# IBM® Power® E1080 Enterprise Server

Gebaut für heute – bereit für morgen!


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AIX IBM i Linux

# IBM Power10

*The IBM Power10 chip is built for the cloud – private, public, or hybrid – meeting demands for scalability, elasticity, security, energy efficiency, while infusing AI into the core.*

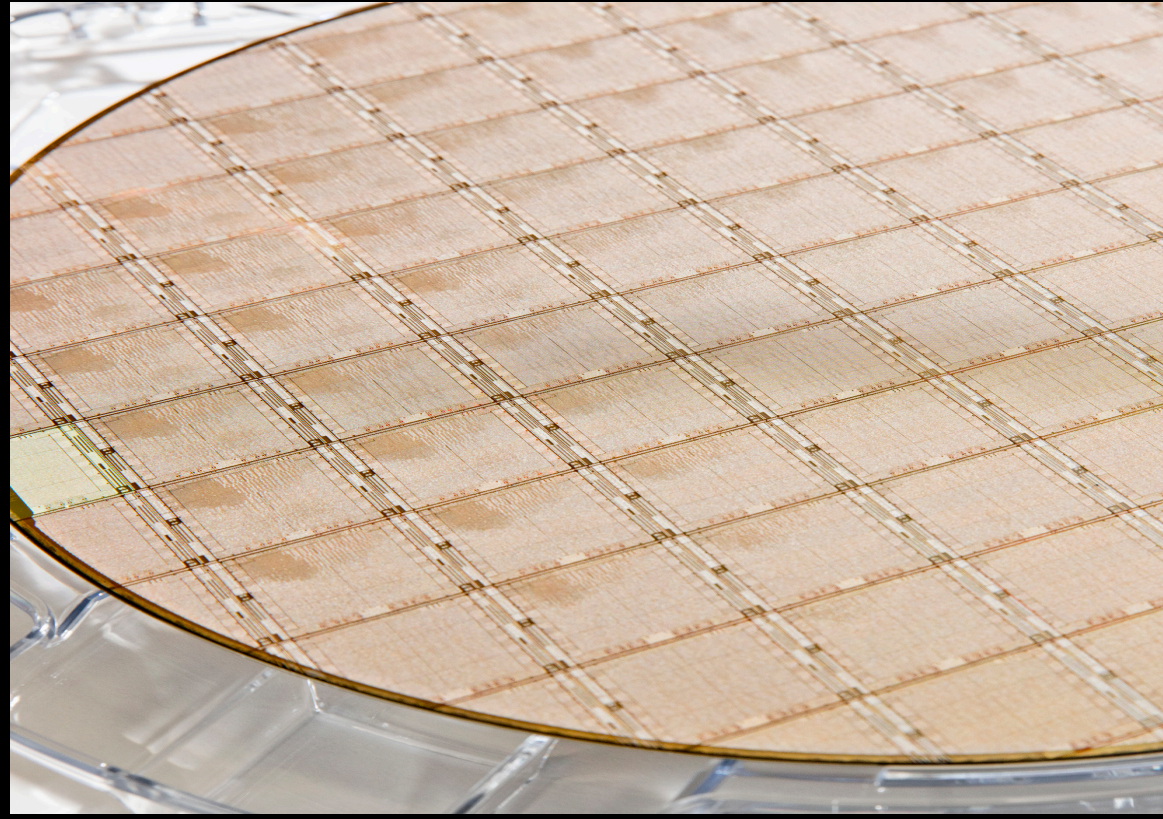
**Powerful new enterprise core architecture in 7nm technology with larger caches and reduced latency**

**Advanced IO for data throughput with PCIe Gen 5 and Open Memory Interface**

**Efficiency for enterprise hybrid cloud environments**

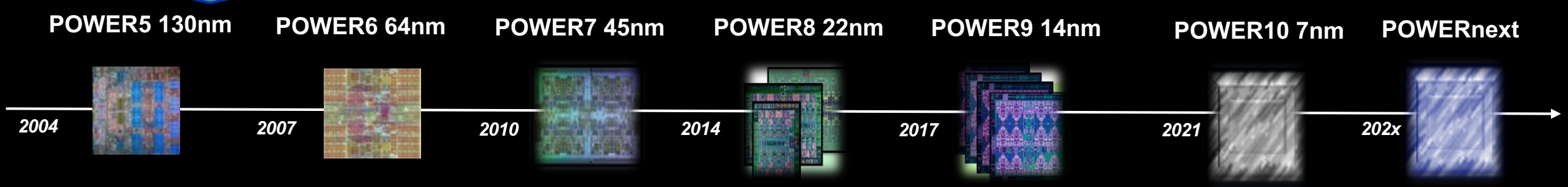
**Enhanced end-to-end security, co-optimized with PowerVM**

**AI acceleration infused in the core**



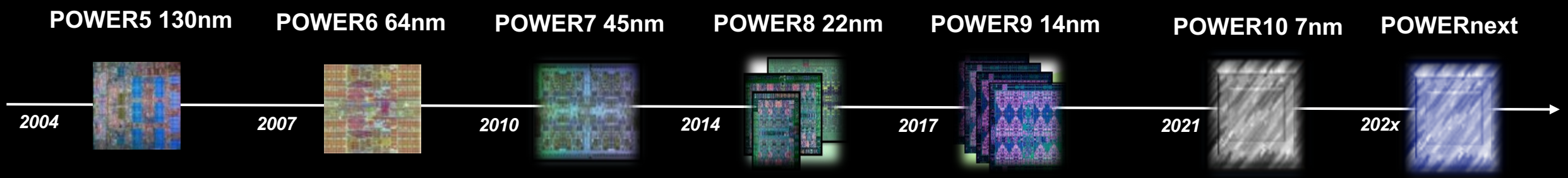
"*There was a lot of excitement around IBM's Power10 in particular - a real beast of a CPU with a feature set that is far out in front of the market.*"
**Patrick Moorhead, Moor Insights and Strategy**

"*Amazing improvements in a single generation!*"
**Earl Joseph, Hyperion Research**



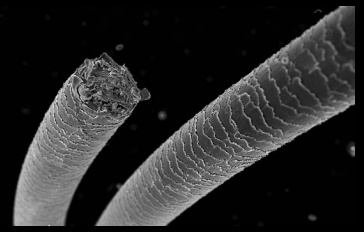
# Aus welcher Ära stammt Ihre Infrastruktur?

| POWER5 | POWER6 | POWER7 | POWER8 | POWER9 |
|---|---|---|---|---|
| 2004 | 2007 | 2010 | 2014 | 2018 |
| **2004** POWER5 Launch. | **2007** POWER6 Launch. | **2010** POWER7 Launch. | **2014** POWER8 Launch. | **2018** POWER9 Launch. |
| **2004** US-amerikanische College-Studenten testen ein neues soziales Netzwerk namens Facebook. | **2007** Steve Jobs stellt unter dem Applaus von Apple-Fans das iPhone vor. | **2010** San Francisco ist die erste Stadt, in der man Uber nutzen kann. | **2015** BB-8 taucht das erste Mal in ‚Star Wars: Das Erwachen der Macht' auf. | SpaceX schickt die Trägerrakete Falcon Heavy auf ihren ersten Testflug. |
| **2005** Die Spielekonsole Xbox 360 kommt auf den Markt. | **2008** Internetnutzer können das erste Mal mit Google Chrome surfen. | **2012** Der Mars-Rover ‚Curiosity' der NASA landet erfolgreich auf dem Mond. | **2016** Die Los Angelos Rams sind zurück in der Stadt, nachdem L.A. zwei Jahrzehnte lang ohne eigenes NFL-Team auskommen musste. | On-demand-Streaming ist inzwischen das beliebteste Musikformat. |
| | **2009** Barack Obama wird US-Präsident. | **2013** Der Preis für einen Bitcoin steigt von 13 auf mehr als 1000 USD. | **2017** Der erste Tesla Model 3 rollt vom Band. | Einer von sechs US-Amerikanern besitzt einen sprachgesteuerten, smarten Lautsprecher. |



# Wie wenig sind eigentlich 7 Nanometer?

1.000.000 nm



80.000 nm

200 nm

Der Grössenunterschied zwischen einem Nanometer und einem Meter entspricht in etwa dem Grössenunterschied zwischen dieser Blattlaus (Grösse 6–7 mm) und der Entfernung zwischen Zürich und New York (6'300 km).


