What is new and what is coming with IBM Power Systems

David Spurway
IBM Power Systems Chief Technology Evangelist, UK and Ireland

Agenda

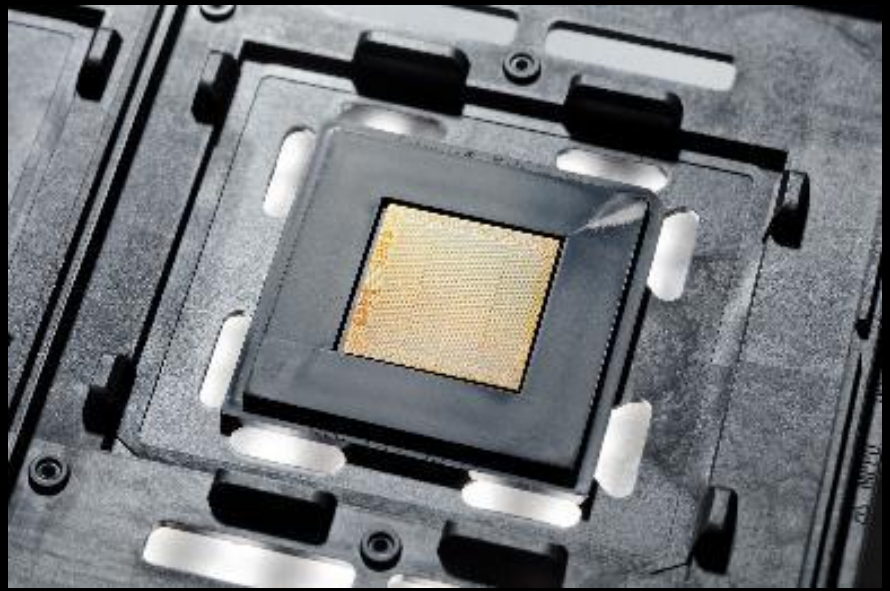
- “NewCo” will not include IBM Systems, so IBM i stays too!
- The future is bright, with POWER10 bringing a range of benefits (including more performance with 3x less energy), with Enterprise servers expected later in 2021
- IBM Power Systems are infrastructure built for Cloud, including IBM i, both on and off premises
- Enterprise AI will focus on “inference”, which can be done on your IBM i system and will get much faster with POWER10
- Hybrid Multicloud is the where most customers are going, and includes IBM i.
- New IBM Power Private Cloud can lower costs, includes pay as you go, with IBM i, bringing Cloud to you!

“NewCo” will not include IBM Systems

“…decided that the managed infrastructure services business of our **GTS** segment will become an independent company, which we’re initially referring to as “NewCo.” We expect the new company to be created sometime toward the end of 2021.”

“Our decision is also the logical next step in our pursuit of the $1 trillion hybrid cloud opportunity. The acquisition of Red Hat allowed us to build an open and secure **hybrid cloud** platform that cuts across all the places our clients do computing—**on-premise**, private, and publicly-operated public cloud environments.”

The future is bright



IBM Reveals Next-Generation IBM POWER10 Processor

New CPU co-optimized for Red Hat OpenShift for enterprise hybrid cloud

August 17, 2020

IBM Power Systems – Infrastructure built for Cloud

Business critical processes and data anywhere – robust, orchestrated, trusted

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 capitalising on RHEL with OpenShift & Cloud Paks and expanding SAP HANA, SAS Viya reach

AIX / IBM i

Optimise infrastructure for efficiency, agility, and digital transformation through IT and application modernisation

Innovation

Agility, flexibility and automation

Application Modernisation

Enterprise AI, advanced analytics, containerisation, extension via microservices

Resilient, Scalable & Secure

Architectural strength and superiority

Where were we?

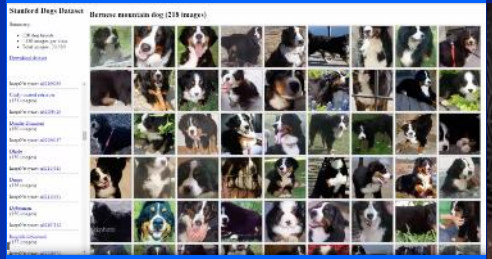
Back on the 23rd of November 2018, I published this blog “The Power Systems plan has three prongs”. The three prongs where:

- Deliver Modern Innovation and value to AIX and IBM i
- Drive flexible and resilient infrastructure into enterprise Linux deployments
- Lead the industry with the highest performing AI solutions that are simple to consume

That came from watching Stefanie Chiras (when she was Vice President, Offering Management, IBM Cognitive Systems) present at the BP Technical Exchange in Böblingen earlier that year.

Fun I have had with AI, so far…

Built my demo with the dogs, and got my daughter to help.



Helped launch a book by a member of the APPG AI.

Presented at many an event, including the “AI World Congress 2019”…

Met the director of the Hitchhiker's Guide to the Galaxy, who is also part of the APPG AI.

Robbie Stamp Talks AI, Digital Afterlives, and Douglas Adams

Robbie Stamp is known for his work with 'Hitchhiker's Guide' author Douglas Adams, but these days, he's helping CEOs understand how AI will impact their businesses. We talked to Stamp about his work at Bioss and a recent 'conversation' he had with Adams.

AC922

An Acceleration Superhighway
Unleash state of the art IO and accelerated computing potential in the post “CPU-only” era

Designed for the AI Era
Architected for the modern analytics and AI workloads that fuel insights

Delivering Enterprise-Class AI
Flatten the time to AI value curve by accelerating the journey to build, train, and infer deep neural networks

Acceleration Super Highway

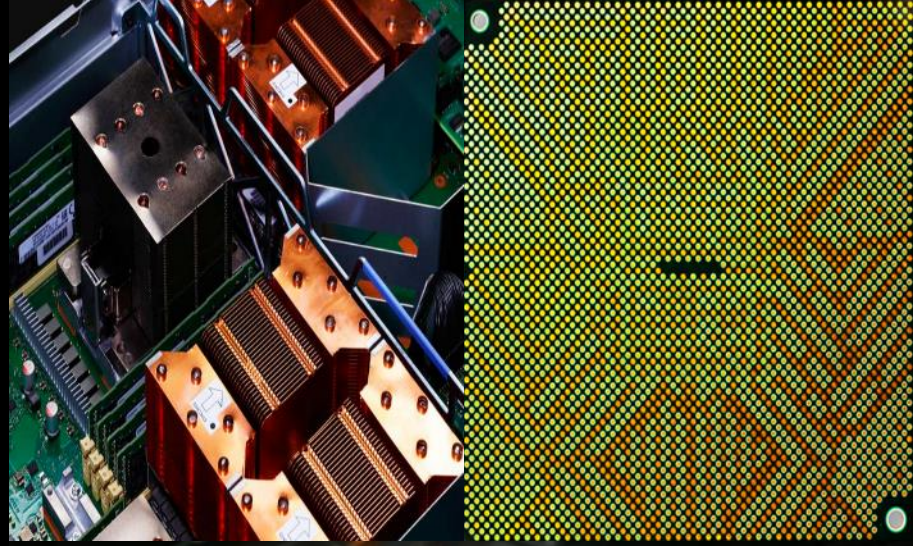
5.6x more data throughput vs. PCIe Gen3
with NVIDIA NVLink optimization to the core

