Pools

A powerful foundation for building flexible IT infrastructures

Flexibility to instantly respond to changing business demands on your systems

- Simpler application workload balancing
- Easily manage periodic workload spikes and burst
- **Puts the activation keys in the client's hands**

High Availability

- Flexibility to move resource activations between systems
- Flexibility for planned system maintenance
- Flexibility for enhanced disaster recovery capabilities

Economic Efficiency

- Operate at 80-90% utilization with flexible capacity
- Minimize excess capacity required to manage availability or contingency for workload uncertainties
- Usage and utility based pricing

Simplified technology transition to POWER8 and POWER9

- Upgrade / Share / Move resources and IBM software licenses between 770+, 780+, & 795 and POWER8 Enterprise Systems
- Transition applications to POWER8 or POWER9 with increased business flexibility and investment protection

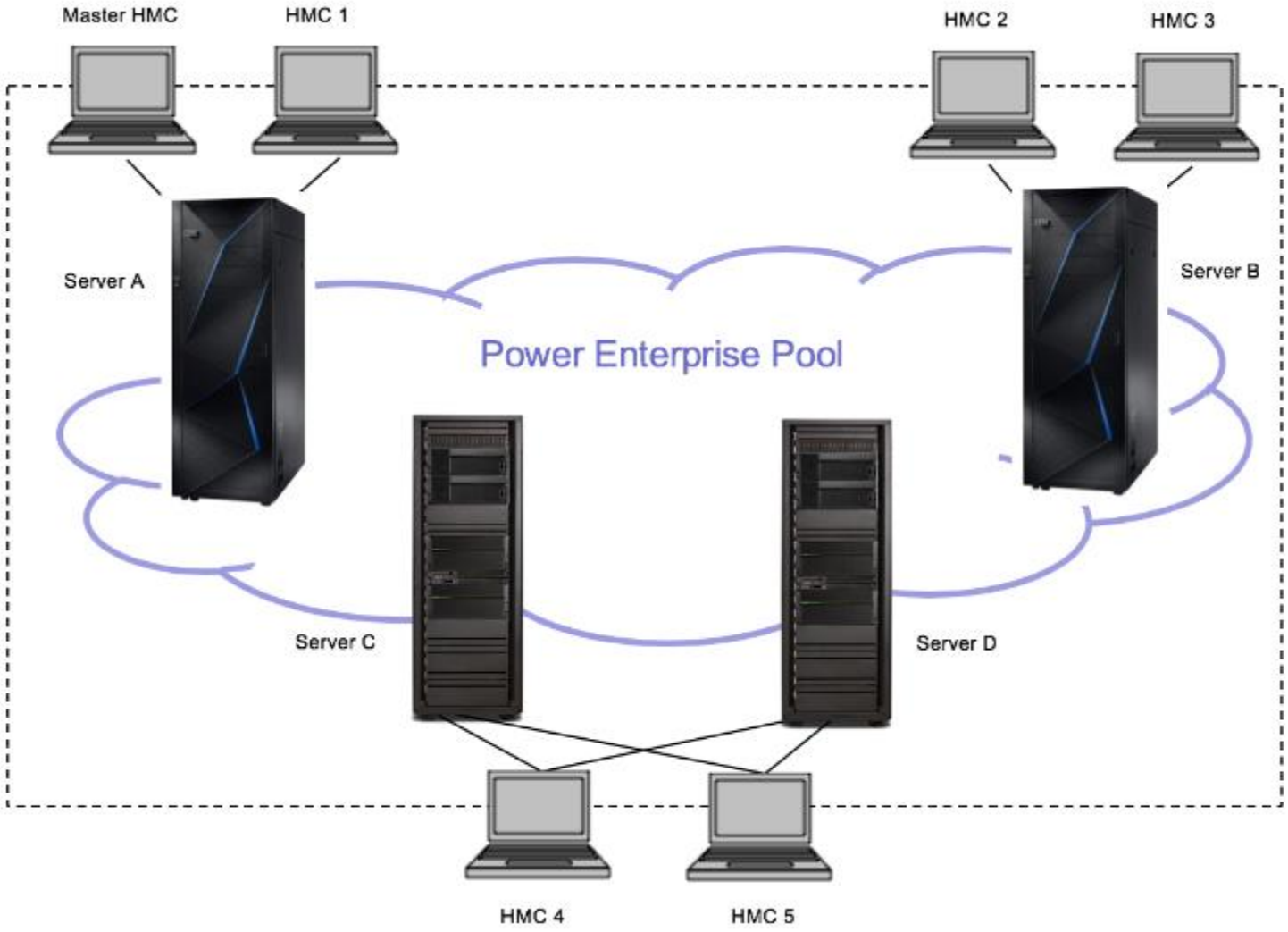
Mobile CoD (Capacity on Demand): allows you to easily move processors and memory activations without disruption to your operations

Elastic COD: for periodic spikes in workload demand

OpenStack: for simplified Cloud and Virtualization Management

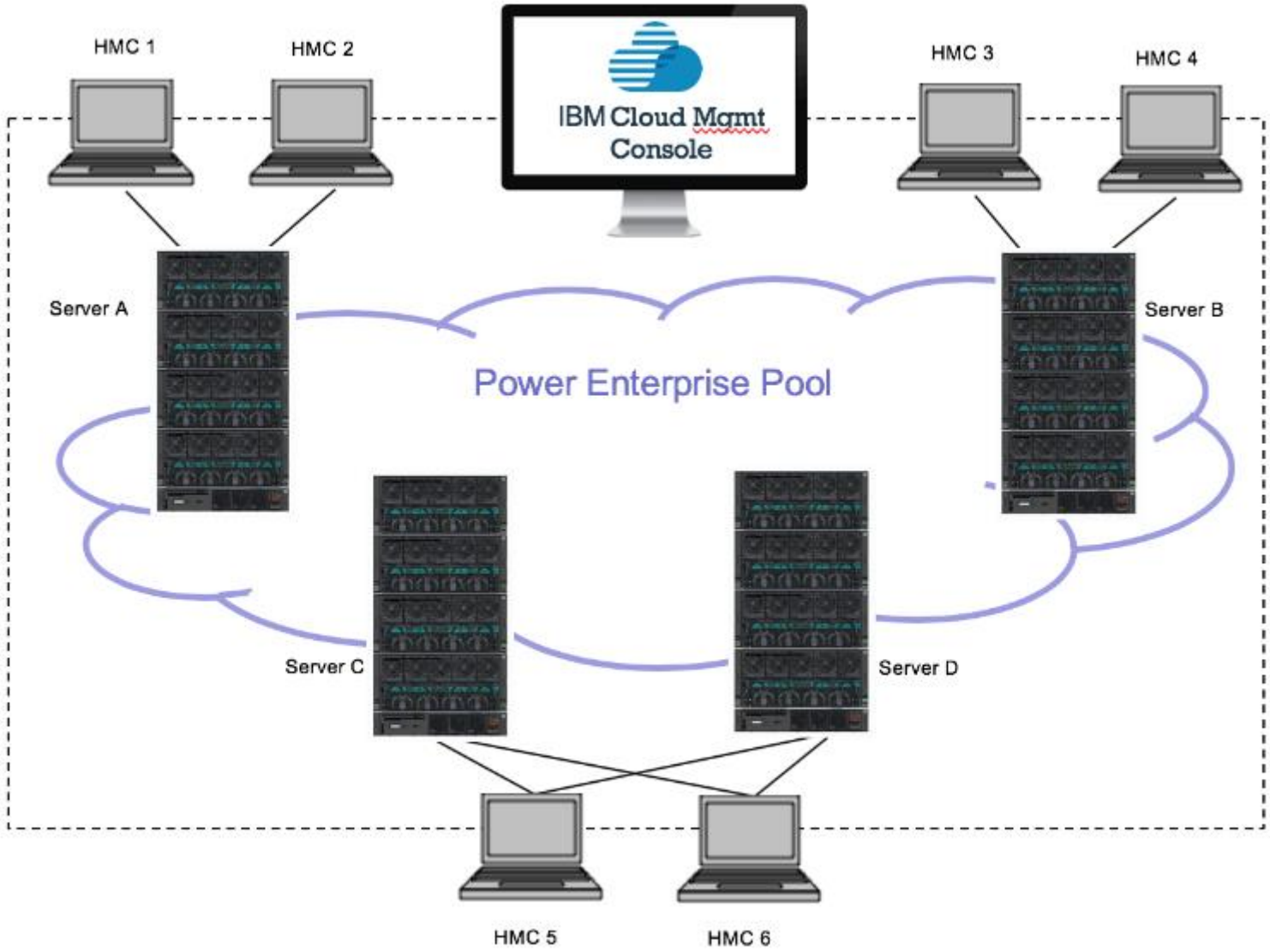
Legacy Power Enterprise Pools

- POWER7 & POWER8
  Or
  POWER8 & POWER9
- Purchase static & mobile resources
- Mobile resources activations must be moved from server to server
- HMCs network-connected to master HMC
- HMC user interfaces for management of all mobile resources



Power Enterprise Pools 2.0

- POWER9 E980 (2019 announcement) and now E950, S922, and S924 (2020 announcements)
  - E980 pools, or E950 pools, or S922/S924 pools
- Purchase base (permanent) activations for expected workloads; all remaining processors and memory (E9xx only) are active. Consumption over the “POOL BASE” resources will be metered (by the minute)
- Resources no longer need to be moved from server to server
- All processor allocations must be in sharepool (no dedicated processor assignment)
- HMCs network-connected to the Cloud Management Console (CMC)
- CMC user interfaces for management and monitoring



Power Private Cloud with Dynamic Capacity

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

Power E980

New!

Power E950

Power S922 & S924

- Flexible options to lower cost
  - Optimize TCO with shared capacity
  - Low initial TCA with pay-per-use
- Simple agility to respond to business demands
- Metering by the minute
- Real time visibility and control

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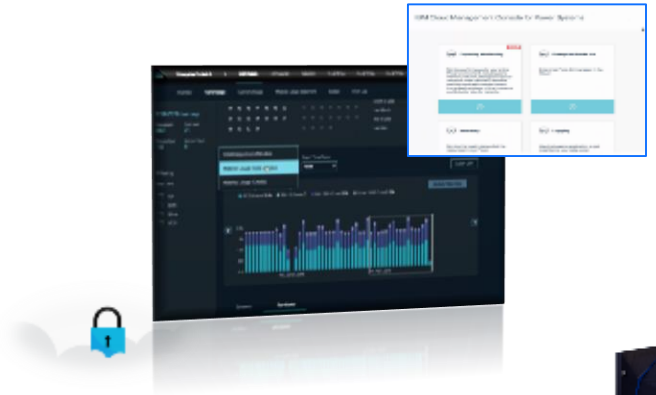
Power Private Cloud with Dynamic Capacity

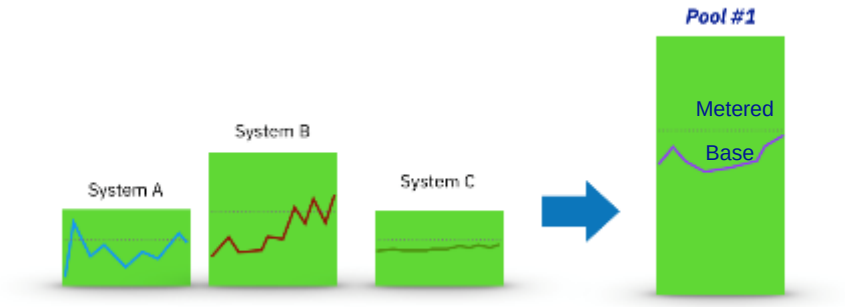
Cloud-like agility and economics with leadership business continuity and security



Power S922 & S924

Power E950

Power E980



Expanded Shared Utility Capacity

- Deploy a Power Private Cloud infrastructure with Shared Utility Capacity across a collection of Power E980, or E950, or S924 and S922 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
- IBM Proactive Support
- Private Cloud Capacity Assessment & Implementation Services

Deploying Shared Utility Capacity

- Purchase servers with Base capacity
- Variable demand addressed by purchasing Capacity Credits for Metered capacity
- IBM Cloud Management Console with HMC automatically monitors and debits against Capacity Credits based on actual usage by the minute

Base and Metered Capacity

Processor activations AIX and IBM i licenses Memory activations (E980 and E950 only)

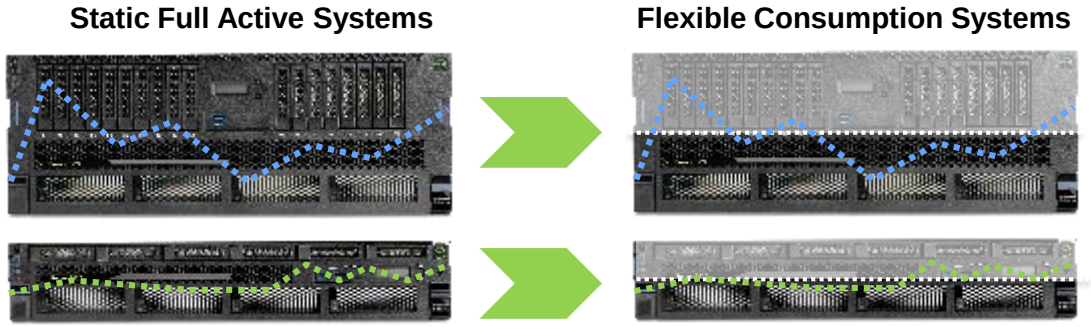
* One server machine type per pool. Multiple pools may be managed by a single instance of a Cloud Management Console

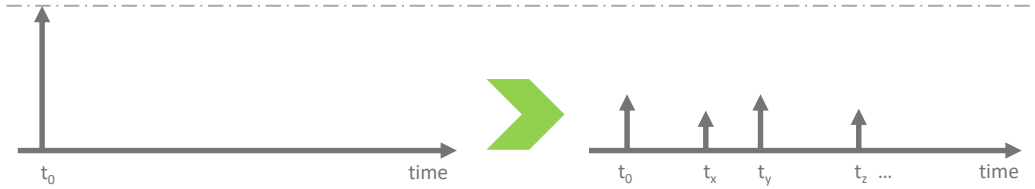
Power Systems Private Cloud Scope: Scale-Out vs Scale-Up

	Scale-Up (E980, E950)	Scale-Out (S922, S924)
Shared Utility Capacity	Yes	Yes
Processor cores metering	Yes	Yes
AIX and IBM i entitlements metering	Yes	Yes
Buy Capacity Credicts in the ESS Portal	Yes	Yes
Memory metering	Yes	No
Elastic Capacity (ECOD)	Yes	No
Base Activations by OS	One for AIX/IBM i and another for Linux	One base core activation for Any OS
Intermix of systems in the same pool	No	Yes
Managed through IBM Cloud Management Console (CMC)	Yes	Yes
Try before you buy: Lab Services Private Cloud Capacity Assessment (FC #EP2X)	Yes	No. Quote directly with Lab Services.

