IBM Power10 Systems

By Jean S. Bozman

IBM's announcement of new Power10 server systems was as much about efficient management of containers and databases as it was about the introduction of the new Power10 servers themselves. The announcement focused on how customers could flexibly deploy the servers, across a wide variety of workloads, running in hybrid cloud and multi-cloud environments.

The worldwide IT infrastructure market has known about Power10 processors, and its rollout into IBM Power servers for some time – including Power10 technical previews at the Hot Chips 2020 conference and a Power10 systems rollout in fall, 2021.

Now, the July 12, 2022, IBM Power10 server announcements built on the IBM Power10 story by highlighting information about a wide range of usage models – for on-prem data centers, on-prem private clouds, hybrid clouds and multi-cloud deployments that leverage the Power10 servers' latest design features. The new Power10 server features enhance their support for encryption and scalability – and pay-per-use flexible deployments are key to this theme.

Usage models highlighted for the Power10 servers included:

- Container management across distributed platforms leveraging Red Hat OpenShift containers, Red Hat Ansible, and IBM Cloud Satellite software
- Secure deployments leveraging Power10 servers' built-in encryption, which is called Transparent Memory Encryption
- Scalable database platforms for the Oracle Autonomous Database, IBM DB2, and cloud-native databases (e.g., MongoDB).
- Scalability for SAP, SAP HANA, SAP S4HANA, and RISE with SAP, premium supplier option applications
- Platform for AI-centric applications running on Power10 servers
- Reduced energy profiles via workload consolidation on systems with 4, 8 and 16 sockets

On-Prem and Off-Prem

Given its emphasis on hybrid clouds, it comes as no surprise that IBM sees the Power10 systems being deployed on-prem, in data centers and in on-prem private clouds – and in public clouds, including the IBM Cloud. IBM's customer base is mid-transition from on-prem-only to this hybrid cloud mix of deployments, making flexibility an important factor in customers' use-case

decisions Flexible deployment models, often using Red Hat OpenShift containers, are intended to speed customers' move into hybrid clouds – and even multi-cloud deployments.

As-a-Service Options

The Power10 server announcement referenced a range of as-a-service options, while stopping short of an IBM "as-a-service" announcement that would compete with "aaS" solutions from HPE (GreenLake) and Dell (Apex). This stance preserves IBM customers' options to manage Power10 systems directly, or indirectly, via MSP partners – or by having them hosted on the IBM Cloud itself. The emphasis is on flexible deployments across hybrid clouds.

Several "as-a-service options" were clearly identified in the Power10 server announcements. These include support for PaaS for DevOps programmers; SaaS from cloud partners (e.g., AWS) for business-service uses; and customers' use of IBM's STaaS storage-as-a-service option. While IBM offers support for IaaS options, it appears that they are not being collected into a unified package of IaaS capabilities at this time. IBM's as-a-service options were listed in the July Power10 systems news releases.

For customers, the chief attractions for as-a-service options are pay-per-use and subscription models for hybrid cloud workloads that are being distributed throughout an organization, tapping both on-prem and on-cloud resources. Power10 deployments can also be made by leveraging the IBM Cloud, where Power10 servers are installed, deployed, managed, and maintained by IBM itself, reducing management tasks for customers' IT organizations.

We believe that IBM's "as-a-service" focus may get stronger over time, as more IBM customers migrate on-prem enterprise applications to a cloud-based usage model. Clearly, the Power10 features are ready for that, including support for Red Hat OpenShift containers and microservices-management middleware (Red Hat Ansible); IBM Virtual Server support for distributed VMs; and end-to-end security through the Power10 servers' embedded and transparent on-platform encryption.

SAP and AI

Support for SAP and AI workloads have long been leading workloads for IBM's Power servers. Successive product line announcements have deepened support for both types of workloads. SAP, a longtime partner with IBM, has worked closely on refining and engineering enhanced support for SAP applications on IBM Power server systems. Support for RISE with SAP, premium supplier option was enhanced in May, 2022, with new announcements for the SAP S4HANA database. Supported AI software tools include IBM Watson AIOps software.