2x bandwidth
with PCIe Gen4 vs. PCIe Gen3

Access up to 2TB of system memory

Superior data transfer to multiple devices
25G Links to OpenCAPI GPU devices

GPU ←→ CPU and GPU←→GPU speed-up
not just GPU ←→ GPU

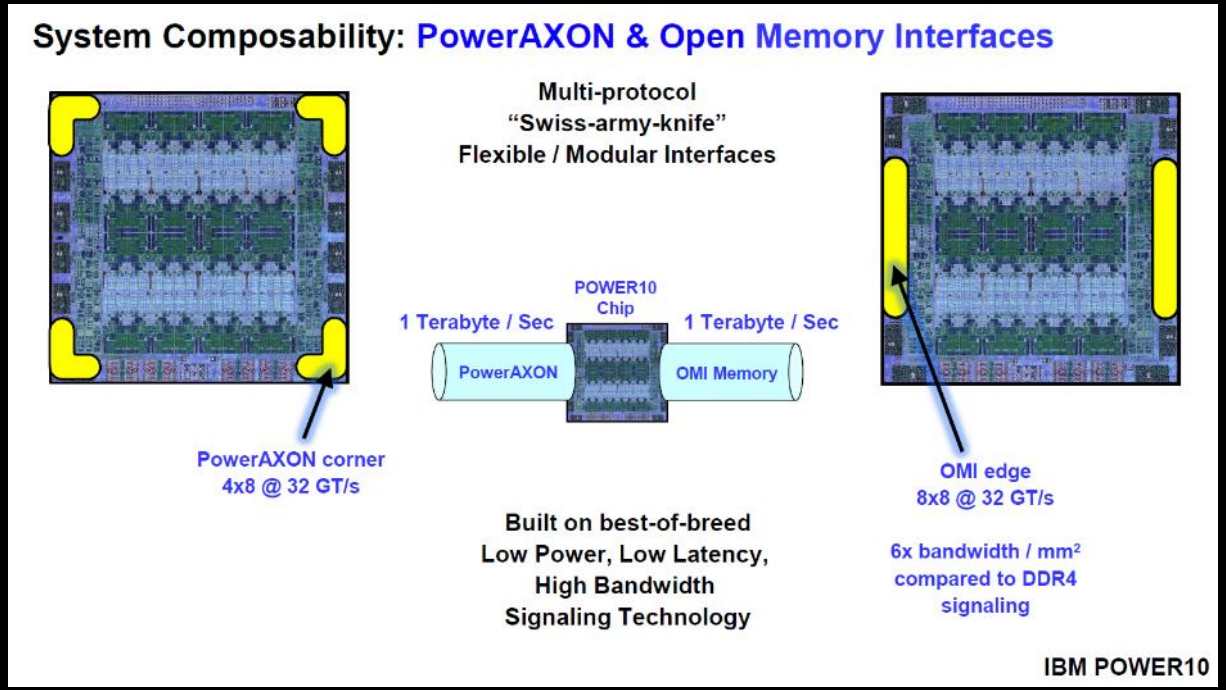


POWER10 no longer needs NVLink

The memory interconnect technology coming with POWER10 is so fast that it leaves the need for specialised interconnects like NVLink behind.

With 3x NVLink 2.0 connections, we could do 68 GB/sec.

POWER10 will be able to do 1TB/sec!



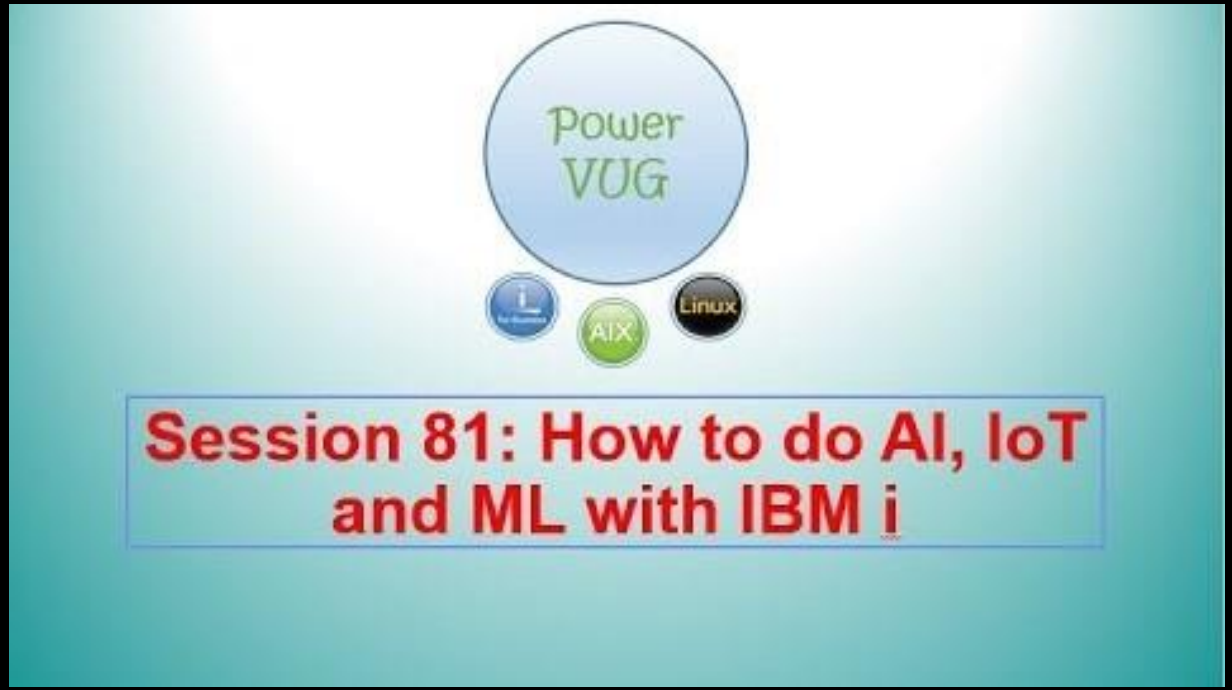
Question: Own any AC922s?

AI with IBM i

Ross Cruickshank's video shows how IBM i can do AI, IoT and mode with Node-RED.

H2O can also be used, as discussed here.

Other methods also perfectly possible, with the wide range of Open Source now available in IBM i.



AI in POWER10

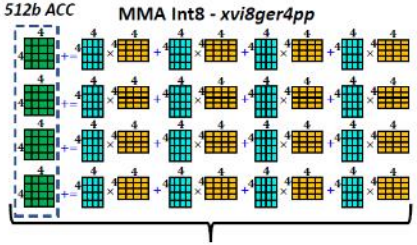
What is good (and already faster than Intel) today, gets up to 20x faster with POWER10!

Do your AI Inference where the data is, keeping the resilience, security and flexibility you need.