Power Private Cloud on Scale-Out Servers

Introducing Shared Utility Capacity on IBM Power S922 and S924 Servers for pay-per-use compute experience - by the minute





VALUE PROPOSITION

- Enable multi-systems resource sharing across a collection of scale-out servers
- Up to 58% lower initial system price to drive a flexible financial acquisition
- Offers a single-pane-of-glass for monitoring and metering a complete POWER landscape

SCOPE

- S922 and S924 Gen4 systems with a minimum of 8 physical cores, one base activation and 256 GB memory
- Share processors, AIX and IBM i license entitlements in the same pool (not memory)
- Supports resource sharing between S922 and S924 systems in the same Pool

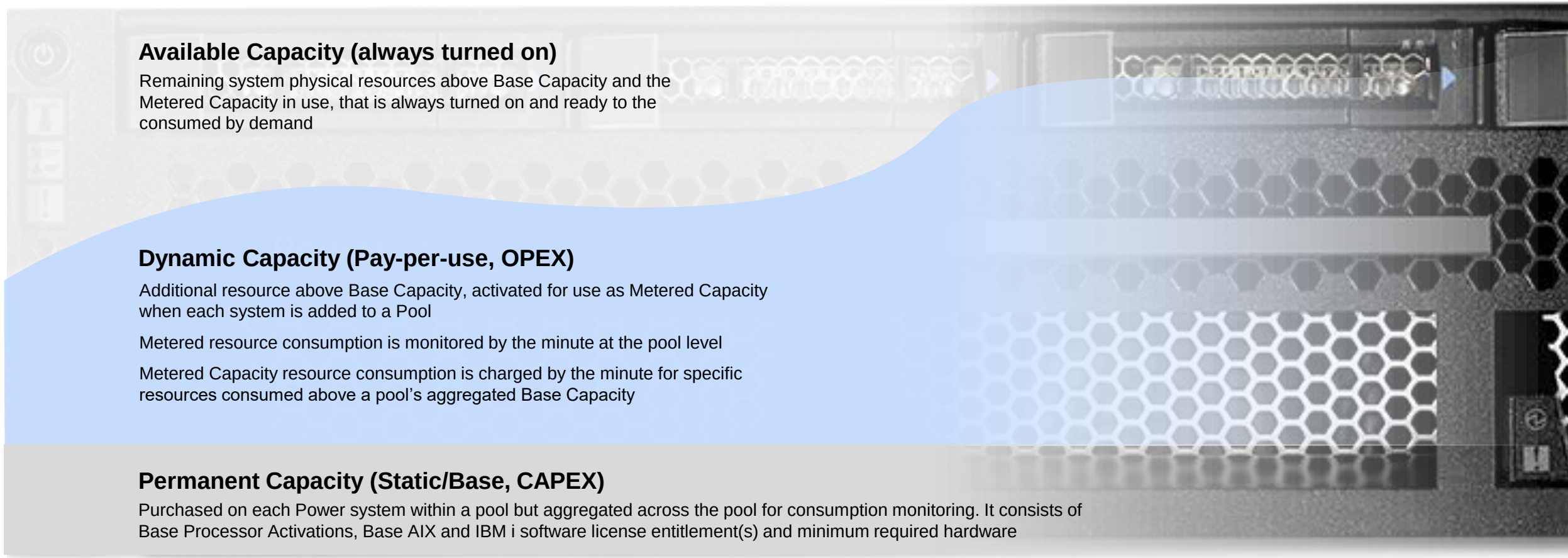
POSITIONING

- No fixed monthly fees commitment
- No limited time contracts. Stay flexible for as long as you need
- Enables multi-systems resource sharing
- IBM's unique comprehensive approach to cloud (on-prem IT to public cloud provider)

TARGET USE CASES

- High-end customers seeking a multi-system resource sharing across low entry servers
- Customers with multiple installations of scale-out servers, in a single datacenter or distributed in different sites
- MSPs/CSPs aiming POWER-based cloud go-to-market such as HANA, Oracle, AIX, IBM i, and others

Capacity Consumption in the Power Private Cloud



Available Capacity (always turned on)

Remaining system physical resources above Base Capacity and the Metered Capacity in use, that is always turned on and ready to the consumed by demand

Dynamic Capacity (Pay-per-use, OPEX)

Additional resource above Base Capacity, activated for use as Metered Capacity when each system is added to a Pool

Metered resource consumption is monitored by the minute at the pool level

Metered Capacity resource consumption is charged by the minute for specific resources consumed above a pool's aggregated Base Capacity

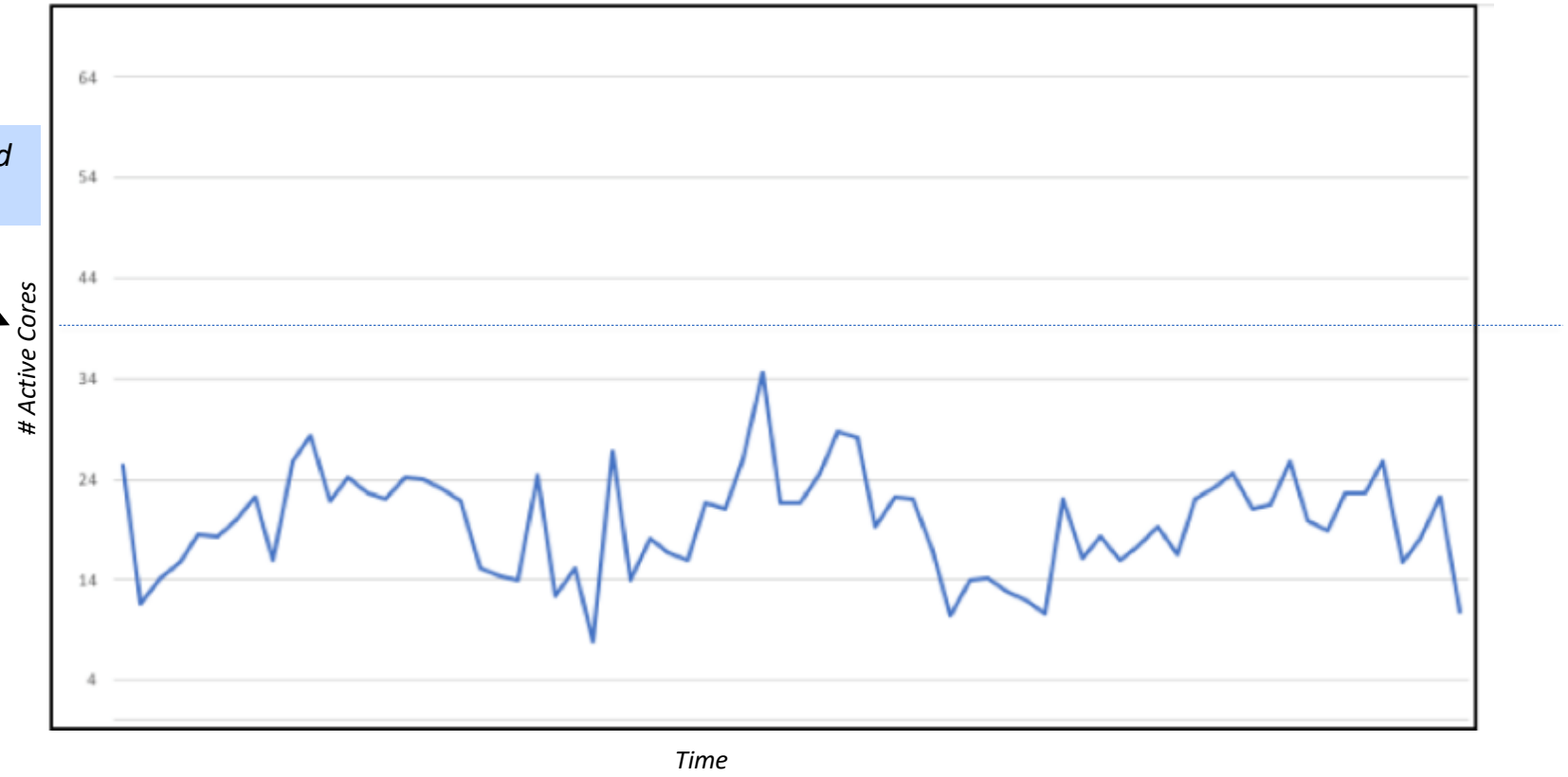
Permanent Capacity (Static/Base, CAPEX)

Purchased on each Power system within a pool but aggregated across the pool for consumption monitoring. It consists of Base Processor Activations, Base AIX and IBM i software license entitlement(s) and minimum required hardware

Note: Clients may manage potential resource consumption via PowerVM & PowerVC configuration & resource management options & policies

System A : Max # cores for peak utilization over sample time period

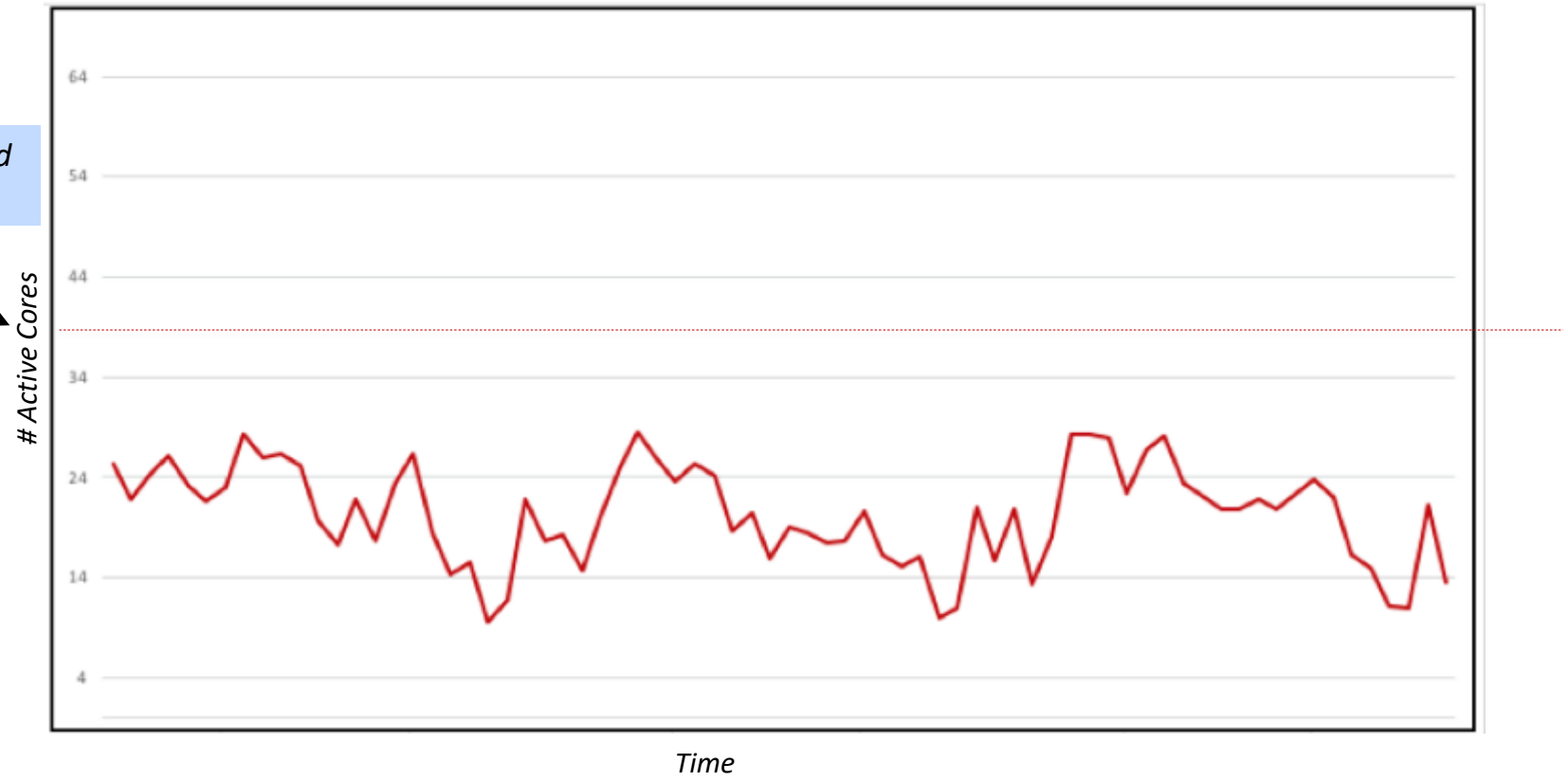
Processor Activations purchased to deliver max peak required



System A

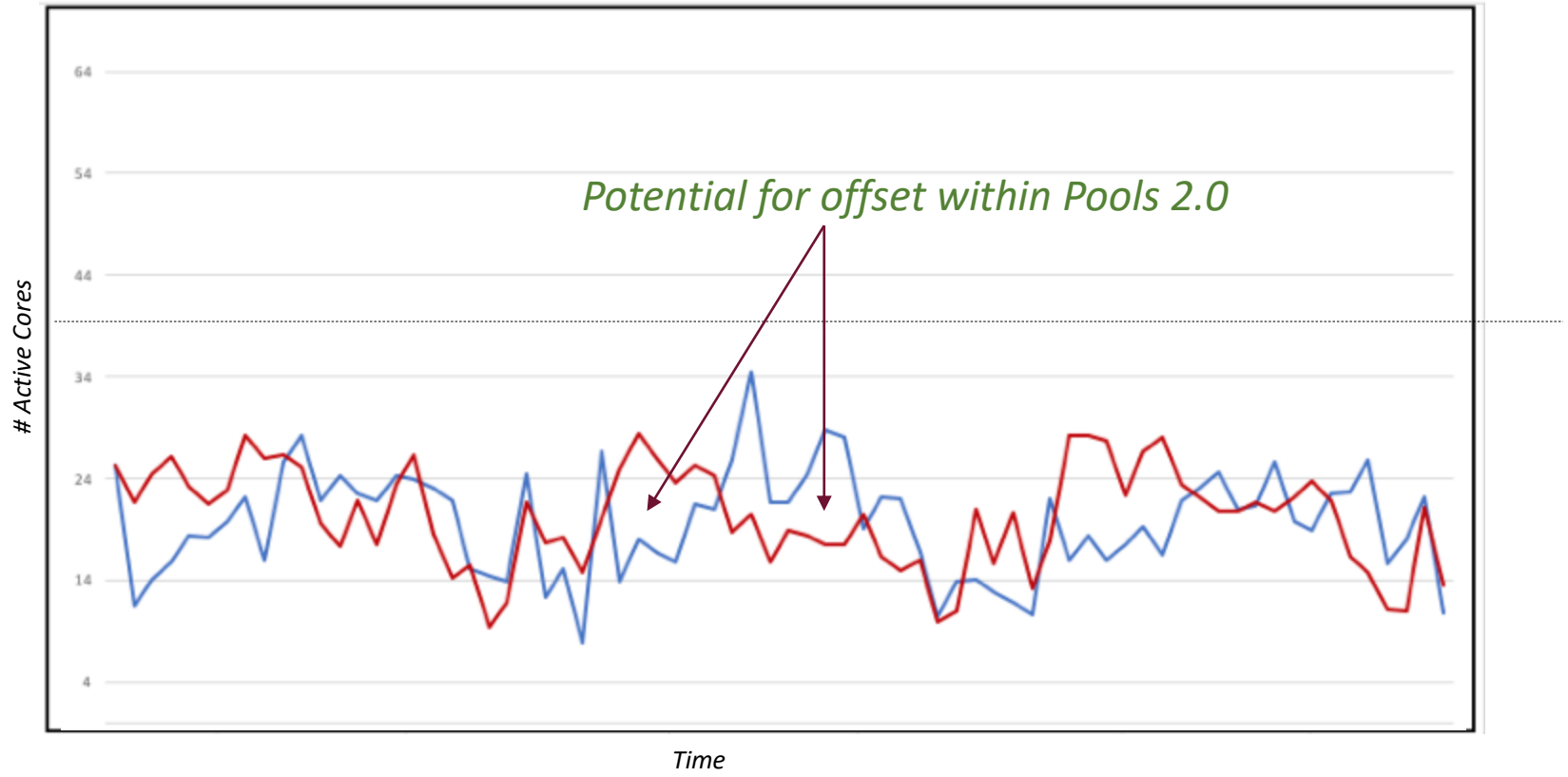
System B : Max # cores for peak utilization over sample time period

Processor Activations purchased to deliver max peak required



System B

Potential Metered Capacity consumption charges on one system may be offset by available (idle) Base Capacity on another system for the same minute