New Power10 Systems

IBM Power10 systems, based on the 7nm Power10 microprocessor, run Linux operating systems (e.g., Red Hat RHEL; SUSE SLES; and Ubuntu; IBM i [formerly OS/400]; and IBM AIX Unix operating systems). The Power servers have a long history of hosting multiple operating systems, including Linux (e.g., Red Hat Enterprise Linux [RHEL], SLES [SUSE Enterprise Linux] and Ubuntu); IBM AIX (Unix) and IBM i (formerly known as OS/400). This multi-OS capability allows Power systems to be used for consolidating workloads onto fewer platforms, simplifying operations for customers who are migrating enterprise applications and databases.

Overall, IBM is leading its Power10 server marketing by characterizing them as efficient, scalable, and secure platforms for compute-intensive and data-intensive workloads. An important security feature called Transparent Memory Encryption (TME) encrypts all data in the Power10 systems' memory and processors – supporting secure end-to-end transactions in data centers and in the hybrid cloud. TME encrypts all data in the Power10 systems' memory and processors – protecting them from cyberattacks that would corrupt data transfers. IBM believes this TME encryption capability is a differentiator for Power10 servers being selected for data-intensive use in high-capacity racks supporting enterprise workloads.

The new models in the Power10 server product line include:

IBM Power S1014: This is an entry Power10 model, including those with IBM i business applications being moved from traditional POWER-based servers to new Power10 servers running in the hybrid cloud. It can be used for scale-out applications and workloads.

IBM Power S1022 and S1024: These are enterprise-capable models, intended for use by SMB business and remote and/or branch offices. Examples include retail stores, bank branches and insurance offices, which replicate and support business applications throughout a corporate network of local sites. These models could also be used for Edge applications based on microservices, cloud-native applications and local databases.

IBM Power E1050: This new Power10 server is a midrange four-socket server system, supporting 12 to 24 cores per socket. It is optimized for data-intensive applications in flexible deployments, across locations in the hybrid cloud. It supports AI inferencing and machine-learning software for localized data analytics, which can be used to avoid large-scale data transfers and network latency that would otherwise increase operating costs.

IBM Power E1080, introduced last fall (September, 2021), was announced as a secure, highly available platform that could be co-managed with x86 servers in hybrid clouds and multi-cloud environments. In many ways, it prepared the way for the new announcements of entry 2-socket

servers, midrange 4-socket Power10 servers – and scalable 4-socket, 8-socket, and 16-socket servers – in the Power10 server product line.

Cloud Architects Analysis

IBM is moving quickly to support hybrid cloud workloads on its IBM Power10 servers. In doing so, it is combining already-strong features for security and management with enhanced encryption, pay-per-use financial models and flexible-deployment support for these servers.

The July announcement reveals a broader pattern of enabling longtime IBM customers' enterprise and SMB business workloads for use in the hybrid-cloud world of cloud-native applications and microservices. IBM is clearly paying attention to the morphing of data-center computing into the distributed world of applications and databases. This fits with IBM's corporate strategy of supporting hybrid clouds and AI capabilities as key goals, as stated by IBM CEO Arvind Krishna at this spring's IBM THINK conferences.

Historically, IBM customers were data-center-centric – and, given rapidly growing cloud infrastructure worldwide, that is no longer the case. Customers' moves into the cloud, which began in the 2008-2009 financial downturn, have intensified in the pandemic years (2020-2022) – resulting in a highly distributed hybrid cloud world. Flexibility is a primary driver of new deployments in the hybrid cloud. However, customers still need RAS capabilities (reliability, availability, and security) for their enterprise applications and enterprise data. The playing field for their deployments is now cloud-wide, embracing hybrid clouds on a global basis.

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