AI Infused Core: Inference Acceleration

- **4x+ per core throughput**
- **3x → 6x thread latency reduction (SP, int8)***

- **POWER10 Matrix Math Assist (MMA) instructions**
  - 8 512b architected Accumulator (ACC) Registers
  - 4 parallel units per SMT8 core
- **Consistent VSR 128b register architecture**
  - Minimal SW ecosystem disruption – no new register state
  - Application performance via updated library (OpenBLAS, etc.)
  - POWER10 aliases 512b ACC to 4 128b VSR's
    - Architecture allows redefinition of ACC
- **Dense-Math-Engine microarchitecture**
  - Built for data re-use algorithms
  - Includes separate physical register file (ACC)
  - 2x efficiency vs. traditional SIMD for MMA



4 per cycle per SMT8 core

Matrix Optimized / High Efficiency

Result data remains local to compute

***Inference Accelerator dataflow** (2 per SMT8 core)*

* versus POWER9

IBM POWER10

IBM Power Systems – Infrastructure built for Cloud

Business critical processes and data anywhere – robust, orchestrated, trusted

Cloud Innovation

Agility, flexibility and automation across private and pub

Application Modernisation

Enterprise AI, advanced

Resilient, Scalable & Secure

ctural nd

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 capitalising on RHEL with OpenShift & Cloud Paks and expanding SAP HANA, SAS Viya reach

AIX / IBM i

Optimise infrastructure for efficiency, agility, and digital transformation through IT and application modernisation

Enterprise AI

What is Hybrid Multicloud?

Hybrid Cloud

A computing environment that includes both a **private cloud** and **public cloud**, allowing applications and **data to be shared between them.**

+

Multicloud

A computing environment utilizing services from **more than one cloud vendor** — building upon multiple technologies.

Hybrid Multicloud

A computing environment leveraging the best of **multiple clouds**, unrestricted in its ability to operate **across premises and vendors**.

Public Cloud Solutions on Power Systems

Business need:

AIX, IBM i or Linux workloads on Power in Public Cloud

- IBM Cloud
  Power Systems Virtual Server
- Azure Cloud
  Skytap on Azure
- Google Cloud
  IBM Power Systems for Google Cloud
- Partner Clouds
  (Skytap, Nimbix, +++)

AIX, IBM i and Linux – available on-demand and pay-for-use by the Hour

Power Systems

AIX, IBM i and Linux in Azure, through Skytap.

AIX on Google Cloud – available on-demand and predictable pricing
IBM i and Linux in roadmap

Power9

Global community of Partner managed Power Clouds including AIX, IBM i and Linux – with broad range of choices from on-demand to managed to hosted

NIMBIX · Atos · Skytap · teuto.net · mindSHIFT · OSU · meridian IT UNITED KINGDOM · LPARBOX · CONNECTRIA HOSTING · SIRIUS COMPUTER SOLUTIONS · bluechip · helpsystems · A·B·A·C·U·S SOLUTIONS · UNICAMP · SCC · csi · CORUS360 · Cirrascale · tieto · ABTECH TECHNOLOGIES

Automation · Agility · Innovation

Choice and Flexibility to Support Client Needs

We'll meet you where you are … … and help you get to where you want to be!

- Discovery workshops
- Cloud workshops
- IBM Garage services
- Lab Services implementations

- Power Developer Cloud
- Power Systems Entry for ICP
- Power to Cloud Rewards
- Cloudcare funding for PoCs

IBM Power Systems Partner Clouds in the UK

Blue Chip Customer Engineering Ltd

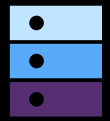
CSI Ltd

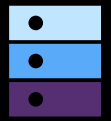
Meridian IT Ltd

SCC Plc

https://www.ibm.com/uk-en/it-infrastructure/learn/power-systems-on-cloud

Hybrid cloud for IBM Power Systems





On Premise – IBM Power Systems

Flexibility

Off Premise – IBM Power Systems Virtual Server

IBM Power Systems S922 + S924	IBM Power Systems E950 + E980	Migration images • PowerVC OVA + • Mksysb (AIX) • SAVSYS (IBM i) • VIOS (Linux) Migrate data • IBM Cloud Object Storage • Mass Data Migration • Aspera	Sample Use Cases: • Test/Dev • DR as a Service • DC consolidation • Divestiture	**IBM Power Virtual Server**
Buy 1 core or more and Pay by the minute	Buy 1 core or more and Pay by the minute			Monthly Pay as you Go with option for lower costs with 12 & 36 month commitments
AIX, IBM i and Linux	AIX, IBM i and Linux			Linux, AIX and IBM i
Low entry price				
Enterprise security, maximum performance and stability on IBM POWER9	Enterprise security, maximum performance and stability on IBM POWER9			Enterprise security, maximum performance and stability on IBM POWER9
SAP TDI 5.0 compliant	SAP TDI 5.0 compliant			Certified for SAP HANA

- IBM Systems Lab Services
- IBM Services for Cloud Migration

IBM Power Systems Virtual Server on IBM Cloud

A user can purchase an AIX, IBM i or Linux Power VM-based Virtual Machine-as-a-Service on IBM Cloud.

Our users can purchase the offering through Cloud consumption-based pricing plans available through IBM Cloud Catalog.

Available worldwide, including 2 DCs in the London area.

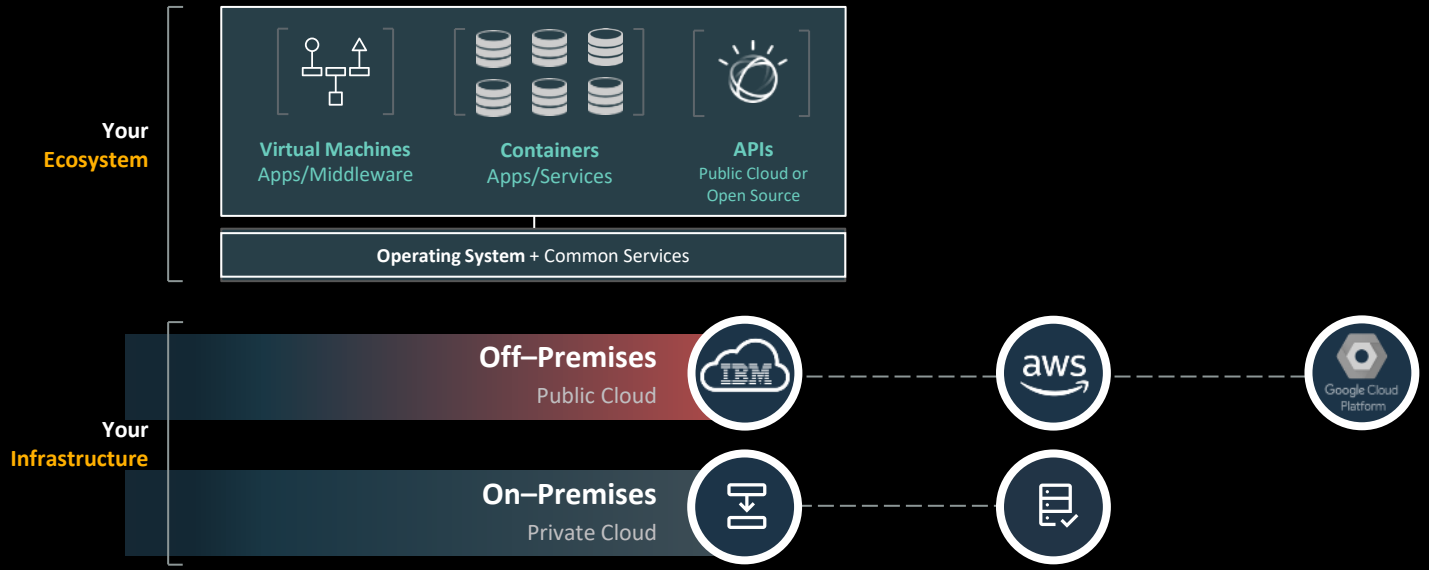
IBM manages up to OS deployment and the client self-manages the OS and up.