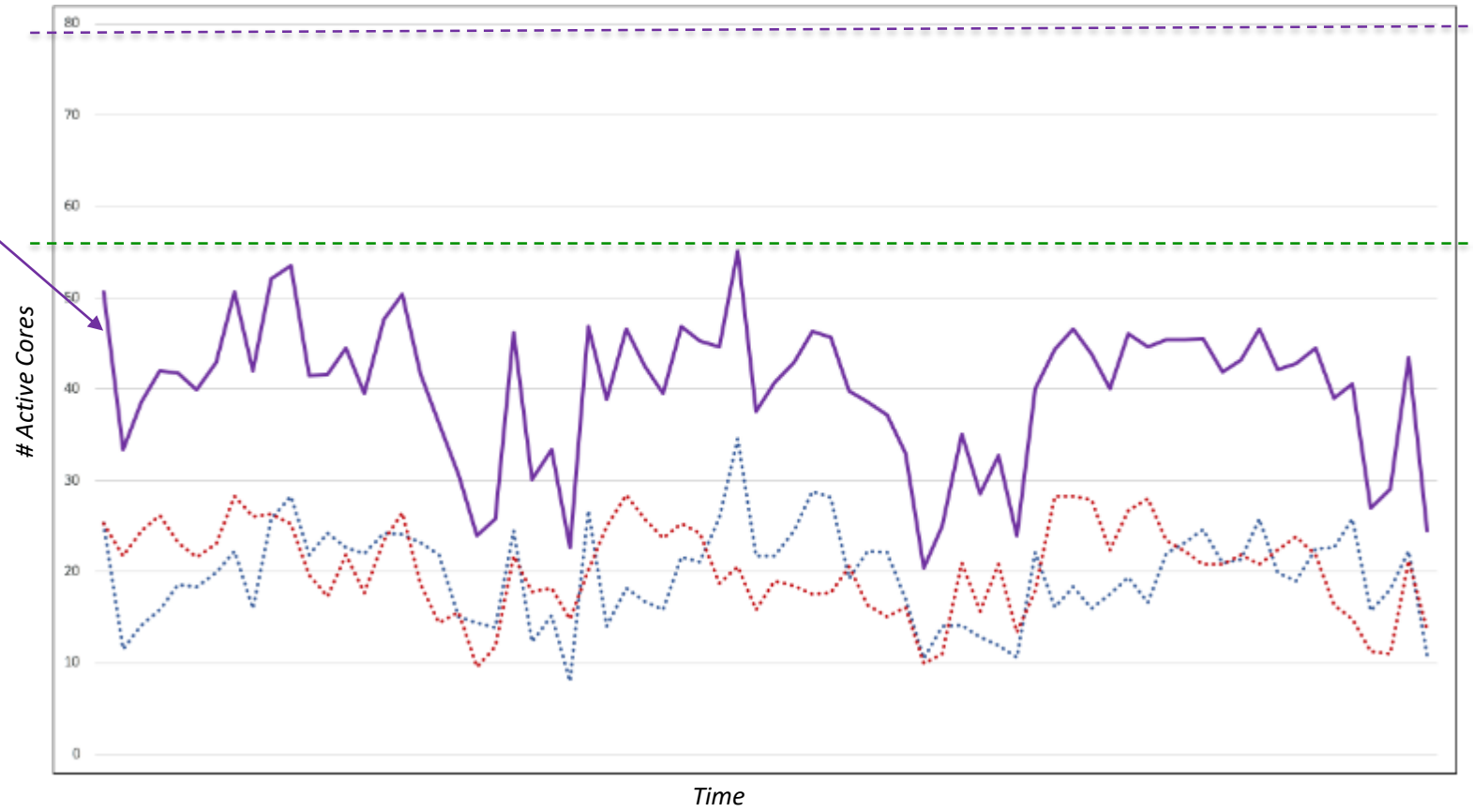


Shared Utility Capacity provides unique innovation to optimize capacity and reduce expense to handle peak demands across a collection of Power servers

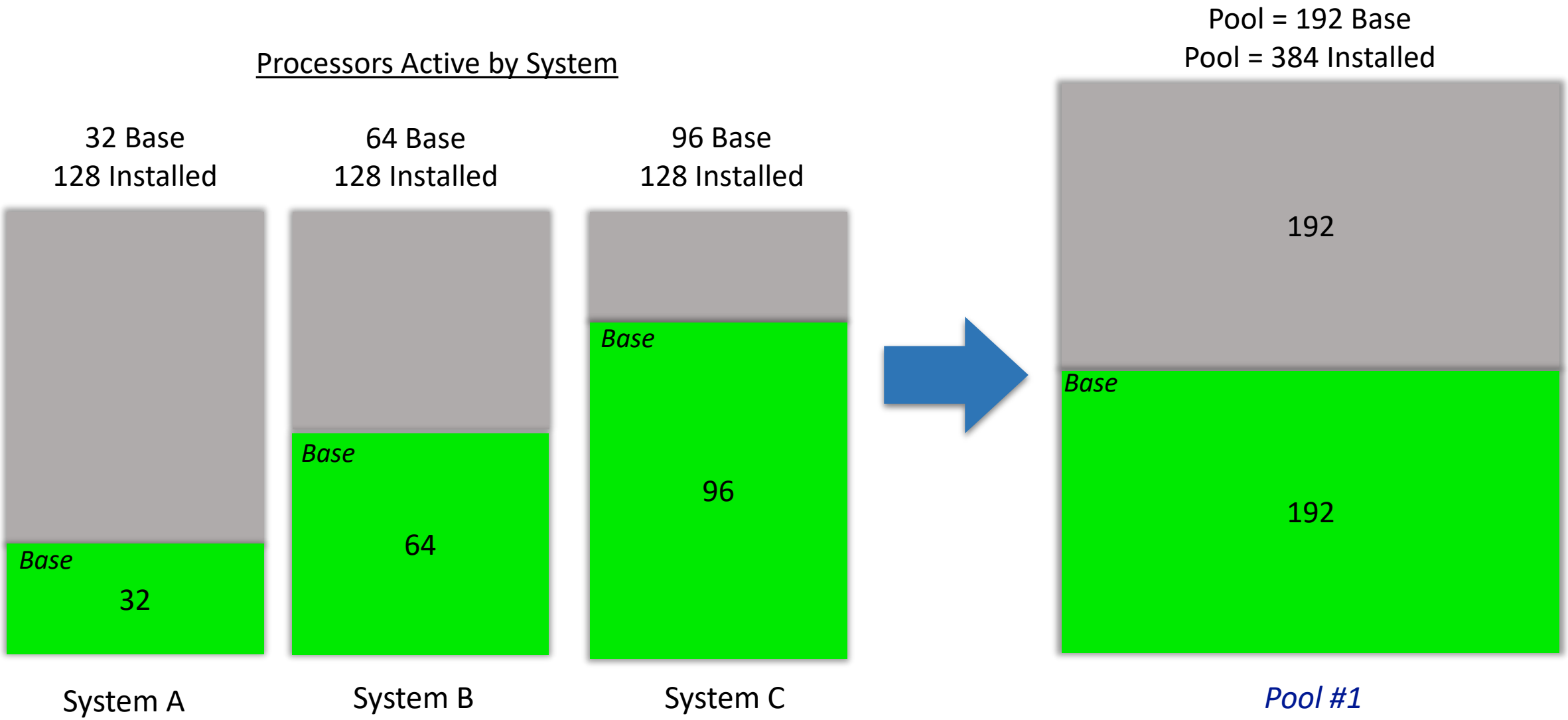
Total of initially planned peak processor activations for System A + System B (prior to Pools)

Aggregated Peak for Pool

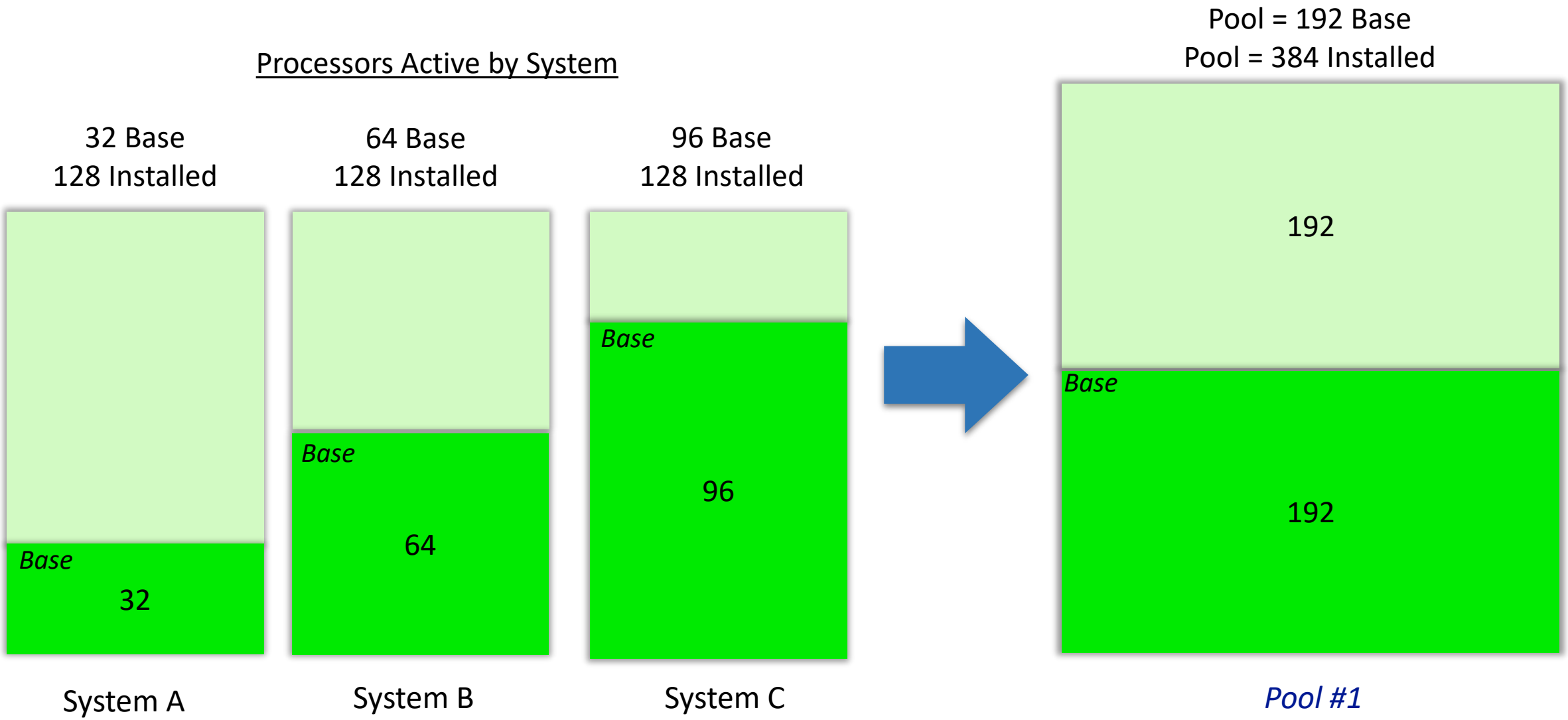
Potential to leverage shared resources in Pools 2.0 to reduce expense to deliver capacity expense



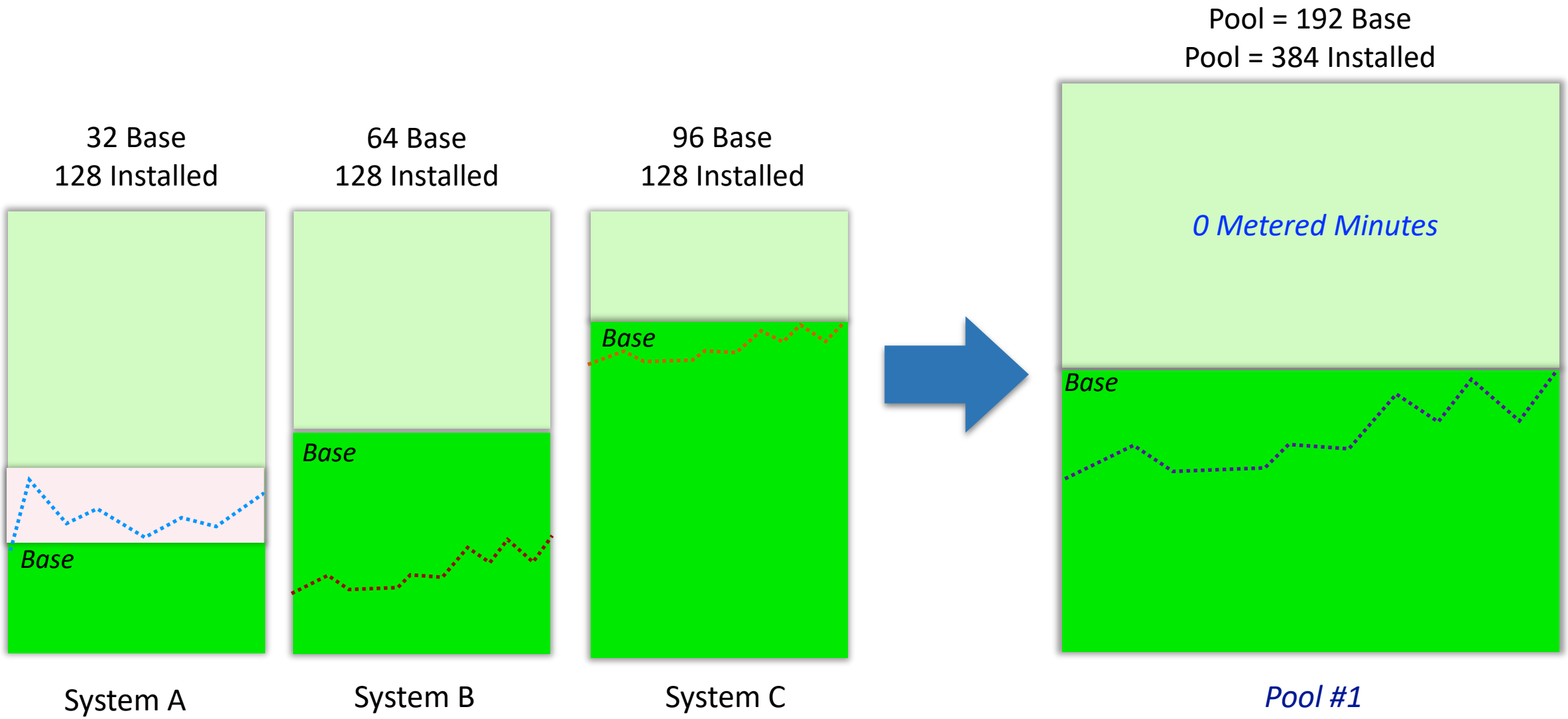
Client purchases Power E980/E950/S922/S924 systems with new Base Processor & Memory (E9xx only) Activation resources.



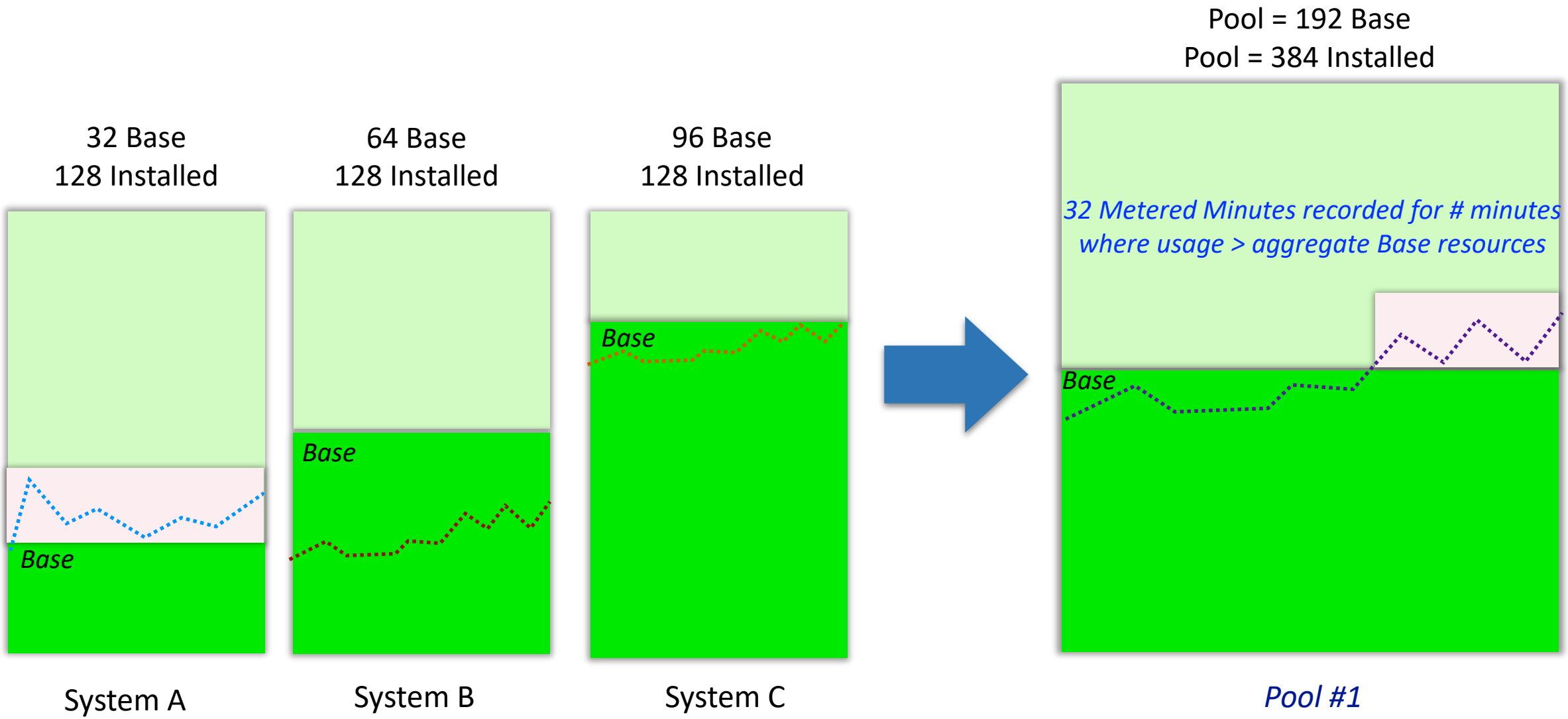
All remaining resources are activated when a Pool is started.
Resource usage is metered for minutes above the pool's aggregate Base resources