# IBM Power E1080 Rollout

AIX IBMi Linux

**Sept 8th**
**Announcement**
- *Power E1080 system*
- *Ordering & pricing available for all configs (1-4 nodes)*

**Sept 17th**
**General Availability**
- *Shipments for 1 & 2N*

**October**
**ESP for 3 & 4N systems**

**December**
**General Availability of 3 & 4N & SAP HANA Certification**

**2Q 2022**
**SCO & Mid-Range**

3Q2021 | 4Q2021 | 2022

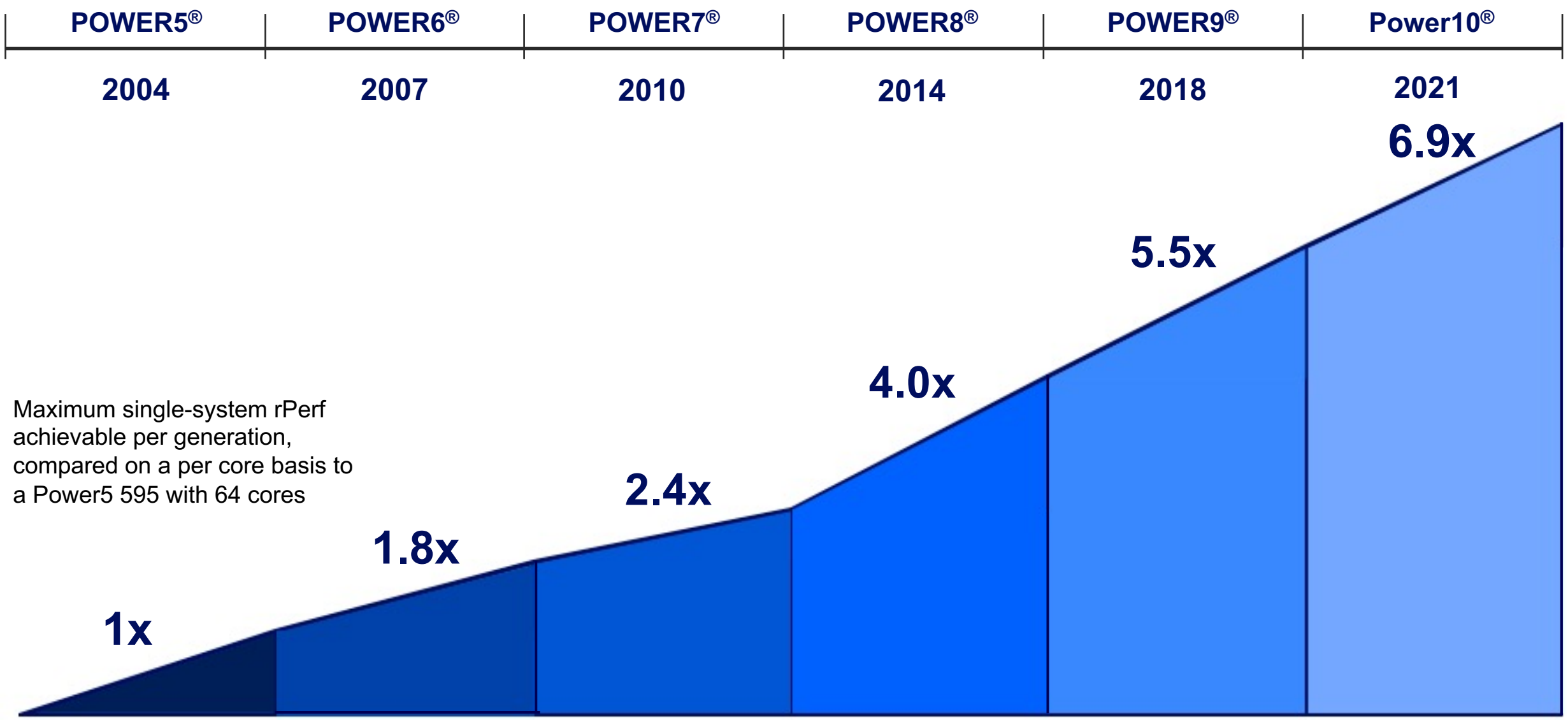
## September GA
- Up to 2 Nodes
- 10 (3.75 GHz), 12 (4.15 GHz), and 15 (4.0 GHz) cores per socket
- Up to 8 TB of memory (4 TB per node)
- LPM support for vNIC will be delayed until 4Q

## December GA
- Up to 4 Nodes
- 10, 12, and 15 cores / socket
- Up to 64 TB of memory in total & 32 TB/partition.
- LPM support for vNIC

**Scale Out Systems**

**Enterprise 4-socket System**

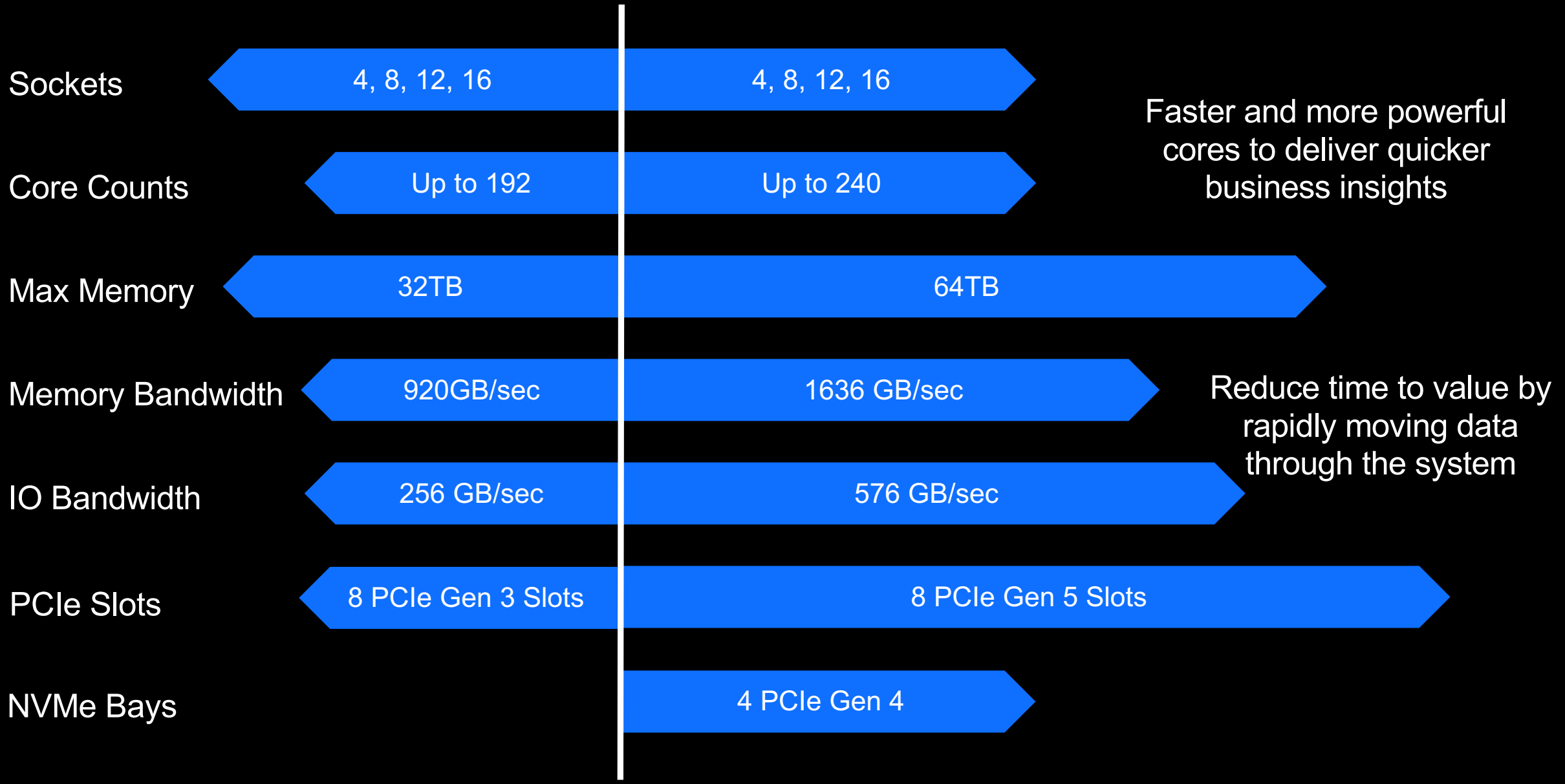
# Power10 increases per core performance over prior generations