Systems: S922, E980

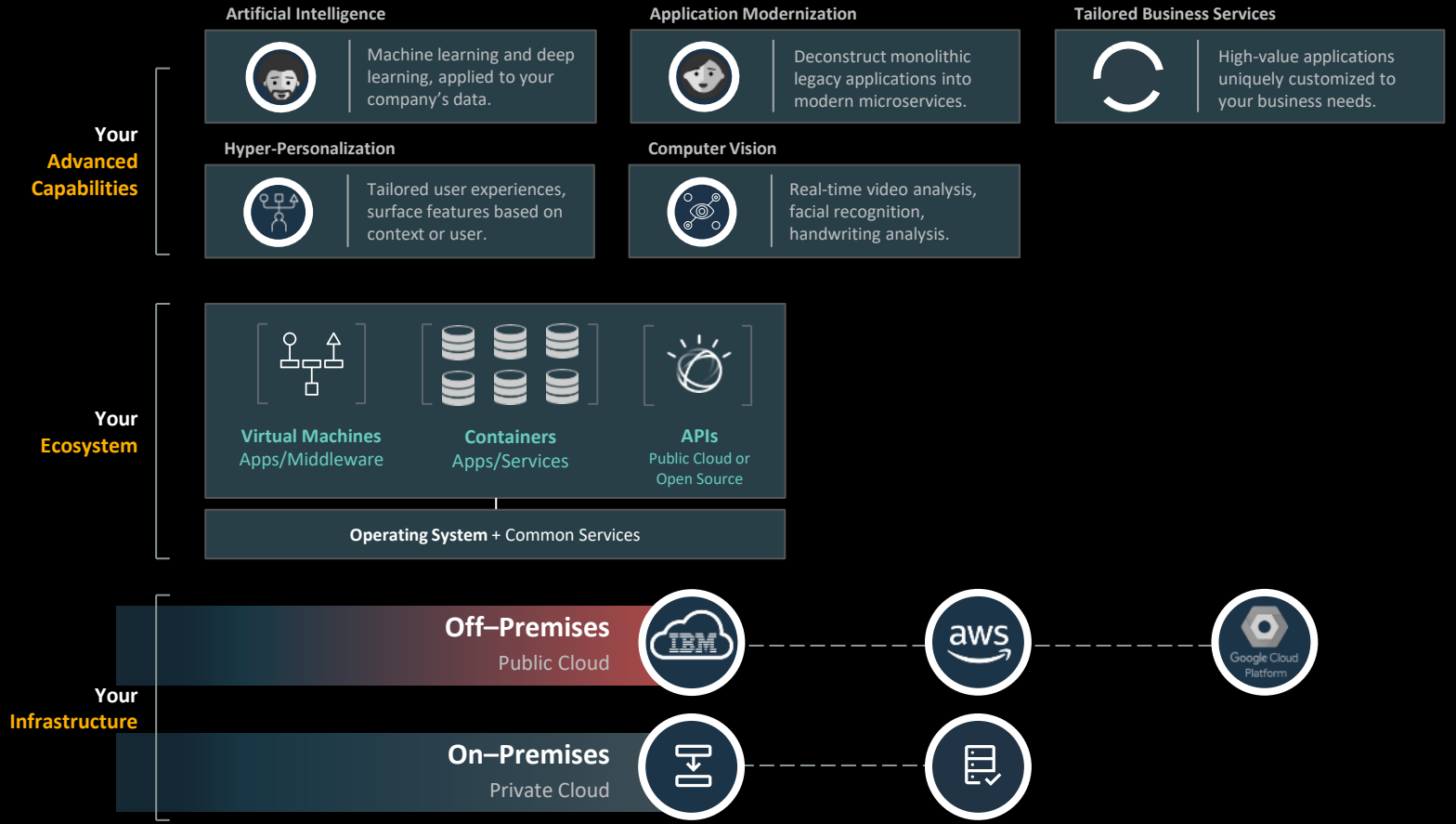
Compute: 0.25-153 cores (15 for S922, 153 for E980), Dedicated or Shared option

Hybrid Multicloud Architecture

Hybrid Multicloud Architecture



Hybrid Multicloud Architecture



Hybrid Multicloud Architecture

Advanced Capabilities & Aspirations

Artificial Intelligence

Machine learning and deep learning, applied to your company's data.

Application Modernization

Deconstruct monolithic legacy applications into modern microservices.

Hyper-Personalization

Tailored user experiences, surface features based on context or user.

Computer Vision

Real-time video analysis, facial recognition, handwriting analysis.

Hybrid Multicloud Architecture

Advanced Capabilities & Aspirations

Artificial Intelligence

Machine learning and deep learning, applied to your company's data.

Application Modernization

Deconstruct monolithic legacy applications into modern microservices.

Hyper-Personalization

Tailored user experiences, surface features based on context or user.

Computer Vision

Real-time video analysis, facial recognition, handwriting analysis.