Processor Example - Pool has 1 system using more than its Base Processor Activations, but another system is idle, using less than its Base Processor resources at the same time, so 0 Metered resource usage is recorded

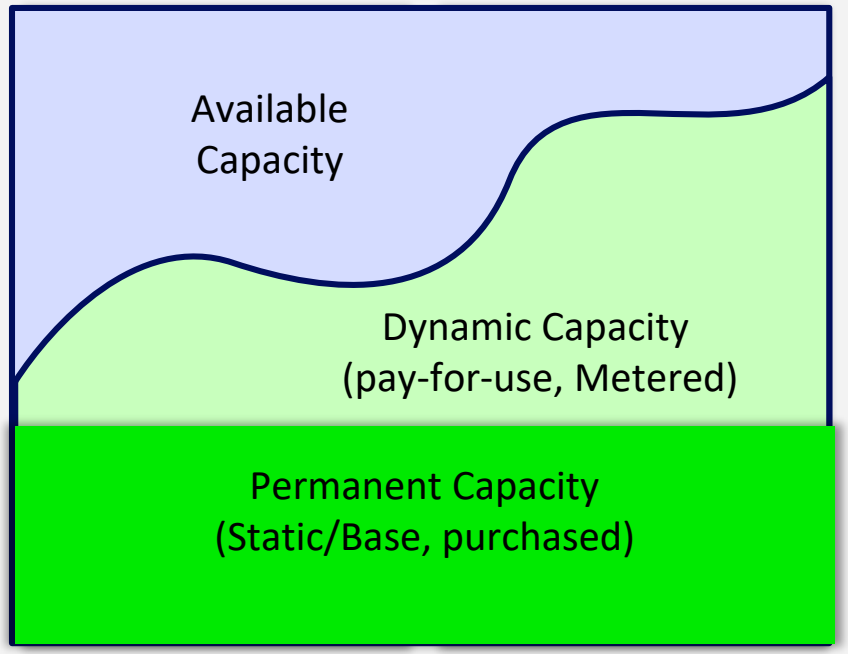


Processor Example - Processor usage > the aggregate of Base Processor Activations across the pool, so Metered Processor Capacity minutes are recorded and Metered Capacity Credits are debited accordingly



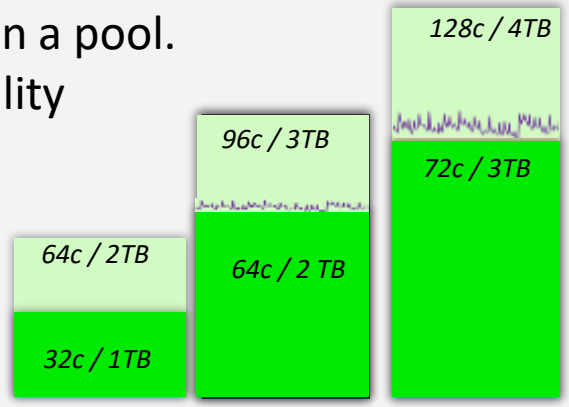
On Prem, Private Cloud. A new approach to selling systems and capacity to align to client business requirements.

Power Private Cloud with Dynamic Capacity



1. **Optimize TCO with dynamic sharing of base activations**
   Automated Base activation sharing within a pool. Metered capacity credits provides flexibility above a pool's Base resources.

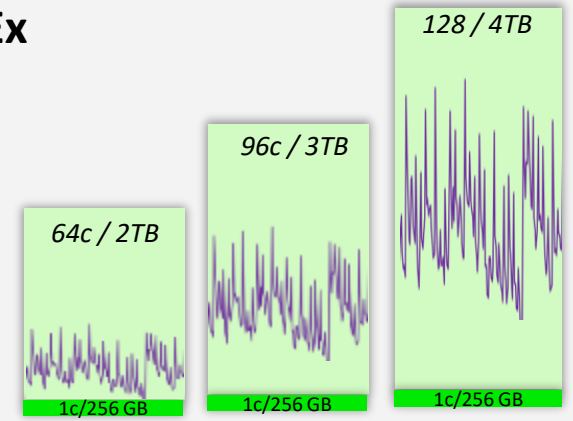
20-30% lower TCO



Base Activations for sustained % utilization

2. **Reduce initial investment / shift to OpEx**
   Reduces initial system acquisition price and offer a pay-for-use consumption

> 50% lower TCA



Minimum Base Activations for lowest initial system price

3 Systems
3 Year Timeframe

Scale-out Example

Traditional purchase with static activations: **$271.426**

Pools 2.0 Case with Initial Base Resources

	System 1	System 2	System 3	Pool Total - Base	
#Cores Installed	20	20	20	60	
# Base Processor Activations	1	1	1	3	-95%
Average Processor / License Utilization (as % of total installed)	50%	40%	25%	38%	
Avg # Cores Utilized (from % above)	10,0	8,0	5,0	23,0	
Server Hardware	$42.736	$42.736	$42.736	$128.208	16%
Hardware Maintenance	$0	$0	$0	$0	
IBM Proactive Service	$14.112	$14.112	$14.112	$42.336	0%
Hardware Maint & Proactive Service	$14.112	$14.112	$14.112	$42.336	0%
Software Licenses*	$1.200	$1.200	$1.200	$3.600	-95%
Software Subscription & Support (SWMA)*	$1.284	$1.284	$1.284	$3.852	-95%
Total (List)	$59.332	$59.332	$59.332	$177.996	-41%
	10%	10%	10%		
Total (End User Net)	$53.399	$53.399	$53.399	$160.196	
				-41%	

→ 41% lower TCA

Summary of Metered Capacity

	Metered $ at % Utilization
# Cores/Licenses Avail	60
Cores/Licenses Metered	20
Avg % of Total Cores/Licenses Utilized	38%
Cores/Licenses Metered %	33%
# Credits Consumed	873,3
Metered Processor Charges	$58.220
Metered Operating System Charges	$151.373
Metered Capacity	$209.593
Total List	$209.593
	10%
Total Net	$188.634

Total TCO

Base + Metered Total

	Total TCO	
# Cores/Licenses Avail	60	
Total Base Cores/Licenses	3	
Avg % of Total Cores/Licenses Utilized	38%	
Cores/Licenses Metered %	33%	
# Credits Consumed	873,3	
Server HW & Metered Capacity	$337.801	207%
Hardware Maintenance	$0	
IBM Proactive Service	$42.336	0%
Hardware Maint & Proactive Service	$42.336	0%
Software Licenses	$3.600	-95%
Software Subscription/Support	$3.852	-95%
Total List	$387.589	29%
Total Net	$348.830	29%
	29%	
Delta to Base	$77.405	

→ 29% higher TCO

IBM Power Private Cloud Capacity Assessment & Implementation Services

Overview

IBM Power Private Cloud Capacity Assessment & Implementation Services is a multisystem IBM Power server infrastructure offering designed to provide a highly resilient and flexible IT environment in support of large-scale servers and your most demanding business applications. This service helps configure and exploit the capabilities of Power's *Elastic Capacity* or *Shared Utility Capacity* to optimize ROI when deploying a Power infrastructure with Power E980 and/or E950 systems.

Target Audience

- Clients with two or more Power Enterprise Servers with Shared Utility or Elastic Capacity
- Works with AIX, Linux and IBM i

Benefits

- Helps improve overall availability with reduced risk of downtime and disruption
- IBM Lab Services consultant remote or on-site
- Skills transfer from our experts helps you fully exploit the capabilities of this product

Qualifying Questions

- Are you planning to deploy pay-for-use capacity within your infrastructure?
- How do you utilize Elastic Capacity on Demand or Power Enterprise Pools 2.0 and the Cloud Management Console?
- How can we optimize our Power infrastructure to be most responsive to the needs of our business?
- How can I most effectively deploy our Power capacity to ensure we deliver high availability and support Live Partition Mobility?

Key Features

- Review workload utilization in the Shared Utility Capacity pool using the IBM Lab Services Capacity Planning Tool – Metered Capacity Modeling
- Assist evaluating the best
- Hands on implementation to provide skills transfer to your team to learn how to use IBM Shared Utility Capacity
- Assist clients in determining the usage for advanced planning and other events
- Implement IBM Cloud Management Console for Power Systems

Deliverables

- Enablement of Shared Utility Capacity or Elastic Capacity
- Enablement of the Cloud Management Console
- A presentation of the results from the IBM Lab Services Capacity Planning Tool – Metered Capacity Modelling

Duration

The service varies depending on the size and complexity of the implementation, but can be customized to specific client requirements.

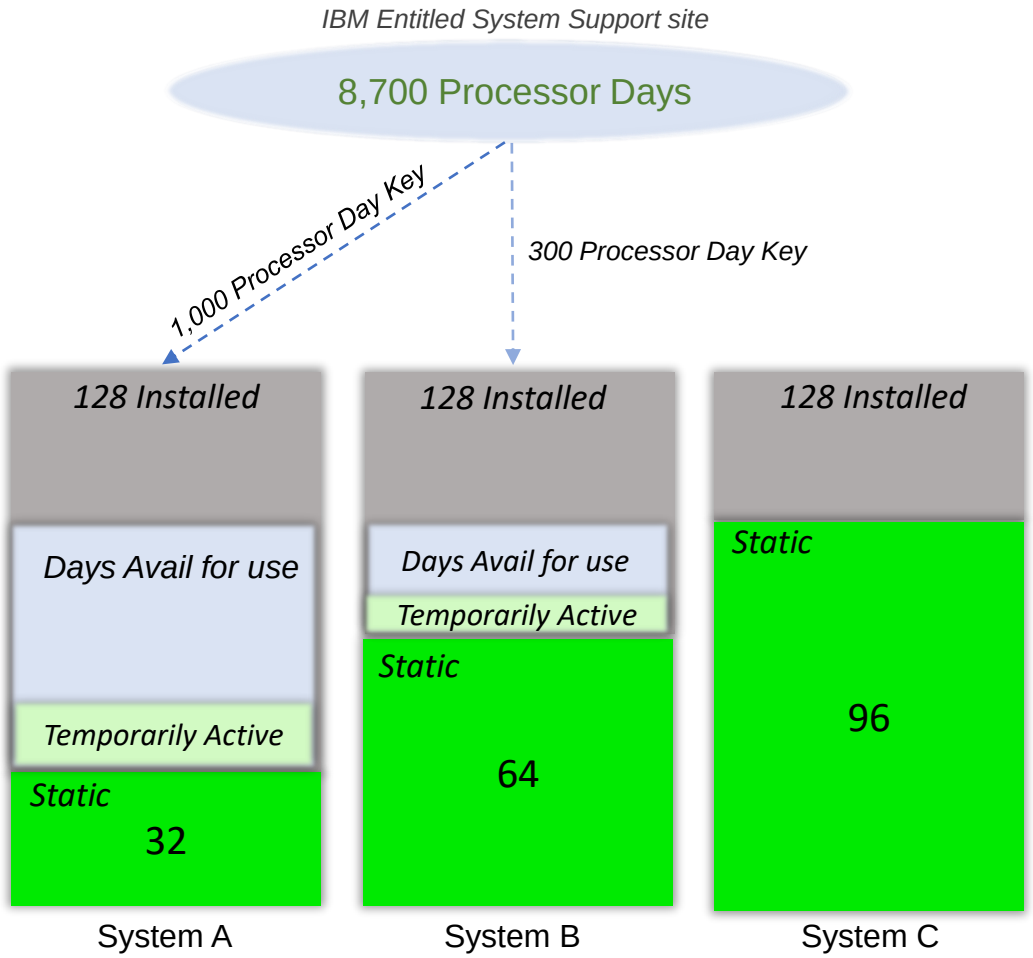
Resources

Learn more about Power Enterprise Pools at:
https://www.ibm.com/it-infrastructure/power/capabilities/capacity-on-demand

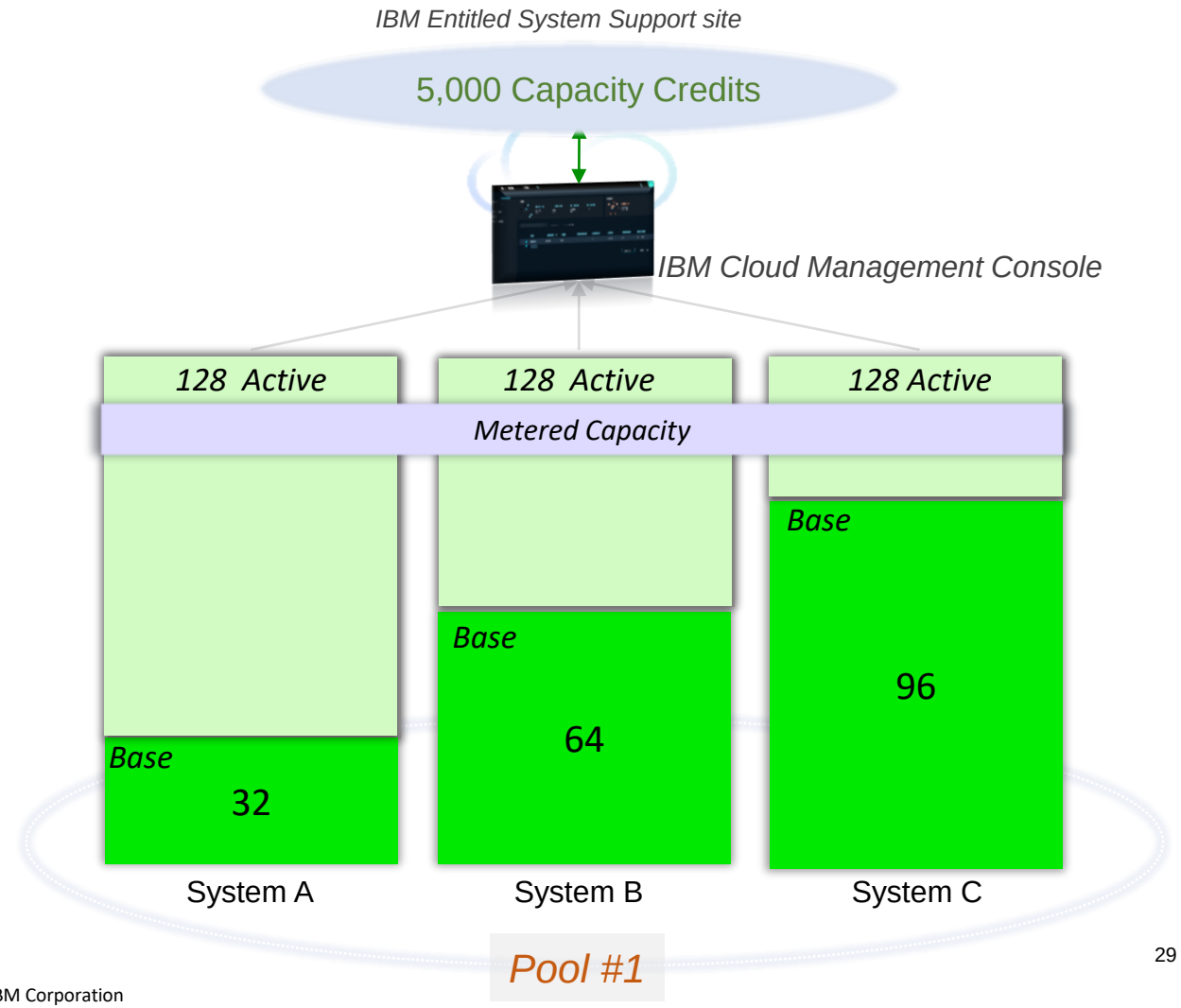
ibmsls@us.ibm.com

Power Dynamic Capacity Elastic vs. Shared Utility Capacity

Elastic Capacity – by the day



Shared Utility Capacity – *by the minute*



Potential Use Cases for Power Private Cloud with Dynamic Capacity

Customer Desires an OPEX Like Payment Solution (Cloud)