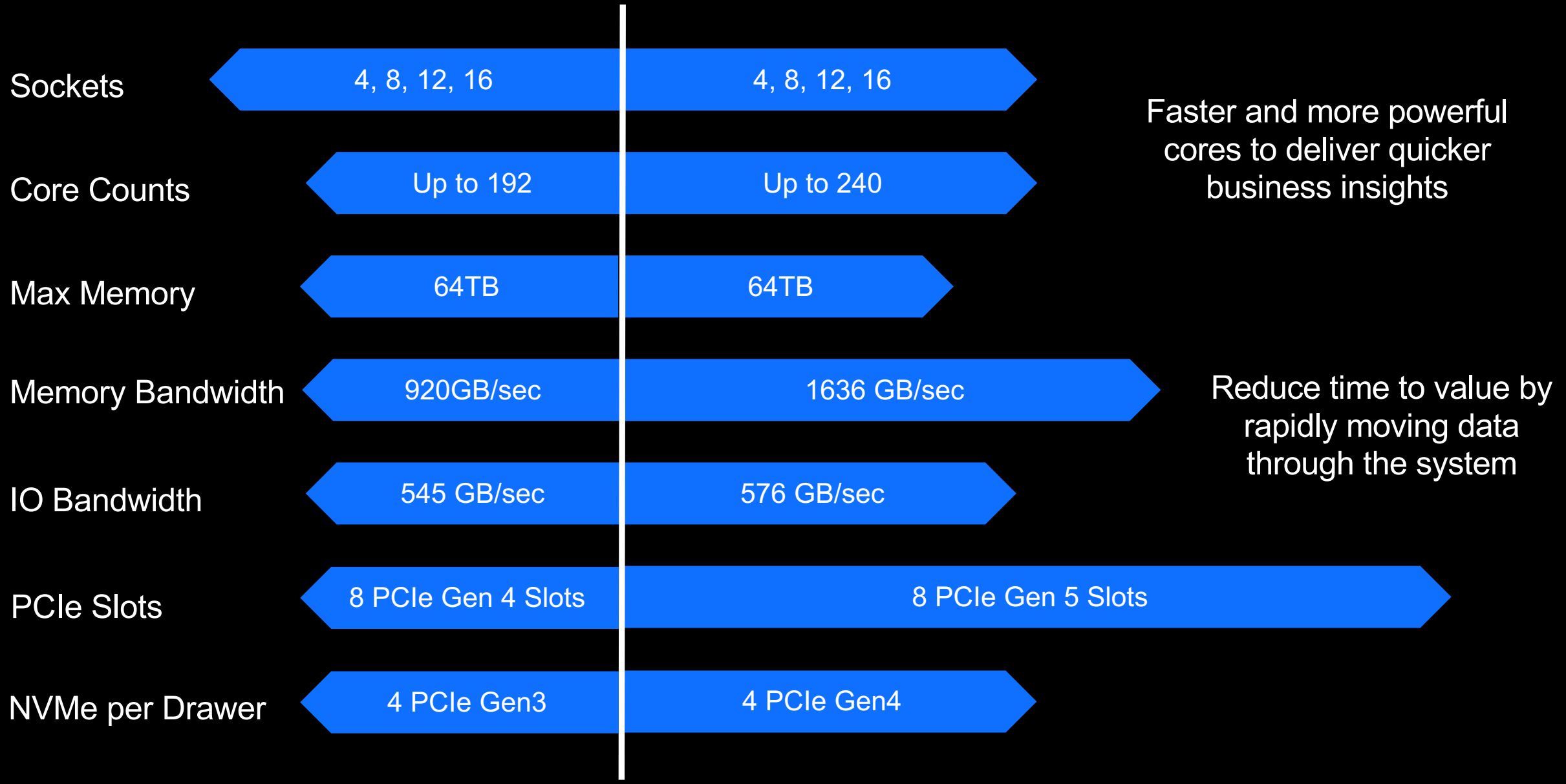

Maximum single-system rPerf achievable per generation, compared on a per core basis to a Power5 595 with 64 cores

Based on IBM internal rPerf projections as of 6/30/2021

# Performance – E880C vs. E1080



# Performance – E980 vs. E1080




Faster and more powerful cores to deliver quicker business insights

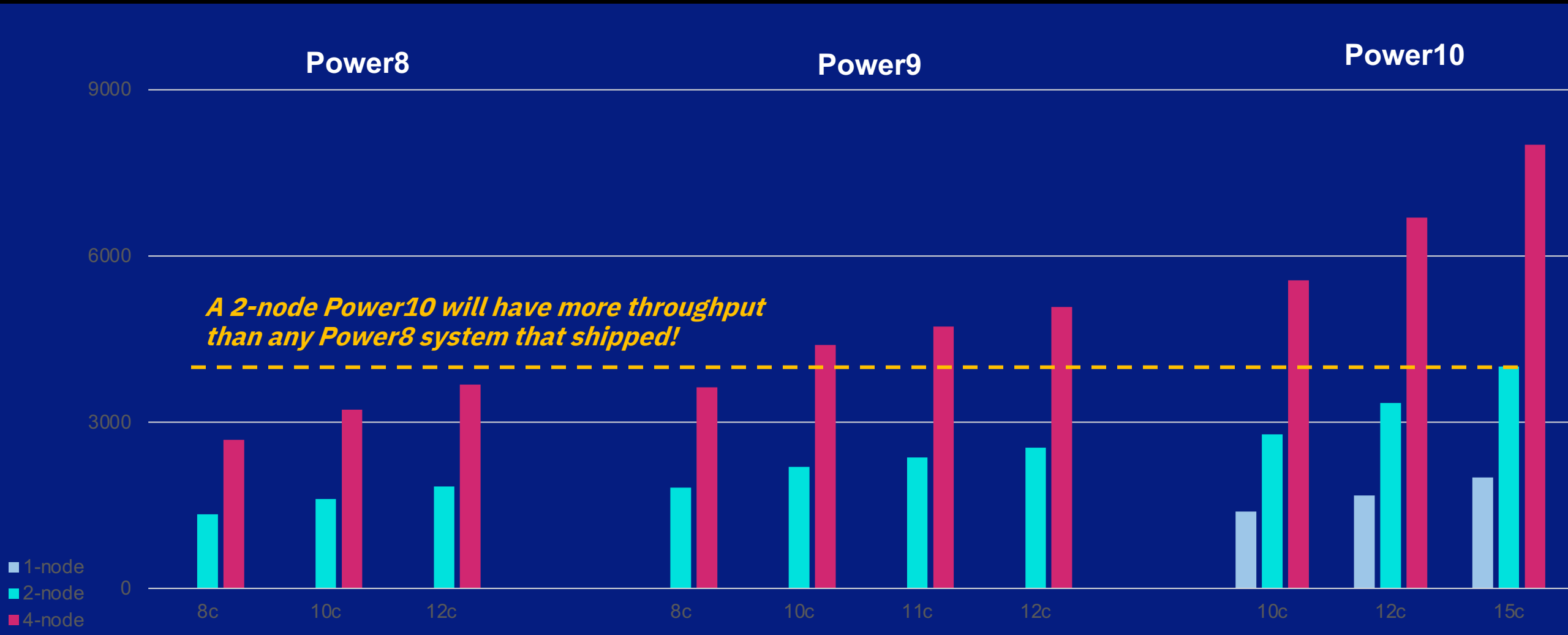
Reduce time to value by rapidly moving data through the system