Your Infrastructure

IBM AIX
Power Systems

IBM i
Power Systems

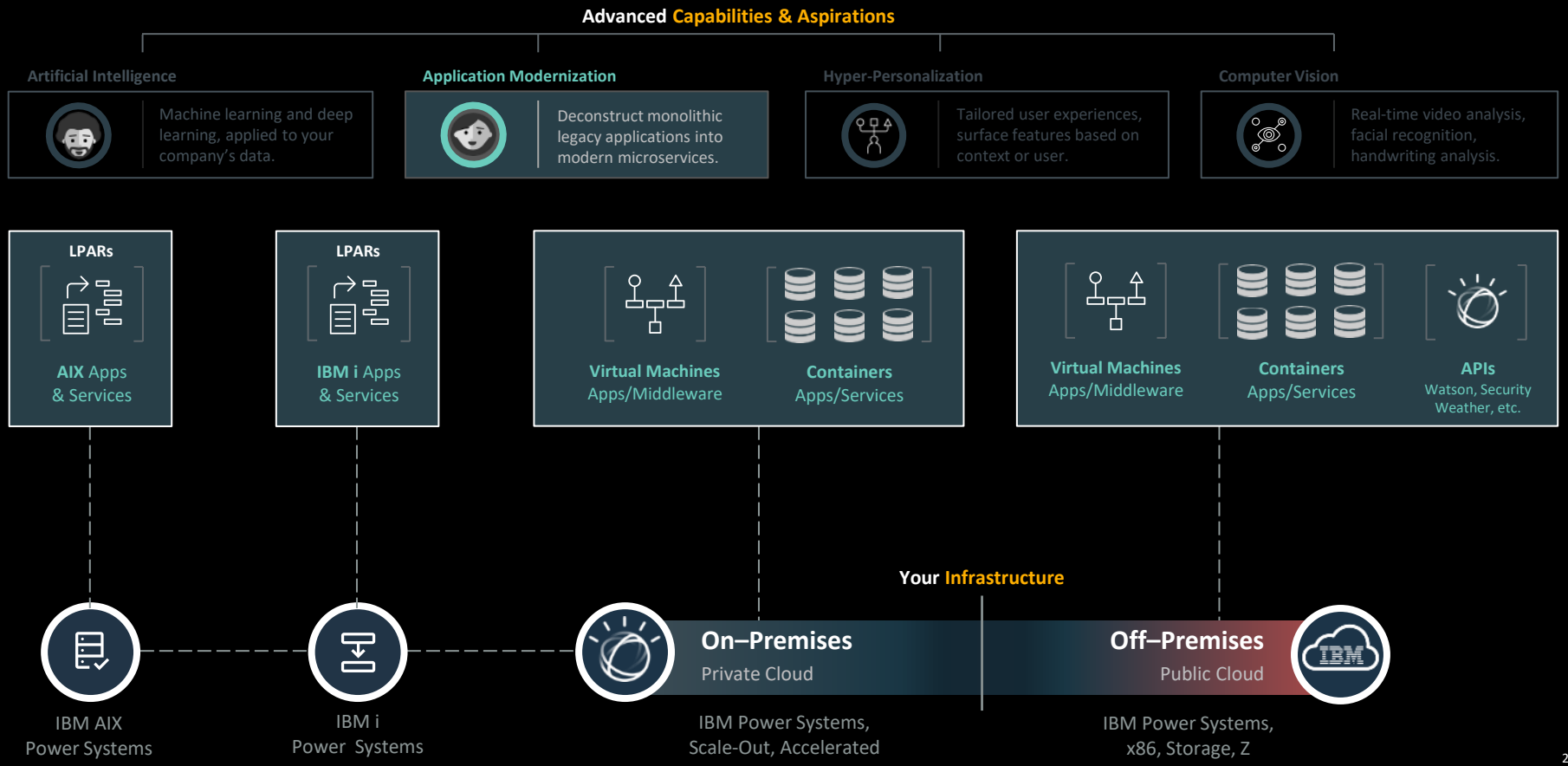
On–Premises
Private Cloud

IBM Power Systems,
Scale-Out, Accelerated

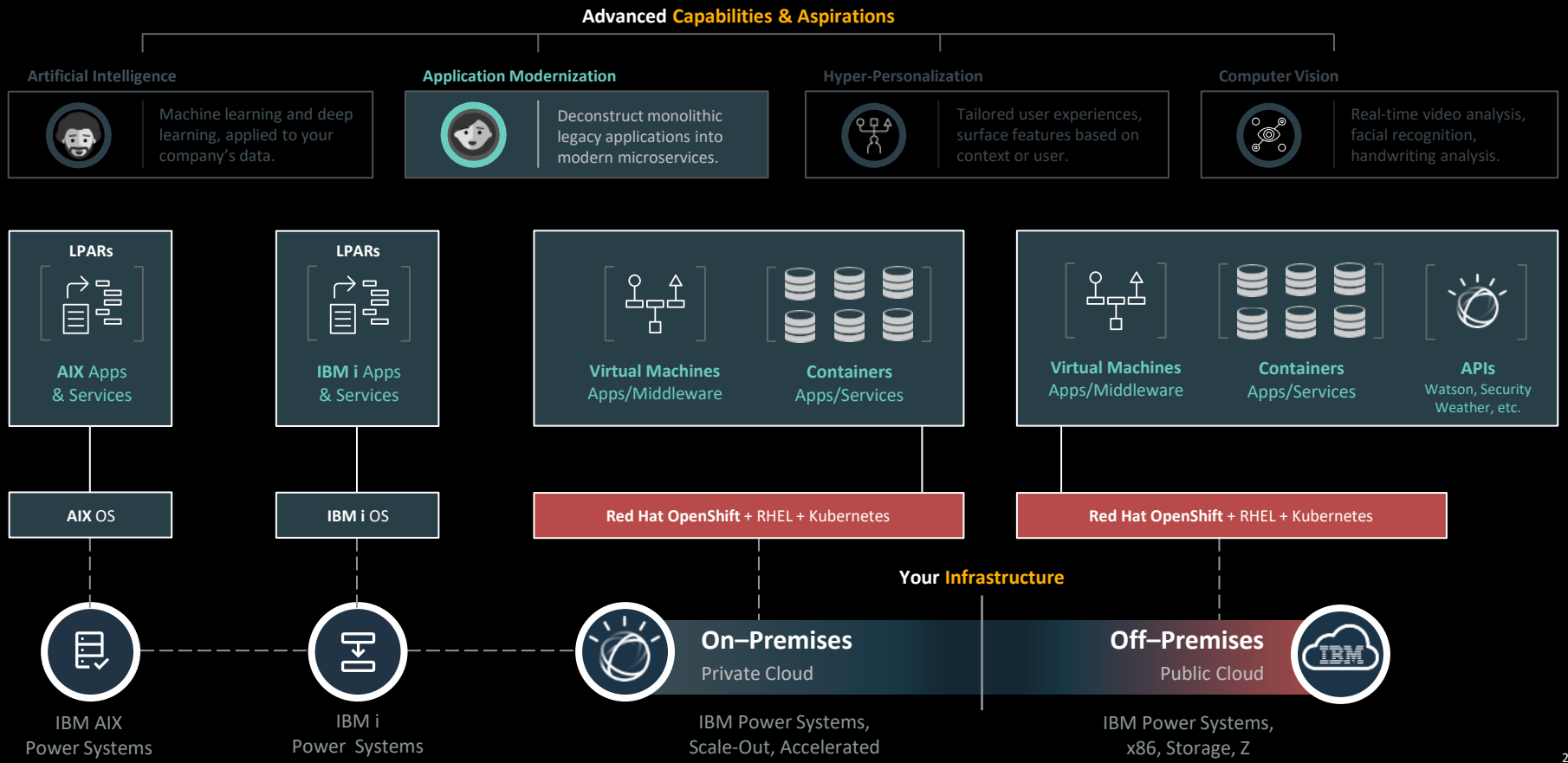
Off–Premises
Public Cloud

IBM Power Systems,
x86, Storage, Z

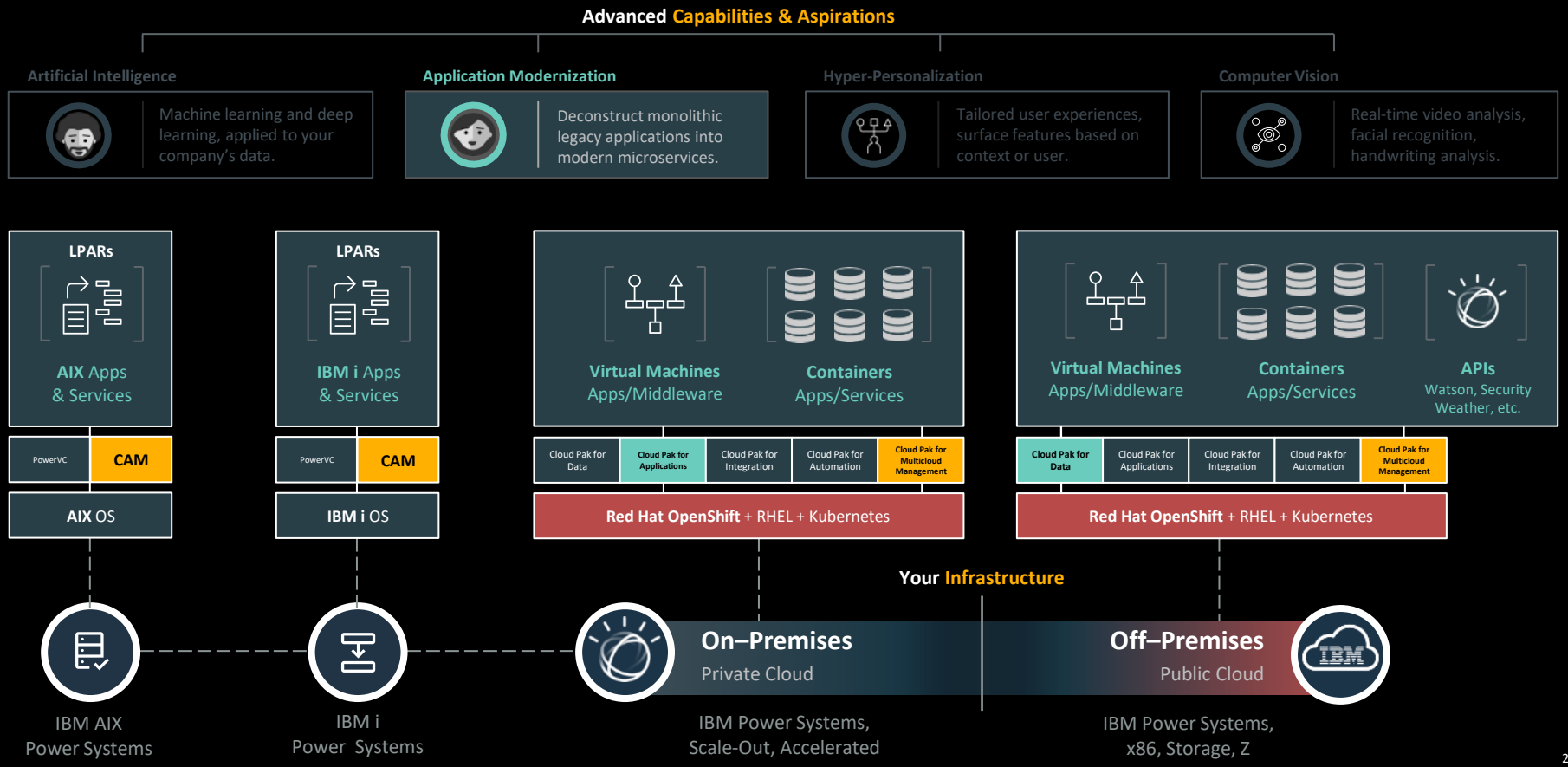
Hybrid Multicloud Architecture



Hybrid Multicloud Architecture



Hybrid Multicloud Architecture



IBM Power Systems – Infrastructure built for Cloud

Business critical processes and data anywhere – robust, orchestrated, trusted

Innovation

Agility, flexibility and automation

Application Modernisation

Enterprise AI, advanced

Resilient, Scalable & Secure

Architectural nd

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 capitalising on RHEL with OpenShift & Cloud Paks and expanding SAP HANA, SAS Viya reach

AIX / IBM i

Optimise infrastructure for efficiency, agility, and digital transformation through IT and application modernisation

IBM Power Virtual Server

Industry leading 2-socket vs x86. Designed to meet highest performance and security needs, within a dense form factor, and a memory footprint up to 4TB.

S914

New

- 1-socket, 4U & Tower
- 4, 6 and 8 cores per socket
- 1TB memory

- AIX, IBM i, & Linux
- PowerVM

S922

New

- 1,2-socket, 2U