- Offers Low TCA
- Ability to *Pre-Pay by the Minute*
- Metered Usage vs “Reservation” Style charges
- Minimal Base & Pre-paid Capacity Offering with no Commitment after initial Purchase

Peak Processing Capacity for busy Workloads (Bursting)

- Immediate Access to Full, Installed Capacity, *Day One*
- Pay Only For What You Use
- Purchase Base Capacity Only for Average Workload
- Peak into Metered Usage for Seasonal Processing

Disaster Recovery and High Availability

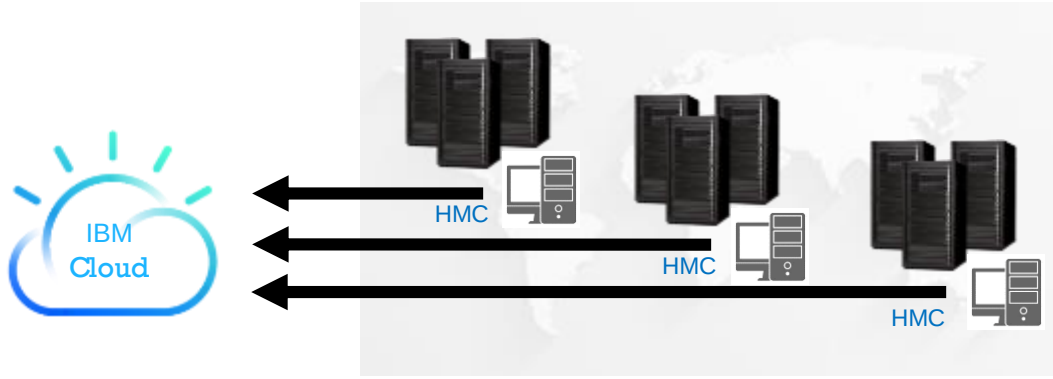
- Purchase Multiple Systems for Redundancy and Failover
- Capacity is 100% Active on DR & HA Systems
- Cost for Usage is only Debited Above Base Capacity

Budget Reallocation or Capacity Resizing

- Exploit Base Capacity for Average Workload
- Utilize Peak Capacity as Metered Usage
- Pre-Pay only for Utilized Capacity by the Minute

Cloud Management Console

Cloud-based micro-services that can be accessed securely, anytime, anywhere for your complete enterprise to provide cross datacenter monitoring



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

Inventory

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

Capacity Monitoring

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

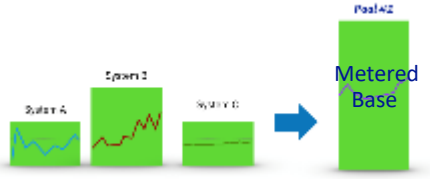
Log Trends

- 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



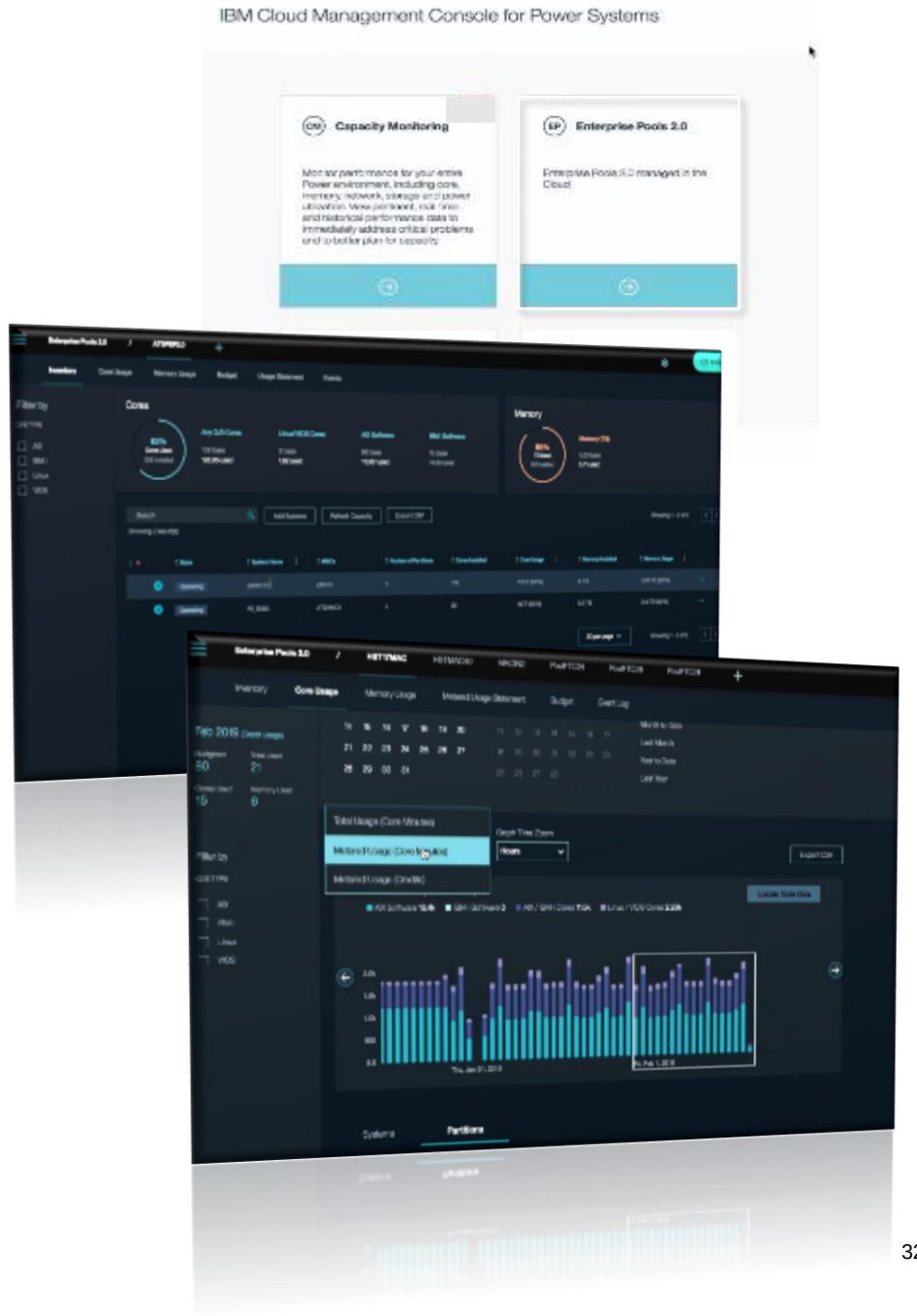
- Seamless multi-system resource sharing and flexibility for clients deploying a private cloud infrastructure
- Shared Utility Capacity across a pool of Power E980, or E950 or S922/S924 systems

➔ **Get started with CMC today!**
https://ibmcmc.zendesk.com/hc/en-us/articles/235776268-Get-Started-with-IBM-Cloud-Management-Console-for-Power-Systems

Power Enterprise Pools 2.0 Highlights

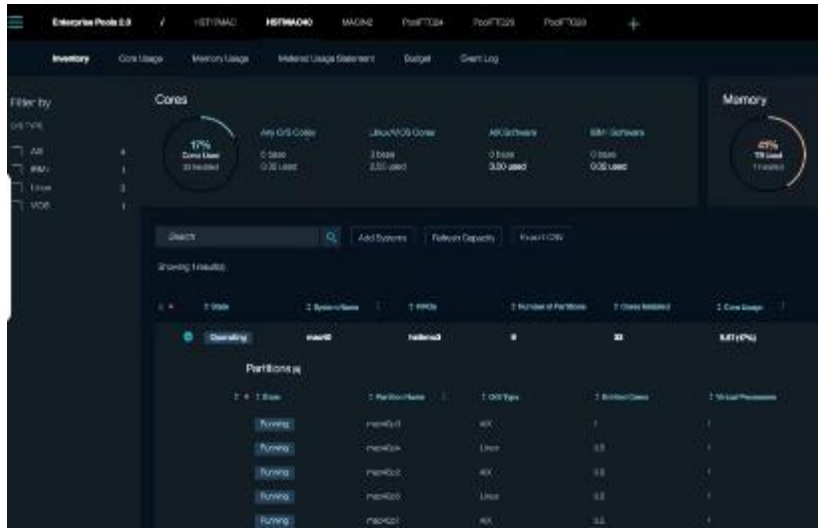
The Power Enterprise Pools 2.0 application provides features to:

- Start a pool
- Add Power E980, E950, or S922/S924 systems to a pool
- Set a monthly budget for Metered Capacity consumption
- Analyze total or Metered minutes, Capacity Credits, core, memory, or operating system resource usage
- Monitor Base and Metered Capacity used within a pool over time
- Analyze trends within a pool and adjust time scale to review by minutes, hours, days, weeks, or month
- Drill down within a selected time period to see more detailed usage by VM
- Show Capacity Credits consumed and breakdown usage by resource within a pool
- Display Capacity Credit balance, budget status, Metered resource rate table, and Capacity Credit purchase history
- Monitor and maintain monthly Capacity Credit budget
- Tailor alerts and thresholds for a pool based upon budget and resource consumption



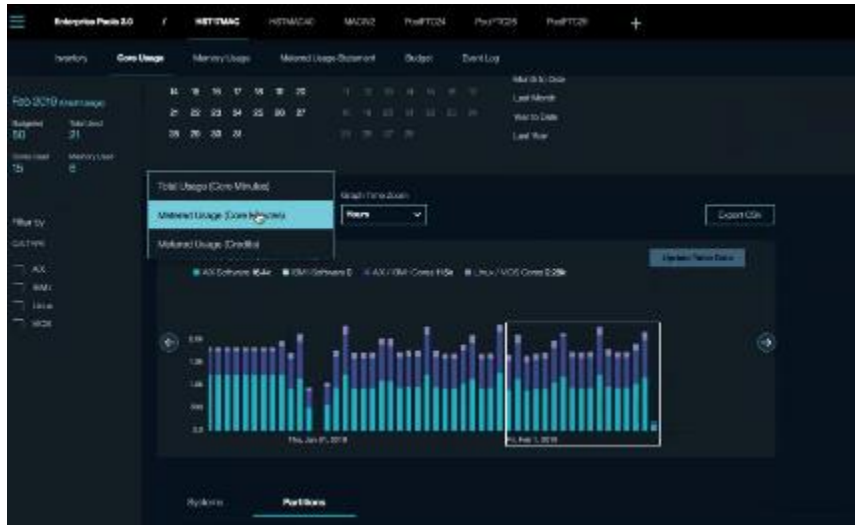
Cloud Management Console (CMC) for Power Enterprise Pools 2.0

Inventory



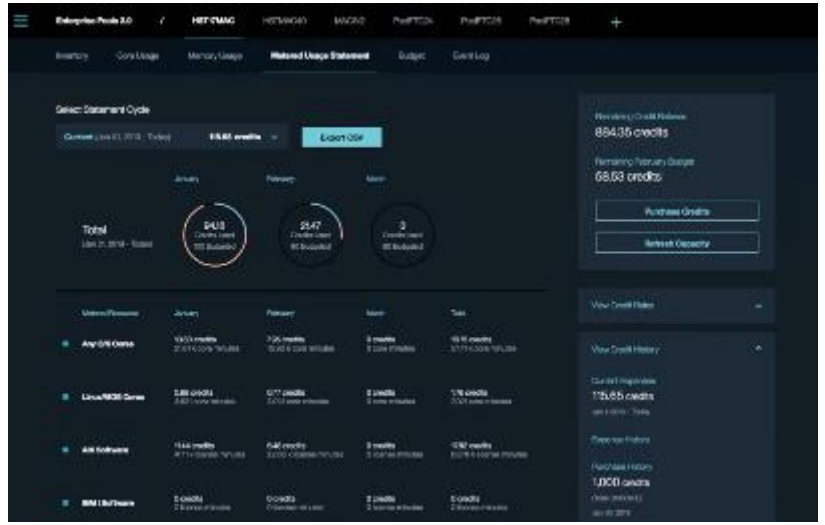
- Displaying, Monitoring & Managing a Pool
- Aggregated resource and VM level detail

Advanced Monitoring



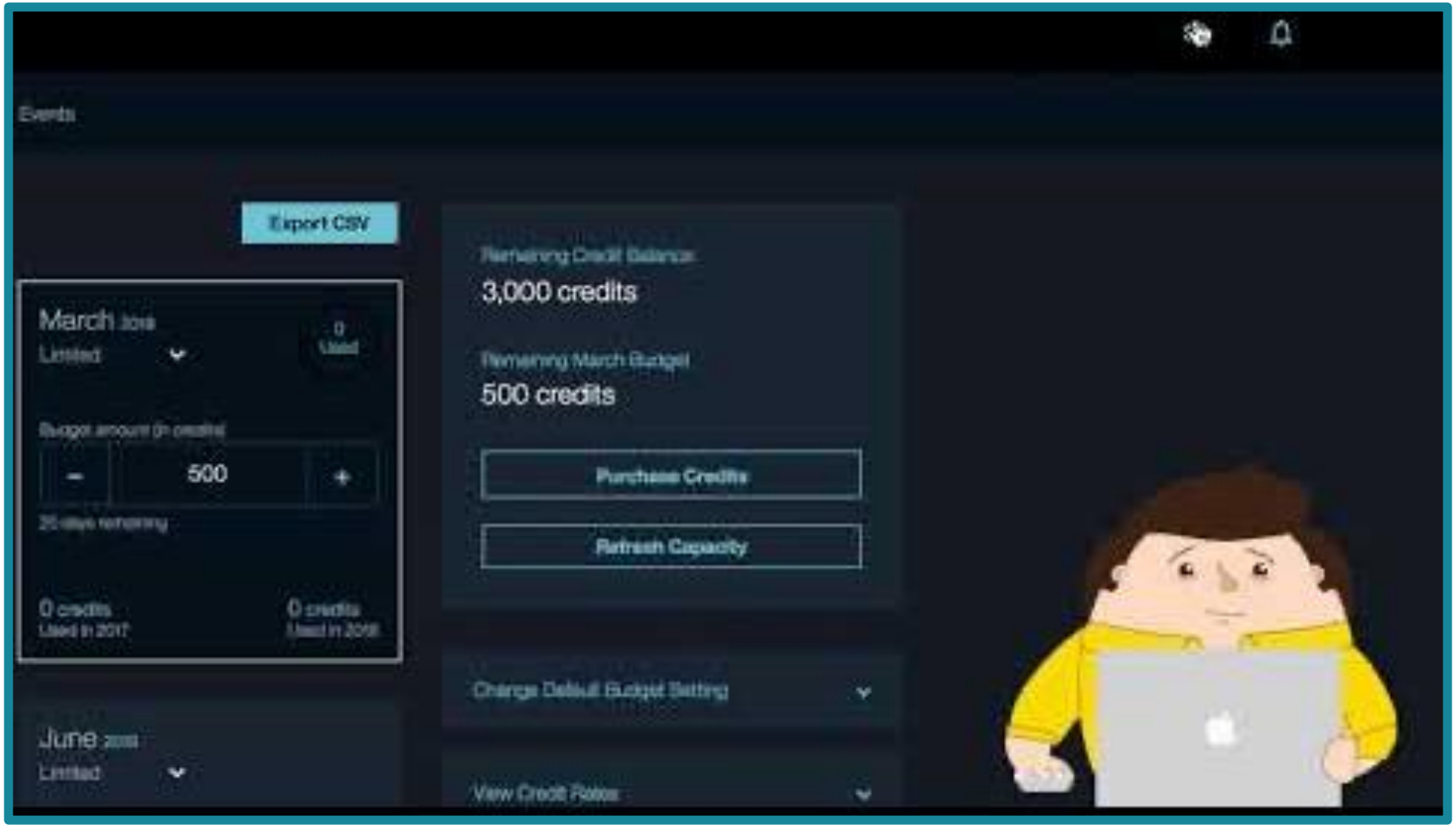
- Analyze Total or Metered Usage
- Change the Time Frame for analysis (Minute, Hour, Day, Week, Month)
- Usage by resource type
- Trending Analysis with ability to adjust time scale

Metered Usage Statement



- Show Capacity Credits consumed and breakdown by resource
- Display Credit balance, budget status, rate table and purchase history