# Power E1080 – *Enhancing TCO and Sustainability*

***Power E1080 delivers 1.5-1.6x more capacity than Power E980***

*20-30% more performance per core vs. P9 (60-80% more than P8)*

*Up to 25% more cores per socket*

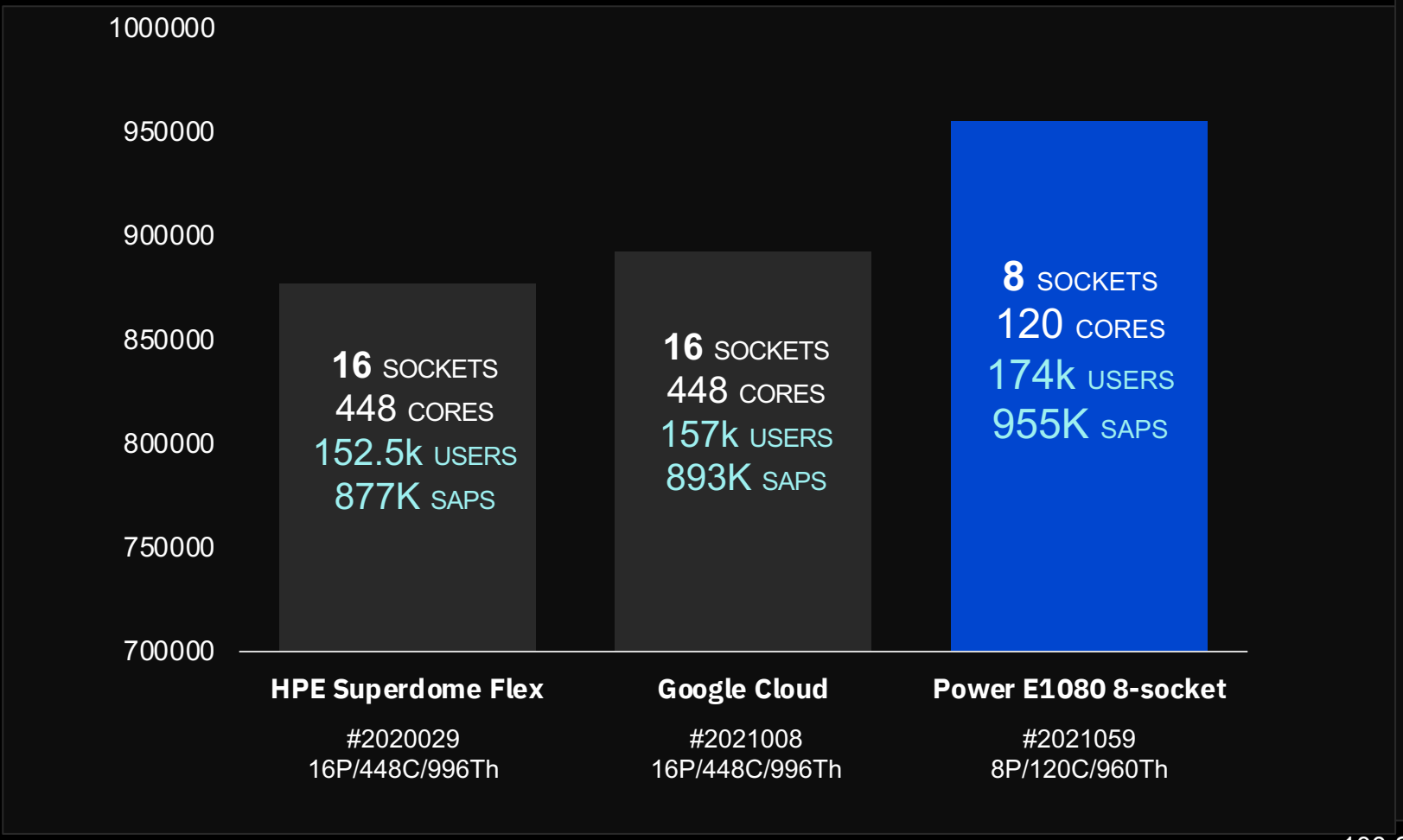


# IBM Power E1080 sets world record 8-socket server SPEC CPU 2017 benchmark result[1]


- World record 8-socket performance
  - SPECrate®2017_int_peak
    - 2170 vs. 1620
  - SPECrate®2017_int_base
    - 1700 vs. 1570
  - 2.5x more performance per core
  - 1.3x more performance per socket
- Power E1080 servers scale to 16 sockets

1. Comparison based on best performing single 8-socket systems (IBM Power E1080 3.55 - 4 GHz, 120 core, AIX and Superdome Flex 280 2.90 GHz, Intel Xeon Platinum 8380H) using published results at www.spec.org/cpu2017/resutls/ as of 02 September 2021. SPEC® and the benchmark names SPECrate®2017_int_base and SPECrate®2017_int_peak are registered trademarks of the Standard Performance Evaluation Corporation. For more information about SPEC CPU 2017, see www. http:/spec.org/cpu2017/.

# IBM Power E1080 sets world record 8-socket two-tier SAP SD standard application benchmark result[1]




- World record 8-socket performance
  - 955,050 vs. 670,830 SAPS
  - 174,000 vs. 122,300 users
  - More performance per core
    - 4x vs. 16-socket Intel[2]
    - 2.7x vs. 8-socket Intel[3]
- The most flexible and reliable SAP HANA platform[4]
- Power E1080 servers scale to 16 sockets

100 SAPS = 2,000 fully business processed order line items per hour

1. IBM Power E1080; two-tier SAP SD standard application benchmark running SAP ERP 6.0 EHP5; Power10 3.55-4.0 GHz processor, 4,096 GB memory, 8p/120c/960t, 174,000 SD benchmark users (955,050 SAPS), AIX 7.2, DB2 11.5 . Certification # 2021059. All results can be found at sap.com/benchmark Valid as of 8/27/21
2. Google Cloud Platform; two-tier SAP SD standard application benchmark running SAP ERP 6.0 EHP5 (cloud); Intel Xeon Platinum 8280L 2.7 GHz, 16p/448c/896t, 157,000 SD benchmark users (892,270 SAPS), running Windows Server 2019 and Microsoft SQL Server 2017, Certification # 2021008.
3. HPE Superdome Flex; two-tier SAP SD standard application benchmark running SAP ERP 6.0 EHP5; Intel Xeon Platinum 8380H 2.9 GHz, 8p/224c/448t, 122,300 SD benchmark users (670,830 SAPS), Windows Server 2016 and Microsoft SQL Server 2012, Certification # 2021006.
4. Ranked most reliable server in its category for 12th year by ITIC . Flexible: Only platform that runs AIX, IBM i, Linux OS'es while supporting the ability to run 16 SAP HANA production environment in a single server

# IBM Power10
## Scalable, sustainable compute

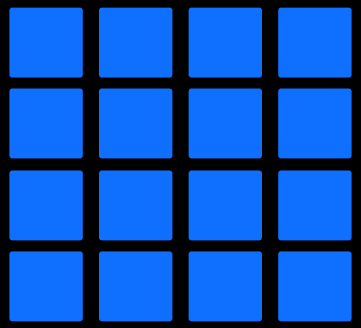
Same work → Less infrastructure → Smaller carbon footprint

**52%** lower energy consumption for the same workload in Power E1080 vs Power E880C*

**33%** lower energy consumption for the same workload in Power E1080 vs Power E980*

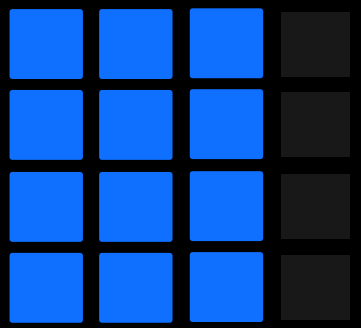
### Reduce carbon footprint with Power10