- 1, 4, 8, 10, and 11 cores per socket
- 4TB memory

- AIX, IBM i, & Linux
- PowerVM

S924

New

- 1,2-socket, 4U
- 8, 10, 11, and 12 cores per socket
- 4TB memory

- AIX, IBM i, & Linux
- PowerVM

L922

- 1,2-socket, 2U
- 8,10, and 12 cores per socket
- 4TB memory

- Linux only
- PowerVM

Question: Own any L922s?

Eliminate Big Data Bottlenecks
IBM Power Systems LC922 & LC921

Withdrawn

The Big Data Crushers!

The IBM Power Systems LC922 enhances the LC product line's open heritage while delivering superior performance in a cost optimized design needed in today's AI Era.

2x

Price performance advantage for data intensive applications such as MongoDB

59%

Improved Spark price-performance for efficiency across the AI data leveraging the P9 thread density for large amounts of concurrent Spark queries

2X

more data scientists on a single server at FASTER RESPONSE TIMES with Data Science Experience (DSX)

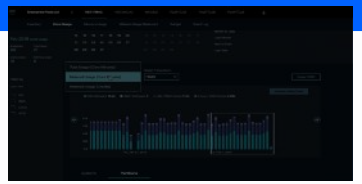
Question: Own any LC92xs?

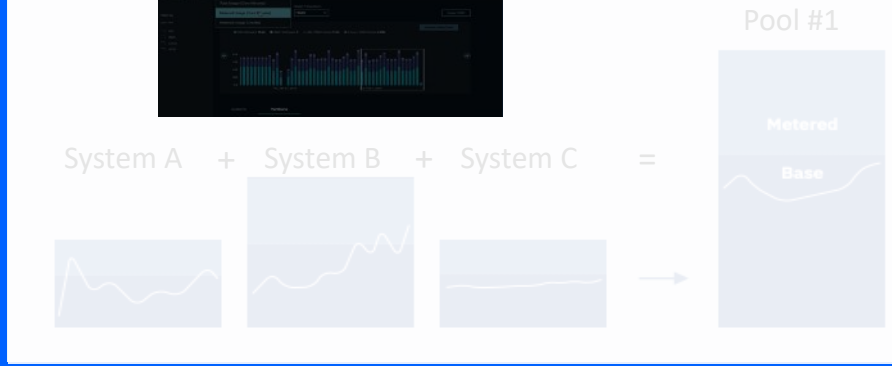
Question: Own any E9x0s?

Question: Own any S9xxs?

Minimise CapEx and Modernise Infrastructure

IBM Power Private Cloud with Dynamic Capacity





Instant and dynamic response to changing business needs, combining flexibility & agility with security, resilience and performance