Video: Details on CMC reporting in Shared Utility Capacity



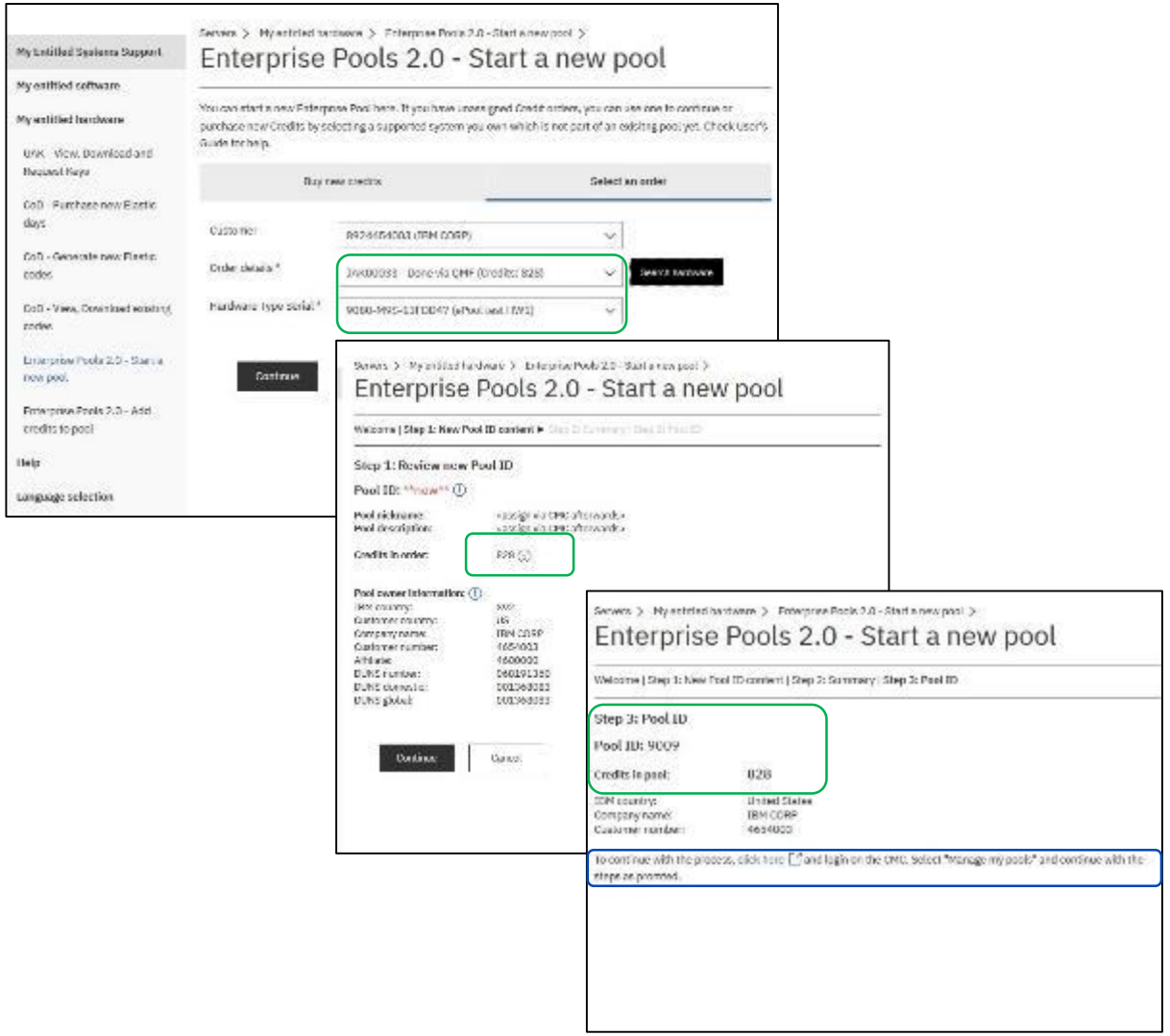
Video on Pools2.0 – details on CMC reporting: https://www.youtube.com/watch?v=l7PgpBOGSqQ

Requirements for Shared Utility Capacity

- Client purchases or leases a Power Scale-Out system with some “dark” resources available for temporary use
- One to thirty-two Power E980, E950, S924 or S922 systems with an IBM AIX®, Linux®, or IBM i operating system may be in the same Pool
- Power Systems firmware 940.1, or later
- All Systems must be in the same enterprise and geopolitical country
- A maximum of 1,000 VMs and up to 32 systems in a pool managed by a single CMC, with up to 500 virtual machines supported per HMC managing a Power Enterprise Pool 2.0.
- *Shared Processor Partitions only* - no Dedicated LPARs
- A minimum of 1 Base Processor Activation is required (FW 940.1 & CMC 1.10)
- A minimum of 256GB of Installed Memory is required
- Cloud Management Console subscription & connection are required
  - All HMCs managing servers within a Pool require Network Time Protocol (NTP) to be enabled
  - Performance and Capacity Monitoring (PCM) must be enabled via HMC for each server in a Pool
- Hardware & Software Maintenance are required on all systems
- Client purchases *Capacity Credits* from Sales (via eConfig order) or directly via Entitled System Support (ESS) (currently available in US, Europe, MEA & CAN) to pay for resource consumption.

6-Steps for Enabling Utility Capacity

1. Clients purchase one or more Power E980, E950, S924 or S922 system with a Base Processor, as well as corresponding software license entitlements.
2. Clients purchase an initial quantity of Capacity Credits from IBM, an IBM Business Partner, or directly on the ESS website, where available, to pay for potential Metered Capacity consumption (minutes of consumption above a pool's collective Base Capacity for a given resource).
3. A system administrator creates a Pool ID through the ESS website using the serial number of a Power E980, E950, S924 and/or S922 system with associated Capacity Credits.
4. An administrator accesses the CMC, defines a Power Enterprise Pool using the Pool ID, and assigns either their Power E980, E950, S924 and/or Power S922 systems to it.
5. All resources are subsequently activated on all Power E980, E950, S924 and/or Power S922 systems in the pool, and the CMC begins monitoring the pool.
6. Metered resource minutes consumed above the pool's aggregate Base for that resource are debited against the pool's Capacity Credits by the CMC and updated in ESS daily.



Link to ESS WEB portal: https://www.ibm.com/servers/eserver/ess/index.wss

Pools 2.0 Capacity Credit Features

SAME on E980 as on E950 as on S922/S924 -> Credits are Credits

Capacity Credit Features	Mach/Mod	Feature	Price
1 Capacity Credit	5819-CRD	#EP9B	$240
10 Capacity Credits	5819-CRD	#EP9C	$2,400
100 Capacity Credits	5819-CRD	#EP9D	$24,000
1,000 Capacity Credits	5819-CRD	#EP9E	$240,000
10,000 Capacity Credits	5819-CRD	#EP9F	$2,400,000
1 Capacity Credit - Digitals	5819-CRD	#EP9J	$240
10 Capacity Credit - Digitals	5819-CRD	#EP9K	$2,400
100 Capacity Credit - Digitals	5819-CRD	#EP9L	$24,000
1,000 Capacity Credit - Digitals	5819-CRD	#EP9M	$240,000
10,000 Capacity Credit - Digitals	5819-CRD	#EP9N	$2,400,000

- Direct & BP Sales via eConfig & ePricer

- Price these ESS features (used only on ESS)

Pools 2.0 Consumption Rate Tables – Minutes : 1 Credit @ List $240

Metered Usage Ratio (# Minutes : 1 Credit)

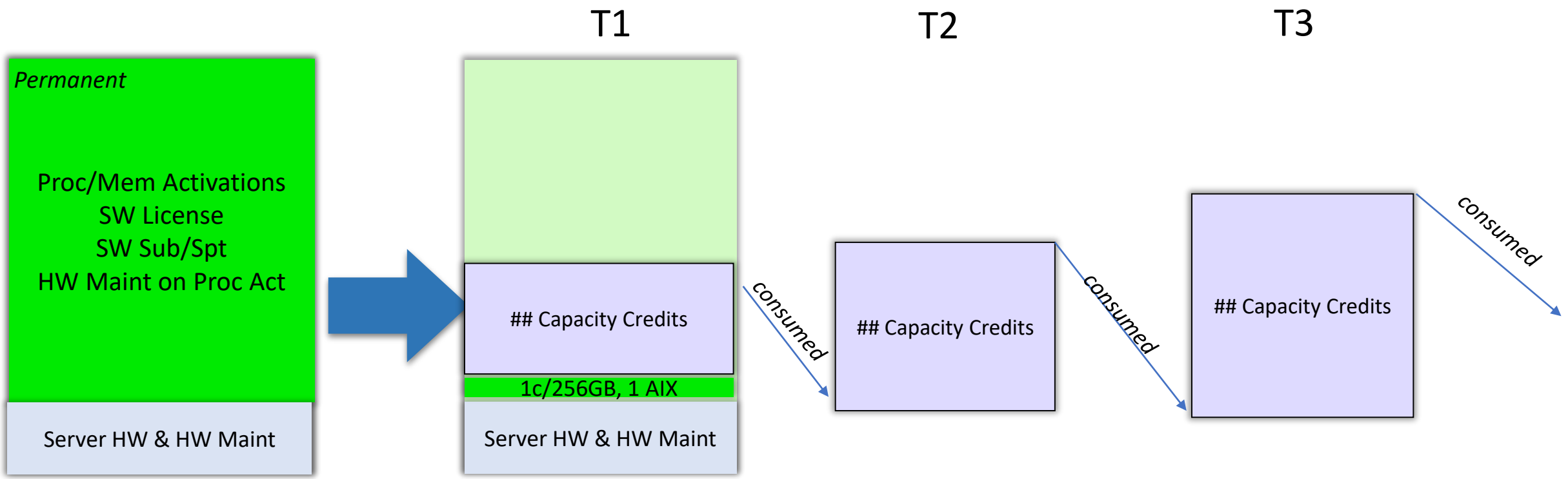
	Power E980	Power E950	Power S922 Power S924
Processor Activation (1 core – Any OS)	20,000	60,000	130,000
Processor Activation (1 core - Linux/VIOS only)	40,000	90,000	N/A
AIX software entitlement (1 core)	30,000	50,000	50,000
IBM i software entitlement (1 core)	1,500	N/A	2,000
Memory Activation (1 GB)	1,500,000	5,000,0000	N/A

Pay-per-use Concept Illustration

Typical Acquisition –
Majority of resource fully activated up-front

Consumption Purchase –
Minimal Base resource activated/licensed up-front

Dynamic Capacity - active resources above Base are consumed as needed and debited from Credits on account



Purchase Option A

Purchase Option B – Power Private Cloud with Dynamic capacity

Metered Capacity & Rate Table calculation example : 8 cores running AIX

- *Resources within a Power Enterprise Pool are monitored by the minute by the Cloud Management Console*
- *Minutes of resource use in excess of a pool's aggregate Base Capacity are metered and charged, at rates established for each machine, against Capacity Credits on account*

Power E980 Rate Table	Metered Usage Ratio (Minutes : 1 Credit)
Processor Activation *(1 core - any operating system)*	20,000
Processor Activation *(1 core - Linux/VIOS only)*	40,000
Memory Activation (1 GB)	1,500,000
AIX software entitlement *(1 core)*	30,000
IBM i software entitlement *(1 core)*	1,500

Metered Resource Charges

# Cores	*8*
#Days	*30*
% Utilization	100%

8 cores running AIX @ 100% Utilization, metered for 30 consecutive days

Processor Metering

# Processor Minutes consumed (1,440 Min/Day x %Util x # Days)	*345,600*
Processor Minutes : 1 Credit ratio	**20,000**
#Credits - Metered Processor Mins	17.28

AIX Metering

# AIX Minutes consumed (1,440 Min/Day x %Util x # Days)	*345,600*
AIX Minutes : 1 Credit	**30,000**
#Credits - Metered AIX Mins	11.52

Total Metering

#Capacity Credits consumed	28.80
Credit List Price ($US)	$240
Value of Credits (List price)	**$2,765**

(List prices, for illustration only and are subject to change without notice).

Metered Resource & Capacity Credit Example

16 cores, AIX & 512GB for 1 month

24x7, no Idle Offset

Time Resources Consumed	
Min/Day	1,440
#Days	30

Metered Processor Usage	
# Cores	16
#Processor Minutes	691,200
Processor Minutes/Capacity Credit	20,000
#Credits consumed	34.56
$/Credit	$240
$ Metered Processors	**$8,294**

Metered AIX Usage	
# AIX Licenses	16
Min consumed	691,200
AIX Minutes/Capacity Credit	30,000
#Credits consumed	23.04
$/Credit	$240
$ Metered AIX Software	**$5,530**

Metered GB Usage	
# GB	512
Min consumed	22,118,400
1GB Minutes/Capacity Credit	1,500,000
#Credits consumed	14.75
$/Credit	$240
$ Metered GB Minutes	**$3,539**

Total #Capacity Credits consumed	72.35
Total $ for Metered Resource	**$17,363**

8 hours/day, no Idle Offset

Time Resources Consumed	
Min/Day	480
#Days	30

Metered Processor Usage	
# Cores	16
#Processor Minutes	230,400
Processor Minutes/Capacity Credit	20,000
#Credits consumed	11.52
$/Credit	$240
$ Metered Processors	**$2,765**

Metered AIX Usage	
# AIX Licenses	16
Min consumed	230,400
AIX Minutes/Capacity Credit	30,000
#Credits consumed	7.68
$/Credit	$240
$ Metered AIX Software	**$1,843**

Metered GB Usage	
# GB	512
Min consumed	7,372,800
1GB Minutes/Capacity Credit	1,500,000
#Credits consumed	4.92
$/Credit	$240
$ Metered GB Minutes	**$1,180**

Total #Capacity Credits consumed	24.12
Total $ for Metered Resource	**$5,788**

8 hours/day, 50% Idle Offset

Time Resources Consumed	
Min/Day	240
#Days	30

Metered Processor Usage	
# Cores	16
#Processor Minutes	115,200
Processor Minutes/Capacity Credit	20,000
#Credits consumed	5.76
$/Credit	$240
$ Metered Processors	**$1,382**

Metered AIX Usage	
# AIX Licenses	16
Min consumed	115,200
AIX Minutes/Capacity Credit	30,000
#Credits consumed	3.84
$/Credit	$240
$ Metered AIX Software	**$922**

Metered GB Usage	
# GB	512
Min consumed	3,686,400
1GB Minutes/Capacity Credit	1,500,000
#Credits consumed	2.46
$/Credit	$240
$ Metered GB Minutes	**$590**

Total #Capacity Credits consumed	12.06
Total $ for Metered Resource	**$2,894**

Prices are for concept illustration only and are subject to change without notice

Power Private Cloud with Dynamic Capacity

Problem Statement

- *Clients want to reduce initial investment / shift to OpEx*
- *Clients want to optimize overall costs (TCO) with automated resource sharing*
- *Clients do not want to commit to resources long-term*
- *Clients want flexibility when to purchase capacity, when to use, on which systems and for how long*

Solution Capabilities

Instant and dynamic response to changing business needs!

This offering delivers extreme economic efficiency and enables clients to instantly and dynamically respond to changing business needs providing on-demand capacity, graphical monitoring and planning in an automated way, combining the flexibility & agility of public cloud with the security, resilience and performance of on-premises IT!