**IBM Power8**



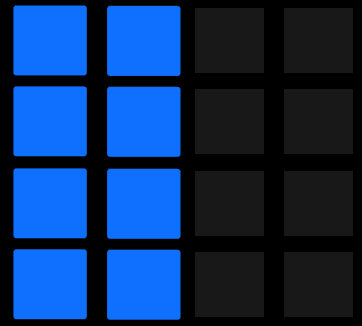
10,376 watts

**IBM Power9**



7,478 watts

**IBM Power10**



~5,000 watts

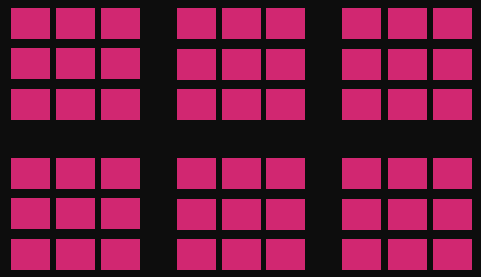
* Power8 (12c) is 3679 rPerf @ 16,600 Watts (0.22 rPerf/Watt), Power10 (15c) is 7998 rPerf @ 17,320 Watts (0.46 rPerf/Watt); 0.46 / 0.22 = 2.06 more rPerf/Watt, delivering 2X energy efficiency
Power9 (12c) IS 5081 rPerf @ 16,520 Watts (0.31 rPerf/Watt), Power10 (15c) is 7998 rPerf @ 17,320 Watts (0.46 rPerf/Watt); 0.46 / 0.31 = 1.48 more rPerf/Watt