Extreme economic efficiency

Enables clients to instantly and dynamically respond to changing business needs

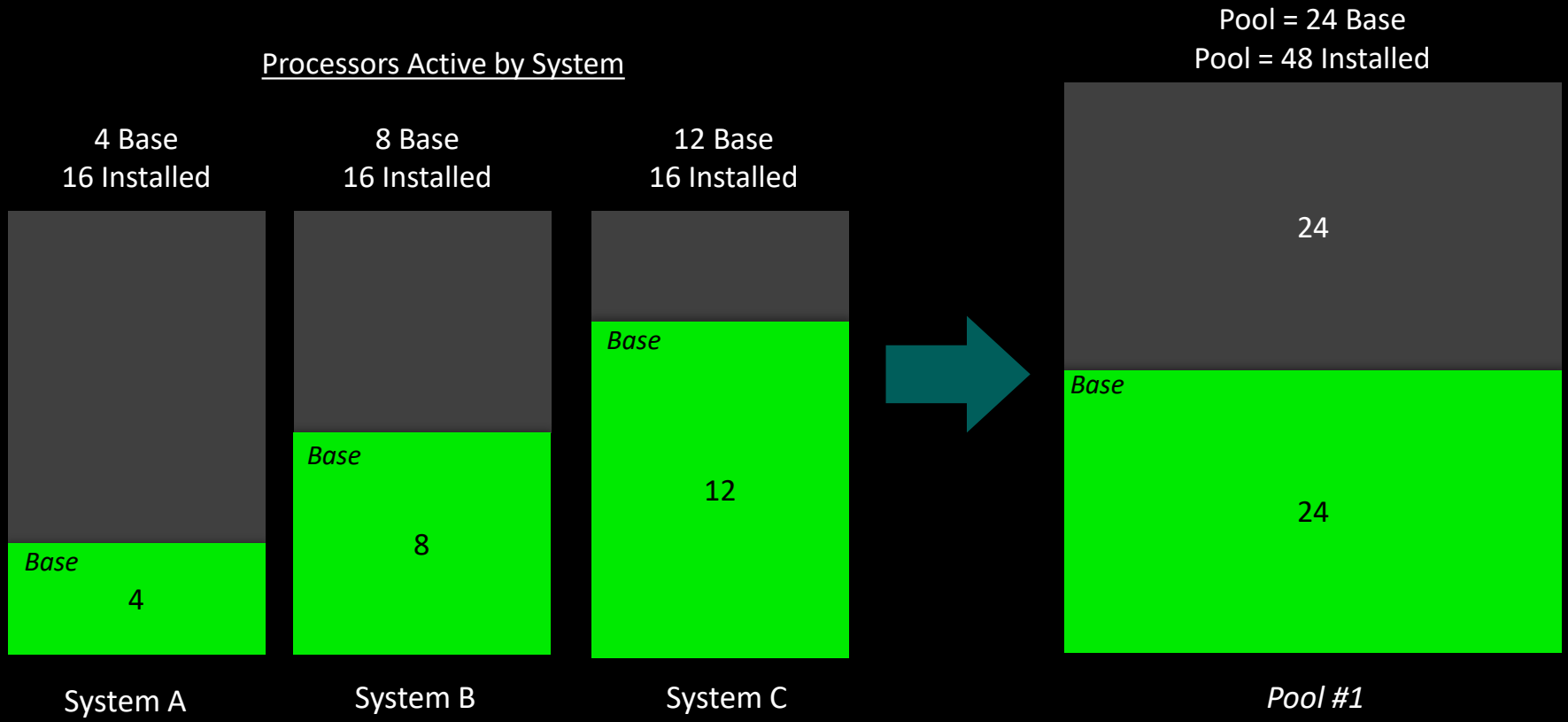
Graphical monitoring and planning

Call to action:

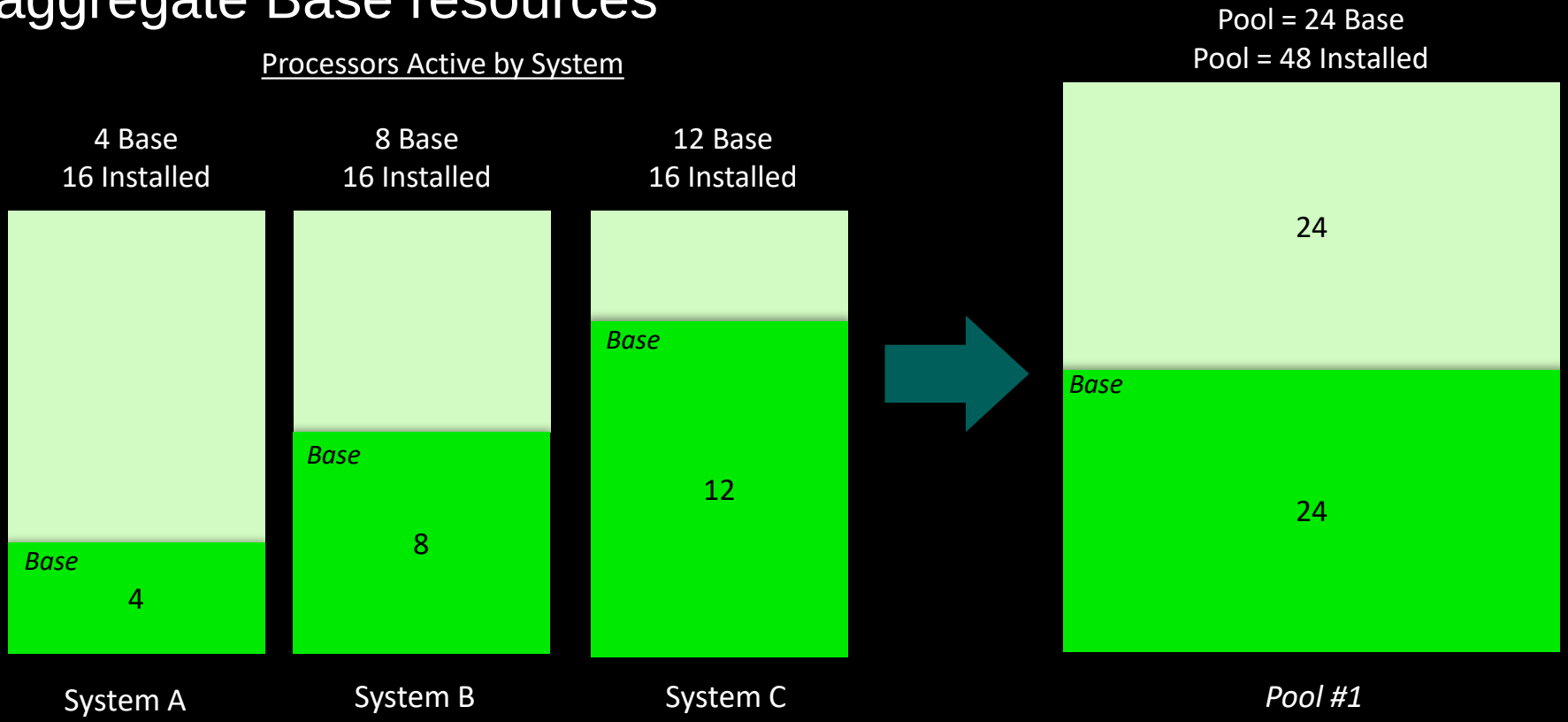
- Do you have varying workloads? Are you a Service Provider or needing to pay-as-you-go?
- Got some older IBM Power Systems?
- CapEx issues held you back before?

Contact IBM or your IBM Business Partner. We can help!