It allows E980, E950 & S922/S924 clients to purchase

1. *Base activations that could be shared across a pool of systems and thus help reduce investment in permanent activations*
2. *Capacity credits that enable metering by the minute and shifting to an OpEx type of model*

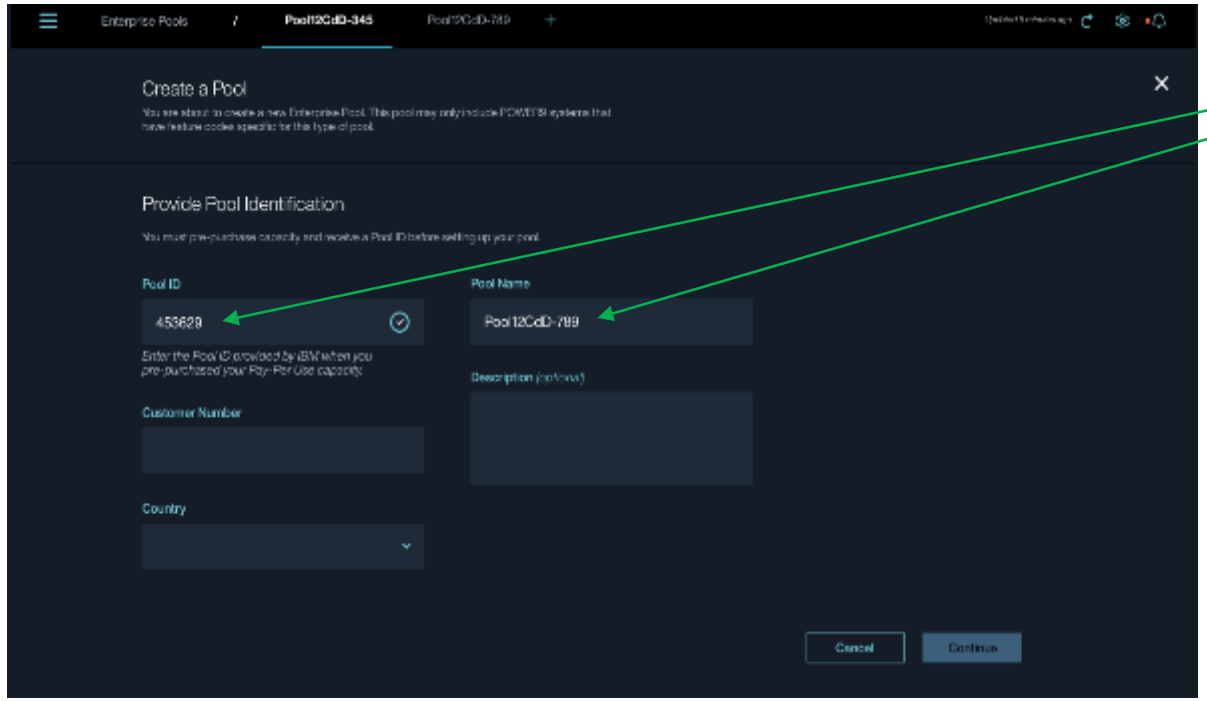
Target Clients & Call to Action

- *Approach clients having dark capacity (POWER8 & POWER9), leveraging PEP 1.0*
- *Clients having multiple POWER8 or POWER9 systems*
- *Clients with varying workloads, such as Service Providers*
- *Revisit deals that haven't been accepted (e.g. CapEx reasons)*
- *Revisit deals with an ugly cost structure*
- *Approach clients with investment restrictions*
- *Clients looking for an OpEx / Cloud-like pricing model*

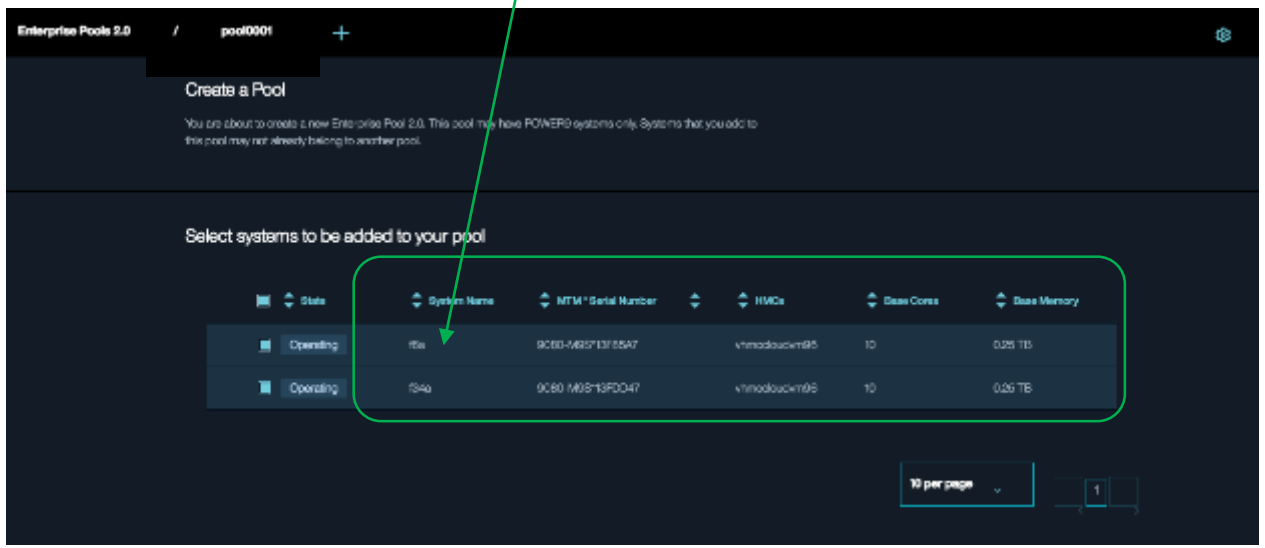
Additional Information and Screen Shots

Creating a Pool (2.0)

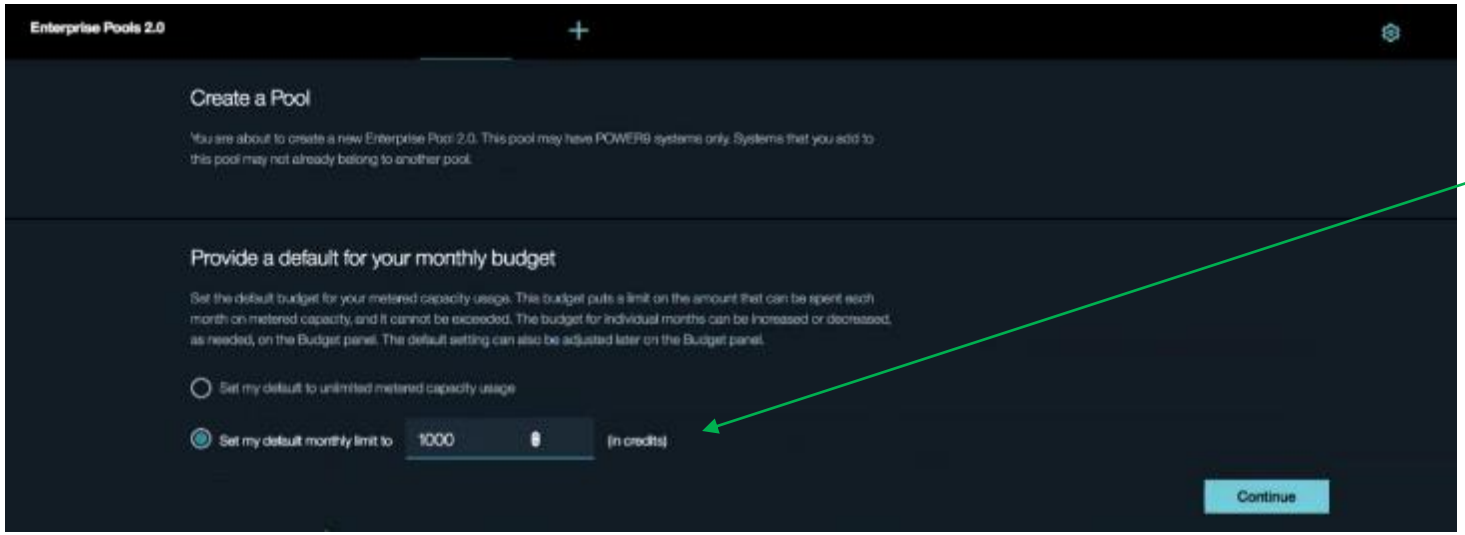
Enter the Pool ID to use and define the Name for this Pool in the enterprise



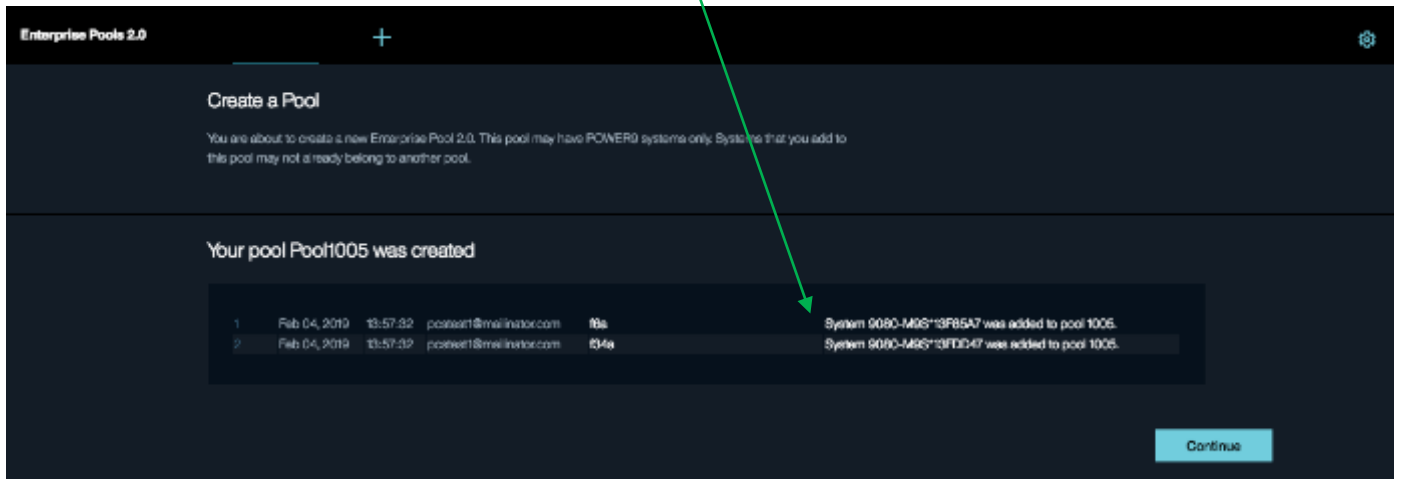
Select additional Power E980s to add to the Pool



Creating a Pool (2.0)

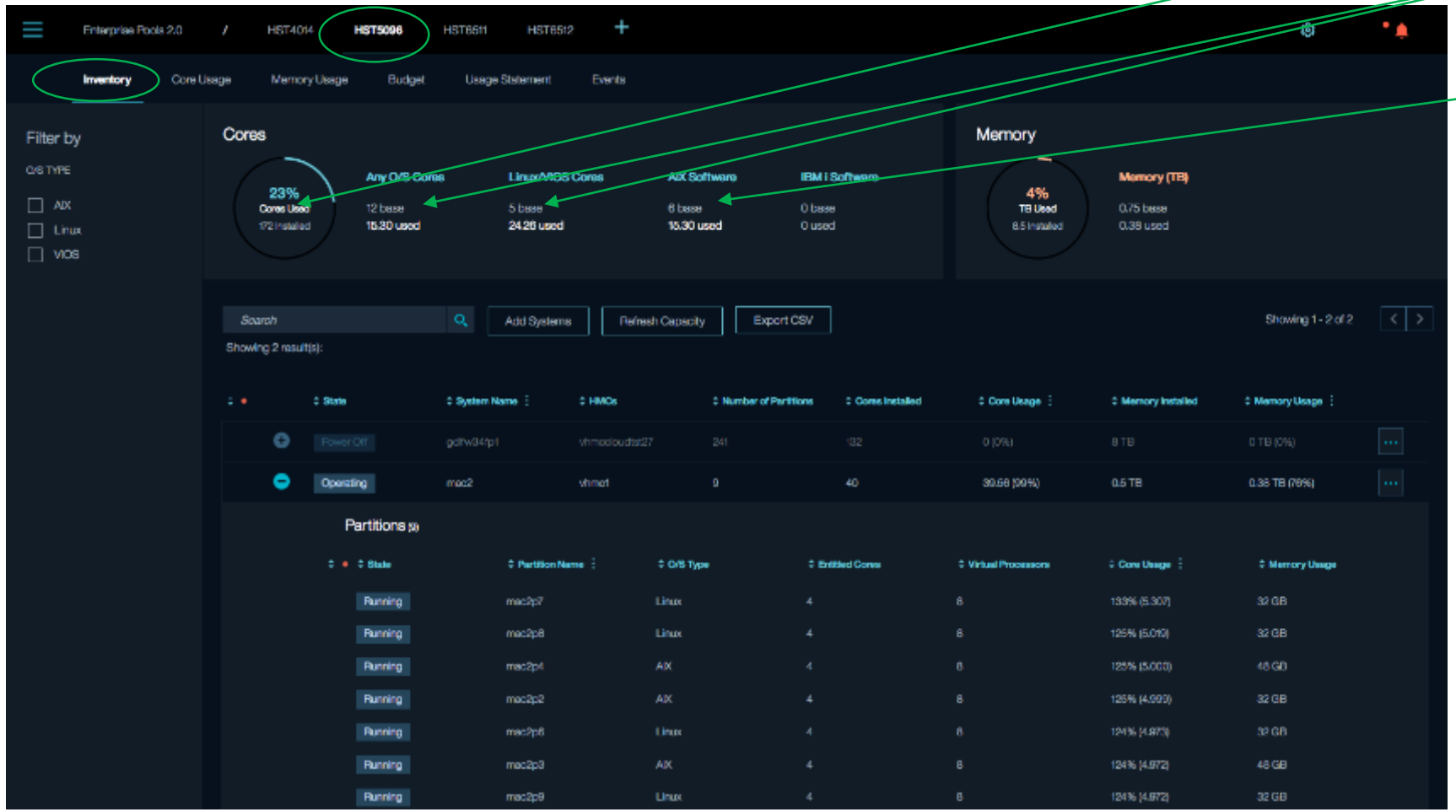


Set a budget ceiling if desired and then continue, and the new Pool will be created



Cloud Management Console Inventory - Displaying, Monitoring & Managing a Pool

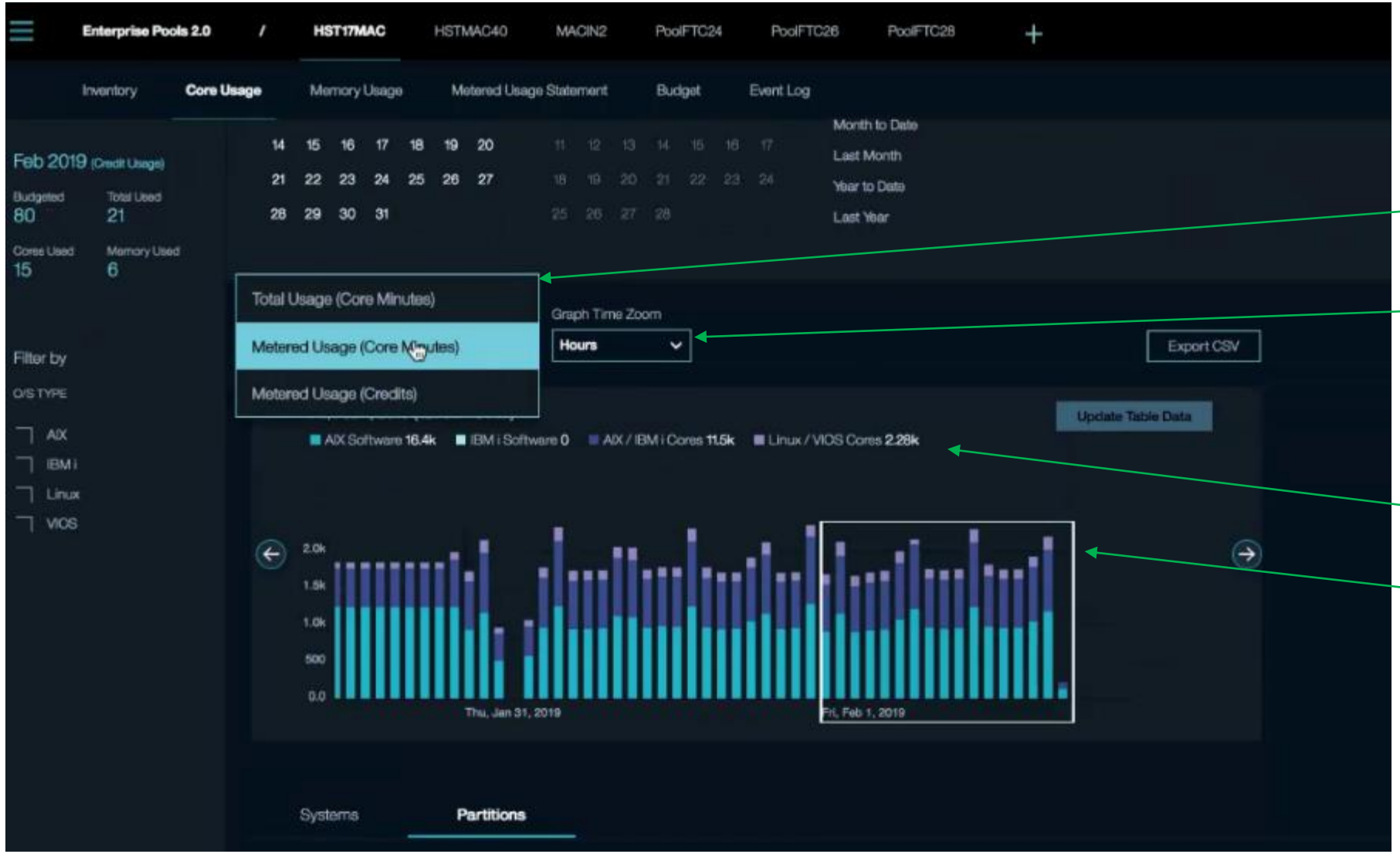
The inventory screen provides drill down capability by system and VM, and dashboard views of resources across systems, with tailorable thresholds.