# Same work, fewer resources, smaller carbon footprint

*Customer example*

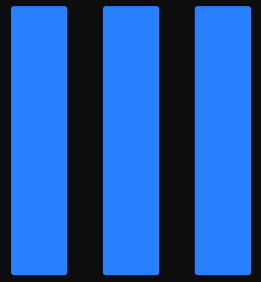
**Previous customer environment:**

126 Intel Oracle Database servers



**Consolidated environment:**

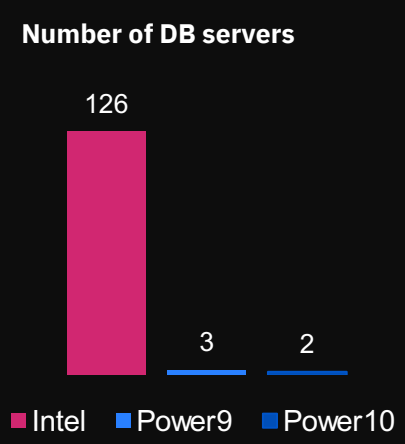
3 Power E980's

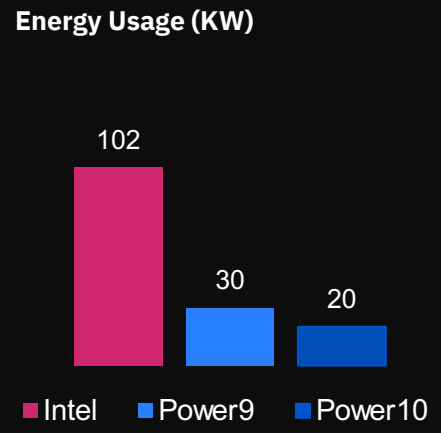


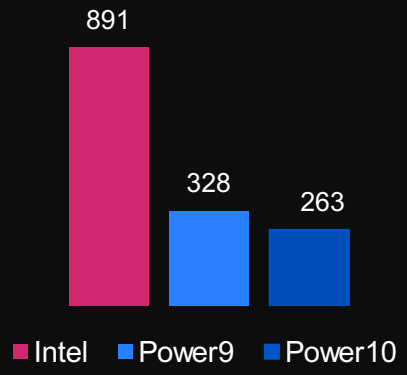
**Projected consolidation:**

2 Power E1080's

## Benefits achieved with consolidation

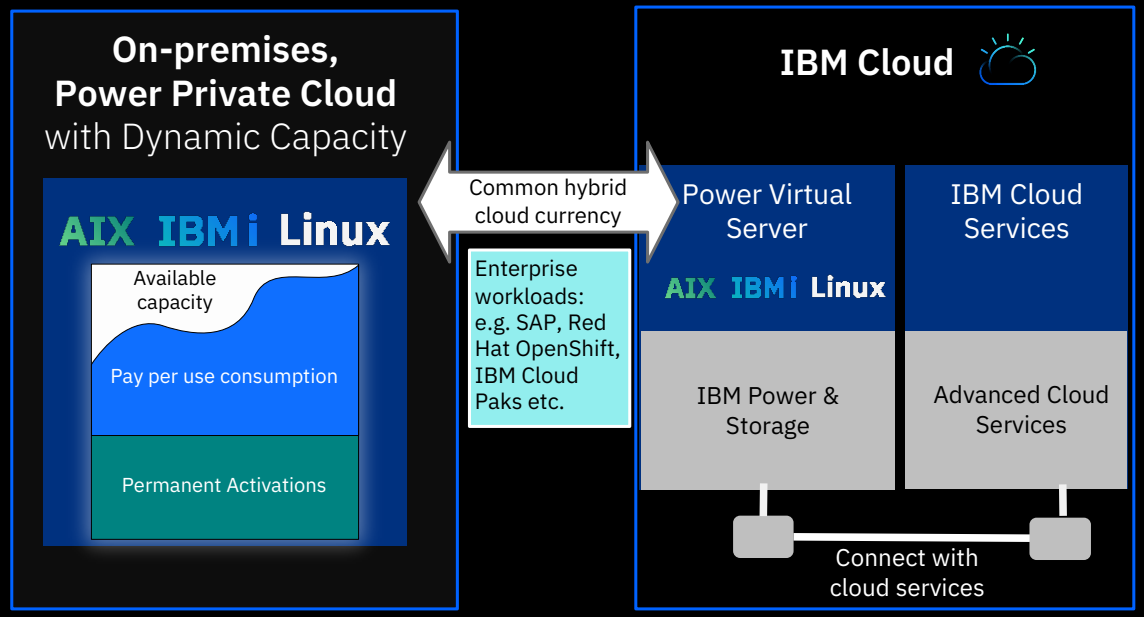


# IBM Power approach to frictionless hybrid cloud

## Consistent experience for elastic computing across the IT environment

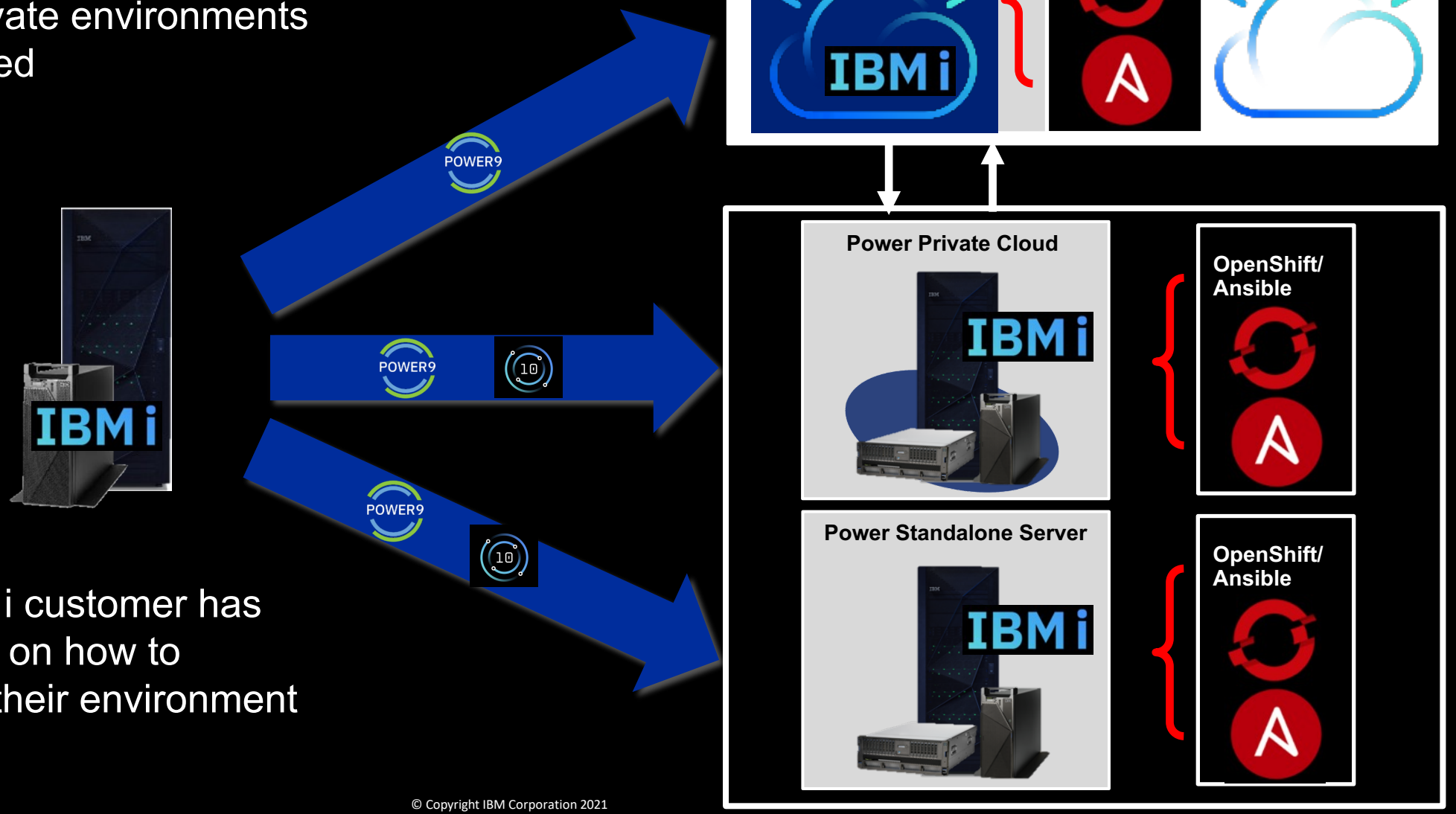



- Consistent and compatible IT architecture – no additional middleware or application refactoring required
- Extend workloads across on-premises and Power Virtual Server
- Common hybrid cloud currency for pay-per-use consumption

# Hybrid Cloud Options for an IBM i Customer

IBM i Anywhere
IBM i Everywhere

Hybrid clouds are public and private environments combined




An IBM i customer has choices on how to deploy their environment

Respond faster to business demands | Protect data from core to cloud | Streamline insights and automation | Maximize availability

# Red Hat on Power momentum enables accelerated delivery of app and infrastructure modernization capabilities

**Red Hat OpenShift**

**200+**
Customers

**Red Hat Ansible Automation Platform**

**32,000+**
Ansible module downloads

**Red Hat Enterprise Linux**

**50,000+**
Subscriptions

## What's new?

### Modernize existing & develop new applications

Red Hat OpenShift + add-ons (Service Mesh, Pipelines, etc.)

Consistent DevOps: Red Hat Runtimes + CodeReady Workspaces

Red Hat Advanced Cluster Management

Power Private Cloud Rack for faster, efficient Red Hat OpenShift deployment

Certified Ansible modules fully supported by Red Hat

### Expand flexibility with a frictionless Hybrid Cloud

Red Hat OpenShift on Power Virtual Server

RHEL for SAP HANA (on-premises and in Power Virtual Server)

On-premises, by the minute metering and consumption for RHEL and Red Hat OpenShift*

*Currently a statement of direction

Respond faster to business demands | Protect data from core to cloud | Streamline insights and automation | Maximize availability

# Red Hat OpenShift & IBM Cloud Paks on Power

## Efficient Scaling

**4.1X** more containerized throughput per core than x86 running Red Hat OpenShift*

## Persistent Security and Reliability

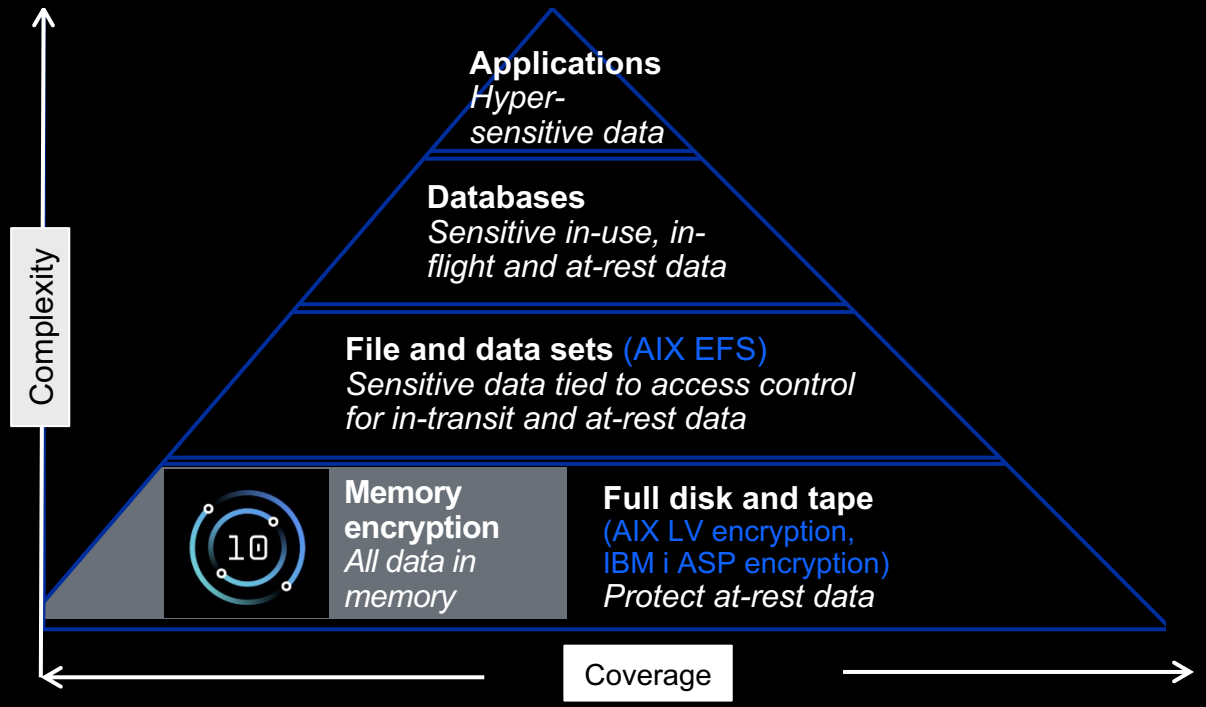
- Most secure workload isolation
- Advanced data protection
- Platform integrity

## Optimize Utilization

- Automated core allocation across worker nodes
- Gain performance and TCO advantages co-locating AIX, IBM i and Red Hat OpenShift environments
- Instant scaling, pay per use consumption

*Based on IBM internal testing of Red Hat OpenShift Container Platform 4.8.2 worker nodes running 80 pods each with 10 users using the Daytrader7 workload (https://github.com/WASdev/sample.daytrader7/releases/tag/v1.4 ) accessing AIX Db2 databases. Average cpu utilization for the OCP worker nodes is > 95%. Comparison: Power E1080 running OCP accessing AIX Db2 on an S922 versus OCP on Cascade Lake accessing AIX Db2 on the same S922. Valid as of 8/26/2021 and conducted under laboratory conditions. Individual result can vary based on workload size, use of storage subsystems & other conditions. IBM Power E1080 (40 cores/3.8 GHz/2 TB memory) in maximum performance mode, 25 Gb two-port SRIOV adapter, 1 x 16Gbs FCA, with PowerVM. Competitive system: Intel(R) Xeon(R) Gold 6248 CPU (Cascade Lake) in performance mode, 40 cores/3.9GHz/512GB memory), 25Gb two-port SRIOV adapter, 1 x 16Gbps FCA, RHEL 8.4 KVM.