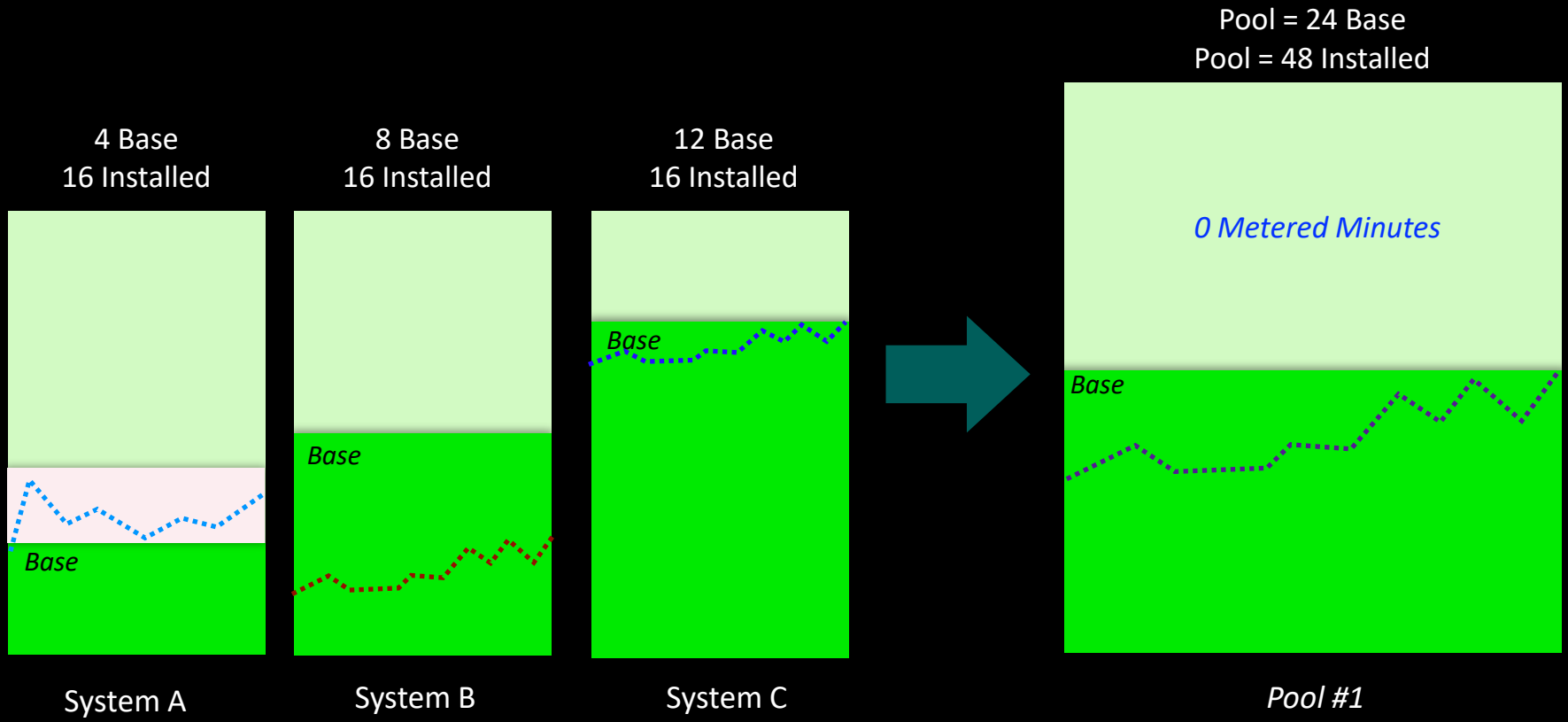
Client purchases Power Systems with Base Processor Activation resources.



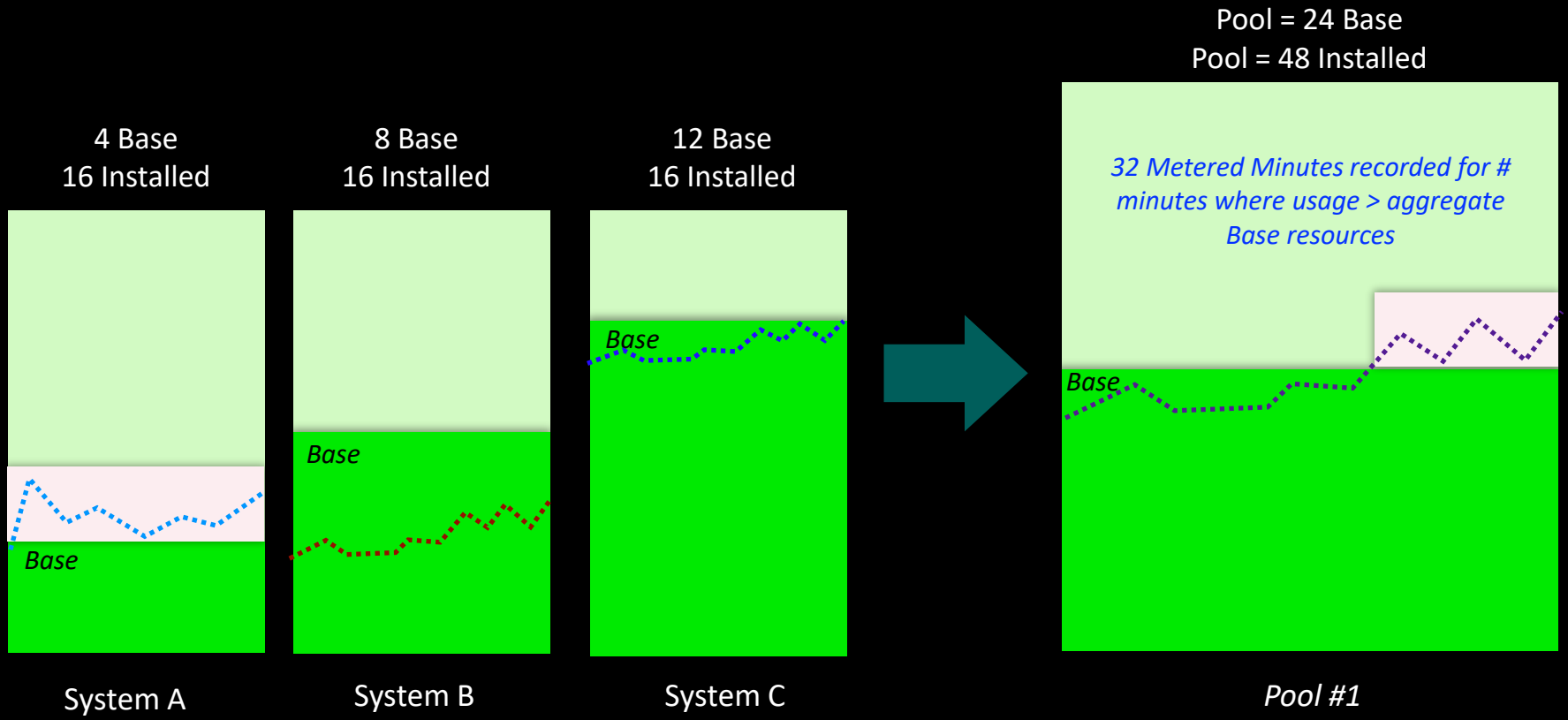
All remaining resources are activated when a Pool is started. Resource usage is metered for minutes above the pool's aggregate Base resources



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



IBM Power Systems – Infrastructure built for Cloud

Business critical processes and data anywhere – robust, orchestrated, trusted

Innovation

Agility, flexibility and automation

Application Modernisation

Enterprise AI, advanced

Resilient, Scalable & Secure

Architectural nd

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 capitalising on RHEL with OpenShift & Cloud Paks and expanding SAP HANA, SAS Viya reach

AIX / IBM i

Optimise infrastructure for efficiency, agility, and digital transformation through IT and application modernisation

IBM Power Private Cloud

IBM Power Systems – Infrastructure built for Cloud

Business critical processes and data anywhere – robust, orchestrated, trusted

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 capitalising on RHEL with OpenShift & Cloud Paks and expanding SAP HANA, SAS Viya reach

AIX / IBM i

Optimise infrastructure for efficiency, agility, and digital transformation through IT and application modernisation

Innovation

Agility, flexibility and automation

Application Modernisation

Enterprise AI, advanced analytics, containerisation, extension via microservices

Resilient, Scalable & Secure

Architectural strength and superiority

Agenda

- “NewCo” will not include IBM Systems, so IBM i stays too!
- The future is bright, with POWER10 bringing a range of benefits (including more performance with 3x less energy), with Enterprise servers expected later in 2021
- IBM Power Systems are infrastructure built for Cloud, including IBM i, both on and off premises
- Enterprise AI will focus on “inference”, which can be done on your IBM i system and will get much faster with POWER10
- Hybrid Multicloud is the where most customers are going, and includes IBM i.
- New IBM Power Private Cloud can lower costs, includes pay as you go, with IBM i, bringing Cloud to you!

Thank you!

David Spurway – IBM Power Systems CTE

Email: david.spurway@uk.ibm.com

Phone: 07717 892 896

Twitter, LinkedIn, YouTube