In this example there are :

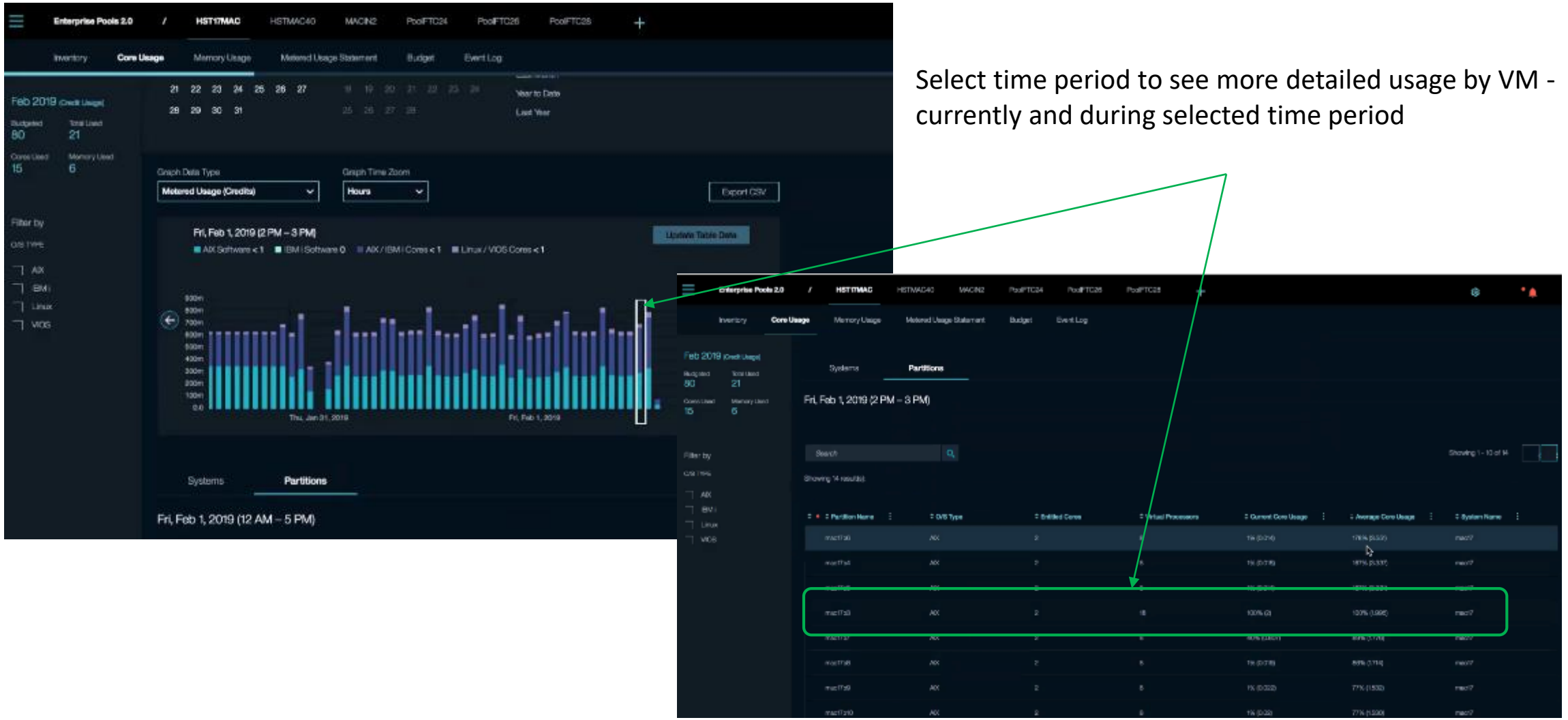
- 172 cores,8.5TB installed
- 17 Base Processor Activations (12 AIX, 5 Linux)
- 6 Base AIX license entitlements

Advanced Monitoring enables clients to track and analyze usage



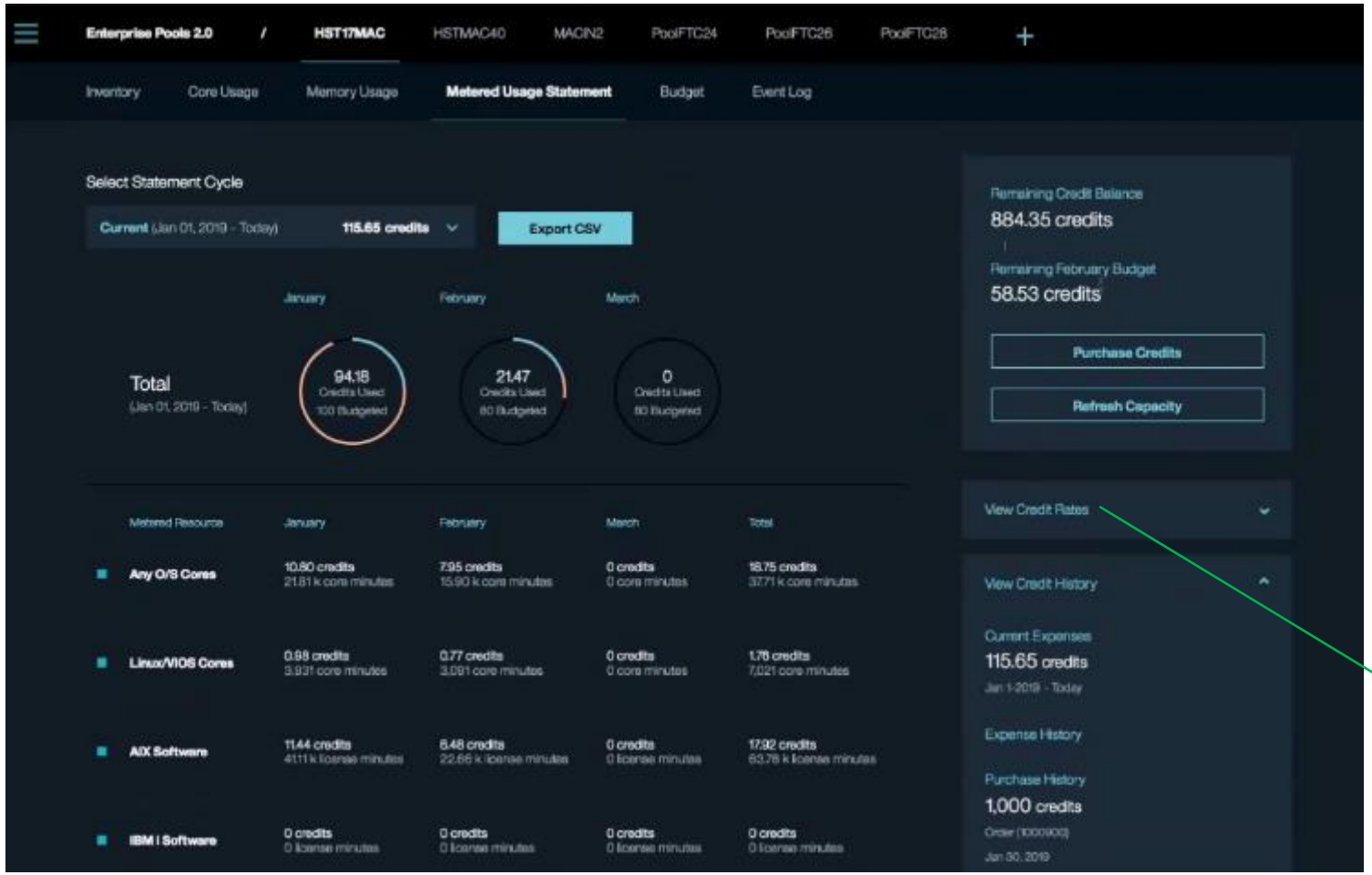
- Analyze Total or Metered Usage
- Change the Time Frame for analysis (Minute, Hour, Day, Week, Month)
- Usage by resource type
- Trending Analysis with ability to adjust time scale

Analyze Core Usage by Time Period and Partition

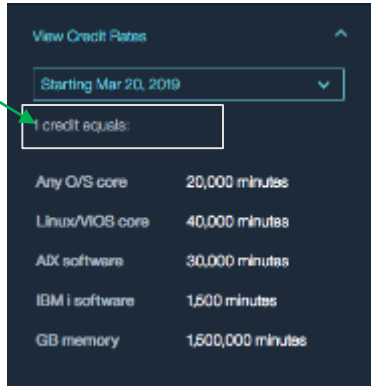


Select time period to see more detailed usage by VM - currently and during selected time period

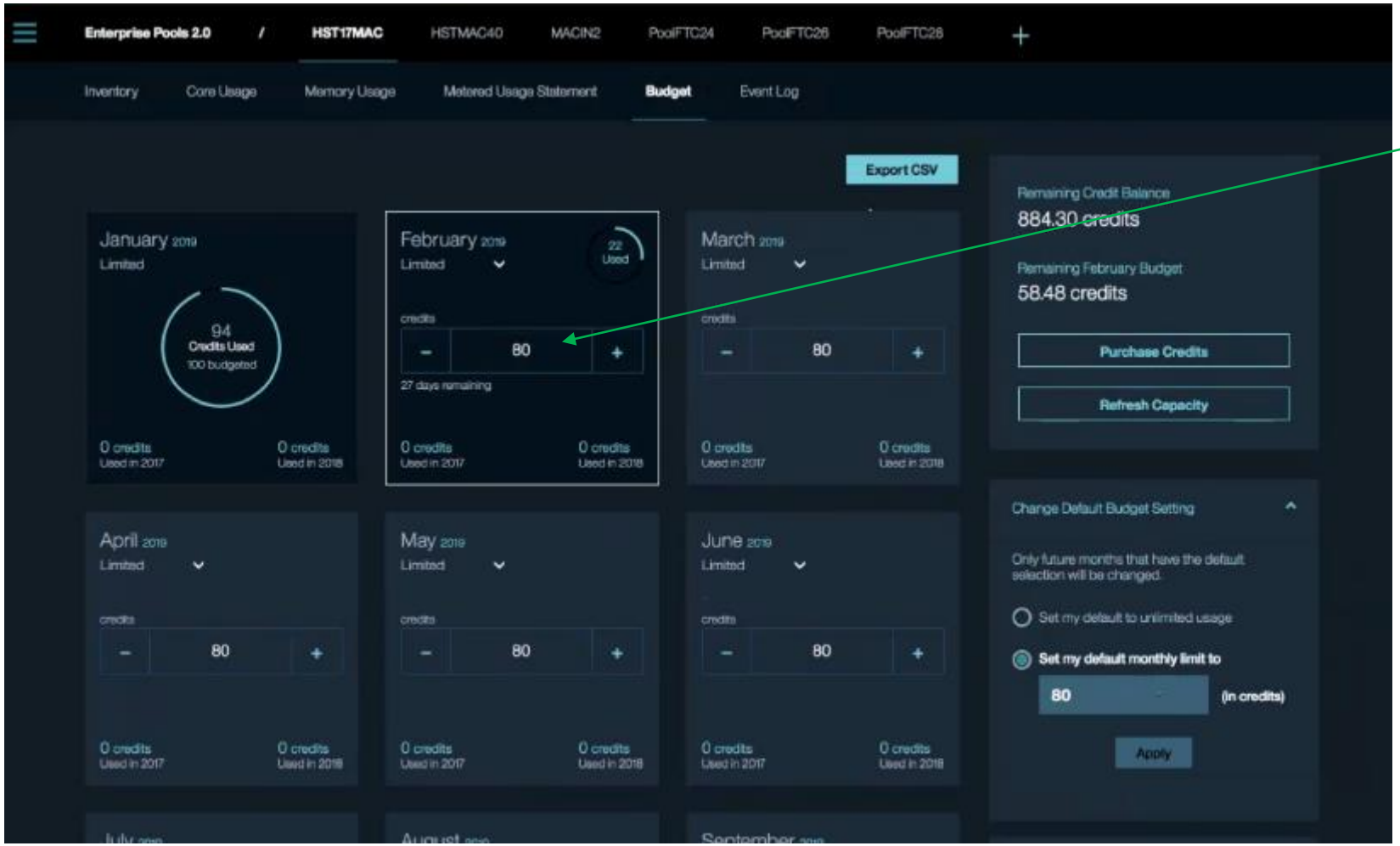
Metered Usage Statement



- Show Capacity Credits consumed and breakdown by resource
- Display Credit balance, budget status, rate table and purchase history

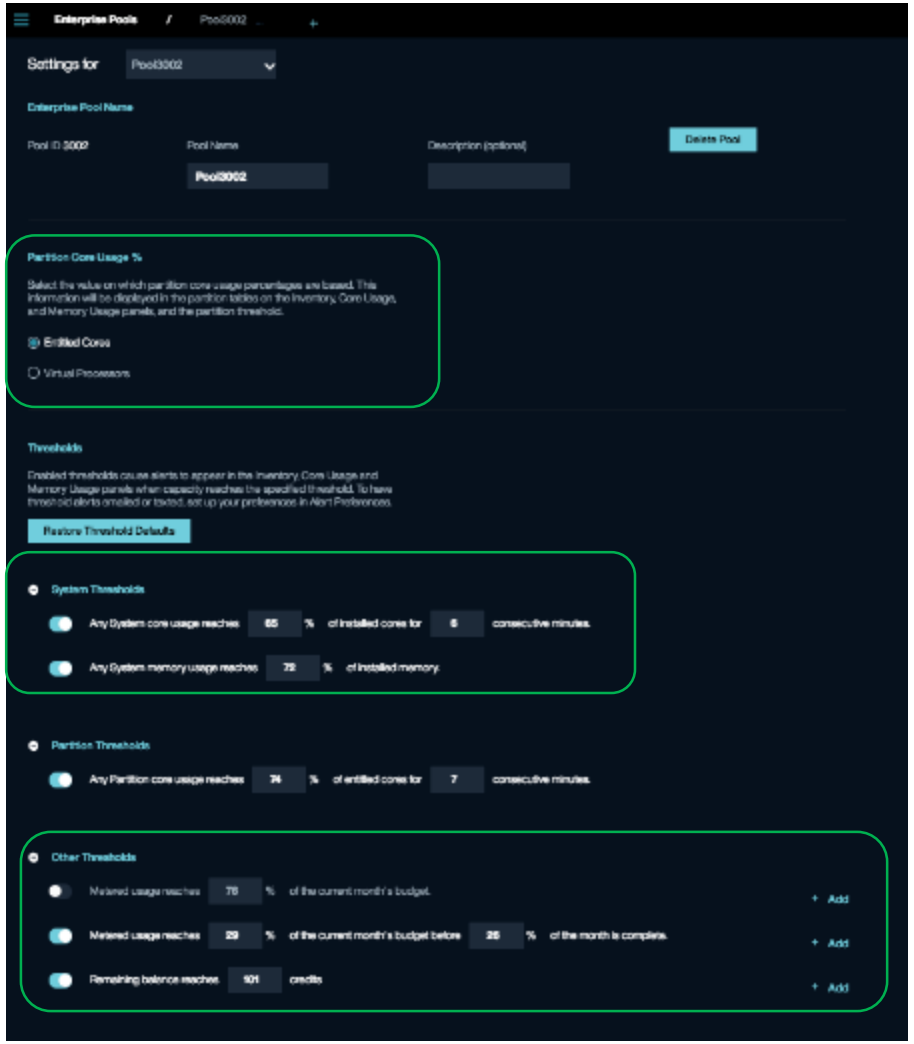


Budgeting Summary - show consumption history and budget by Month



- Change monthly Capacity budget

Tailorable Alerts & Thresholds



May be set to notify an email ID or send a text message

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