# Protect Data:
## End to end security with full stack encryption




Transparent memory encryption with:

- No additional management setup
- No performance impact

Blazing fast hardware-accelerated encryption compared to Power9

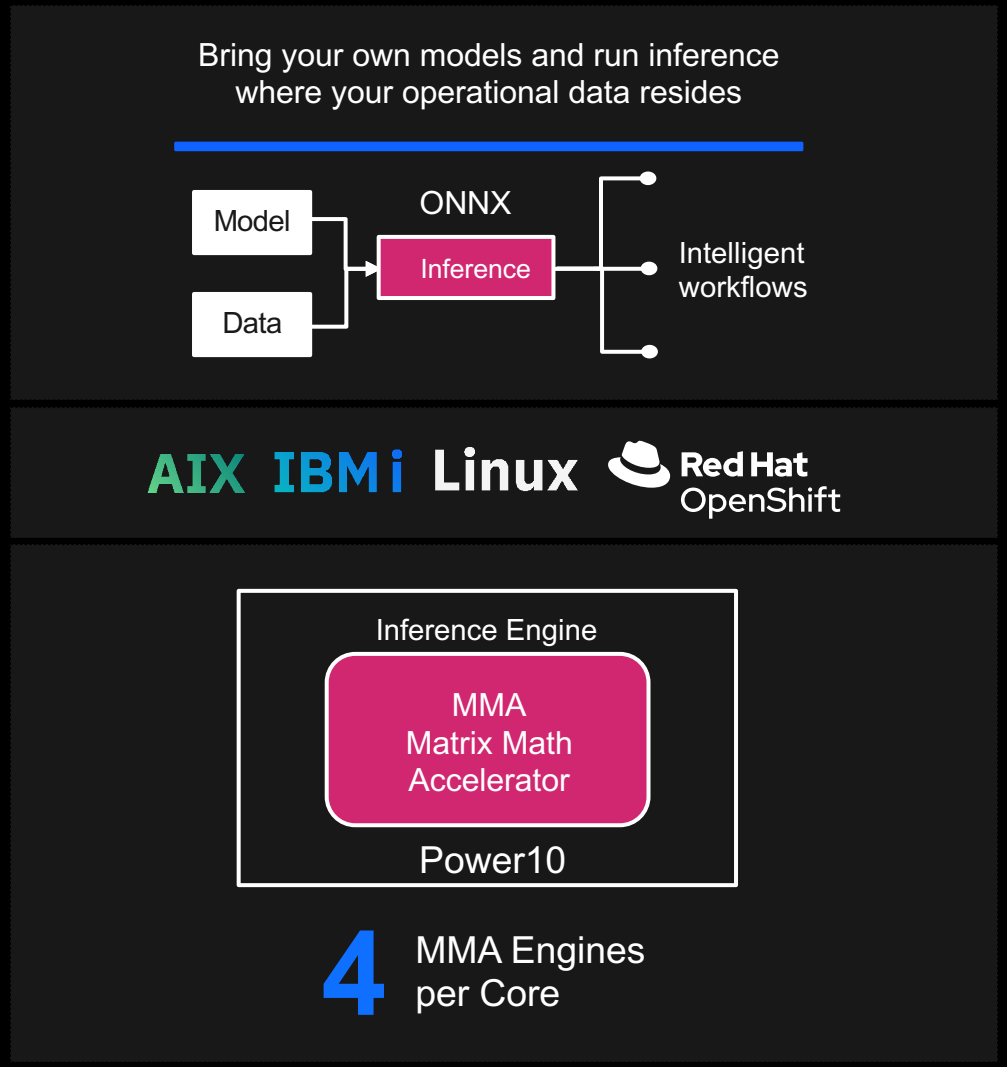
- 2.5x faster AES crypto performance per core[1]
- 4x crypto engines in every core

Stay ahead of current and future threats with support for:

- Quantum-safe cryptography
- Fully homomorphic encryption

1. AES-256 in both GCM and XTS modes runs about 2.5 times faster per core when comparing Power10 E1080 (15-core modules ) vs. Power9 E980 (12-core modules) according to preliminary measurements obtained on RHEL Linux 8.4 and the OpenSSL 1.1.1g library

# In-core AI inferencing and machine learning




**5X**

Faster AI inferencing per socket over Power E980*

- Perform in-core AI inferencing and ML where data resides
- Provides alternative to using separate GPU systems
- Train AI models anywhere, deploy on Power without changes for AI; with high RAS
- Support for popular libraries, AI frameworks and ONNX runtime

* 5x improvement in per socket inferencing throughput for large size 32b floating point inferencing models from Power9 E980 (12-core modules) to Power10 E1080 (15-core modules). Based on IBM testing using PyTorch, OpenBLAS on the same BERT Large with SQuAD v1.1 data set

# Planned OS support: AIX IBM i Linux OpenShift

***Updated: 06/25/2021***

| OS | AIX | | | IBM i | | | | Linux | | | | | | | OpenShift (RHEL CoreOS) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Power Platform | AIX 7.1 | AIX 7.2 | AIX 7.3 | IBM i 7.1 | IBM i 7.2 | IBM i 7.3 | IBM i 7.4 | RHEL 8.2 | RHEL 8.4 | RHEL 8.6 | RHEL 9* | SLES 12 | SLES 15 | SLES Next* | OCP 4.8 | OCP 4.9 | OCP 4.xx |
| Power E1080 | TL5 SP5 (Virtual IO only) | TL5 SP1 TL4 SP1 | TL0 SP1 | | | TR11 | TR5 | ** | | *2Q22 | *2Q22 | SP5 | SP3 | *2023 | ** | Oct. 18, 2021 (target GA) | New releases ~once per quarter |
| POWER9 S914, S922, H922, S924, H924, E980 S922 | | | | Note S922, E980 only | | | | | | *2Q22 | *2Q22 | | | *2023 | | Oct. 18, 2021 (target GA) | New releases ~once per quarter |

Not Supported | Supported in P8 Mode | Supported in P9 Mode | Supported in P10 Mode

*** Red Hat BU approval required*

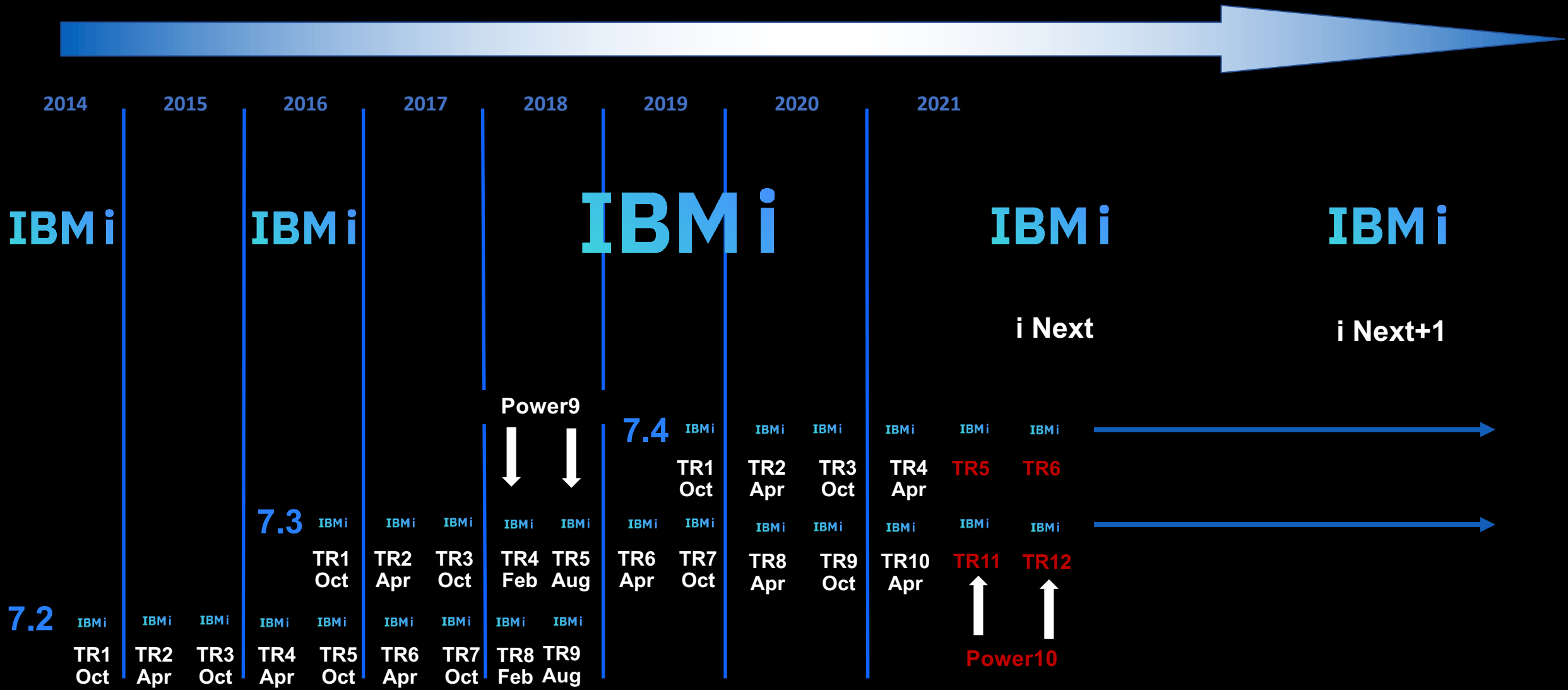
** New Major Releases Planned for:*
*- RHEL 9 2Q22*
*- SLESNext 2023*

*- Releases supporting Power10 mode will also support POWER9*

**Power10-based systems support AIX, IBM i, Linux, and Red Hat OpenShift**

# IBM i Release Roadmap

**IBM i** Anywhere
**IBM i** Everywhere




** All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice and represent goals and objectives only.
** Arrows indicate “ongoing status and do not imply any specific dates.

# First sold P10 in EMEA!


# What is IBM Power Expert Care?

*A better way of attaching Service and Support*


A new way of attaching Services and Support to Power products.

- Services will get standardized across products and geographies
- Easy and fair pricing
- Simplify the client experience

# IBM Power Expert Care service tiers

## IBM Power Expert Care for E1080

*Choose the duration (1,3 or 5 years) and level of support you require*

| | Warranty | Advanced | Premium |
|---|---|---|---|
| **IBM Hardware Maintenance** | **1 year** | **3 or 5 Years** | **1, 3 or 5 Years** |
| **IBM Software Maintenance** | **1 Year** | **3 or 5 Years** | **1, 3 or 5 Years** |
| **Proactive Support** | **1 Year (HB)** | **3 or 5 Years** | **1, 3 or 5 Years** |
| **Global Total Microcode Support** | **-** | **-** | **Yes** |
| **IBM Media Retention Services** | - | - | **Yes** |
| **Enterprise Accelerated Value Program (eAVP)** | - | - | **Yes** |
| **Hardware services** | **24x7** same business day, IBM onsite* | **24x7** same business day, IBM onsite* | **24x7** same business day, IBM onsite* |

**What products is IBM Power Expert Care available with?**
It's currently only available with the IBM Power Systems E1080.

**What are the installation options for the 9080-HEX?**
All the 9080-HEX are IBI (IBM installable) machines, therefore IBM will install.

**What exactly I am offered in Power Expert Care?**
Advanced Expert Care includes
- post warranty IBM Hardware Maintenance: 24x7 same day response hardware support

Premium Expert Care includes
- post warranty IBM Hardware Maintenance: 24x7 same day response hardware support, Global Total Microcode Support, IBM Media Retention Services and Enterprise Accelerated Value Program services.

IBM Software Maintenance and Proactive Support are prerequisites to purchase fwith IBM Power Expert Care.

**Are other services available with IBM Power Expert Care?**
Yes, services such as IBM Media Retention Services, Global Total Microcode Support, Enterprise Accelerated Value Program, and Committed Maintenance Service Levels are available services to purchase in some countries.

**How can I renew IBM Power Expert Care at the end of the initial duration?**
You can renew your existing coverage at the end of the contract or choose to renew or upgrade to a higher offering at any point by contacting IBM sales representative or your IBM business partner.
.

# eConfig Result

| Product | Description | Qty |
|---|---|---|
| 9080-HEX | CTLQ:9080 Model HEX | 1 |
| 0265 | AIX Partition Specify | 1 |
| 0837 | SAN Load Source Specify | 1 |
| 2146 | Primary OS - AIX | 1 |
| 4650 | Rack Indicator- Not Factory Integrated | 1 |
| 5228 | PowerVM Enterprise Edition | 20 |
| 6671 | Power Cord 2.7M (9-foot), Drawer to IBM PDU, 250V/10A | 8 |
| 9169 | Order Routing Indicator- System Plant | 1 |
| 9300 | Language Group Specify - US English | 1 |
| 9440 | New AIX License Core Counter | 20 |
| EB47 | 25GbE Optical Transceiver SFP28 | 8 |
| EBAB | IBM Rack-mount Drawer Bezel and Hardware | 1 |
| EC2T | PCIe3 LP 2-Port 25/10Gb NIC&ROCE SR/Cu Adapter | 4 |
| ECW0 | Optical Wrap Plug | 8 |
| EDBK | 2 x SMP cable brackets for non-IBM Rack | 1 |
| EDFP | Flexible service processor | 2 |
| EDN1 | 5U System node Indicator drawer | 1 |
| EDP3 | 48-core (4x12) 3.60 to 4.15 GHz (max) Power10 Processor with 5U system node drawer | 1 |
| EDPC | 1 core Processor Activation for #EDP3 | 20 |
| EFCH | System Node to System Control Unit Cable Set for Drawer 1 | 1 |
| EJBC | 4-NVMe U.2 (7mm) Flash drive bays | 1 |
| EM8F | Active Memory expansion enablement for HEX | 1 |
| EMBZ | 512 GB Memory Activations for HEX | 2 |
| EMC1 | 128 GB (4x32GB) DDIMMs, 3200 MHz, 16GBIT DDR4 Memory | 16 |
| EN1B | PCIe3 LP 32Gb 2-port Fibre Channel Adapter | 4 |
| ER16 | Indicator, reserve 5 EIA rack space | 3 |
| ER21 | Field Integration of Rack and Server | 1 |
| ESC0 | S&H - No Charge | 1 |
| ESWK | AIX Update Access Key (UAK) | 39 |
| EXS3 | 3 year, IBM Power Expert Care Advanced, 4hr Committed On-Site | 1 |
| SVPC | 5000 Power to Cloud Reward points | 2 |
| | Serial: N/A | Total |
| 9665-AS3 | 3 year, Advanced Expert Care, 4hr Committed On-Site | 1 |

# 5 nm technology,
# R&D long term investment

IBM and its Research Alliance partners GLOBALFOUNDRIES and Samsung have developed an industry-first process to build silicon nanosheet transistors that enable 5 nanometer (nm) chips. (Jun 2017)

*Less than two years since announcing a 7nm test chip, IBM scientists have achieved another breakthrough*

https://www-03.ibm.com/press/us/en/pressrelease/52531.wss

The resulting increase in performance will help accelerate cognitive computing, the Internet of Things (IoT), and other data-intensive applications delivered in the cloud. The power savings could improve the TCO and also means that the batteries in mobile products could last two to three times longer than today.

# Time Goes By…


…. and thank you for your attention!