IBM zEnterprise BC12 (zBC12)

Enabling enterprises of all sizes to build a better customer experience with IBM z Systems

Highlights

- Delivers increased performance, flexibility and scale in a lower cost package
- Helps save money through consolidation on Linux® and an efficient cloud delivery model
- Enables workloads to be deployed where they run best and cost less with proven hybrid computing
- Lets you secure it all with confidence on a trusted and resilient infrastructure

Organizations around the world are recognizing the increasing role that technology plays in driving change as they shift investments from infrastructure maintenance towards new projects, such as cloud, data analytics and mobile applications. To remain competitive, they must constantly adapt and respond with increased speed to deliver new services through multiple channels to customers, partners and employees. To capitalize on this opportunity, organizations must be able to tap into their valuable data and energize applications without going over budget while keeping everything protected and secure to reduce organizational and reputation risk. This requires an optimized infrastructure that is integrated, agile, trusted and secure.

The newest member of the IBM® zEnterprise® System family is the IBM zEnterprise BC12 (zBC12). Designed as an entry point for enterprise computing it embodies the same innovation and value, flexible growth options, industry-leading virtualization, trusted resiliency, secure cloud, enterprise mobility and operational analytics capabilities as the massively scalable IBM zEnterprise EC12. The zBC12 delivers a lower and more granular cost structure with significant improvements in packaging, performance and total system scalability over prior generations.

More performance, flexibility and scale

The zBC12 is powered by up to 18 microprocessors, running at 4.2 GHz, boasting up to 36 percent improvement in performance per core, 58 percent more general system processing capacity and up to 62 percent more

total capacity compared to its predecessor, the z114.[1] It also offers up to 496 GB of available memory (2X more than z114) to dramatically improve performance of memory constrained workloads.

Each core on the zBC12 microprocessor chip has dedicated data compression and cryptographic processors—an improvement over the previous generation where two cores shared those processors. IBM continues to enhance IBM z/Architecture® with memory hierarchy improvements enabled by IBM z Systems™ chip designs, refinements in execution processing, and improved prefetch instructions—all designed to optimize throughput for many workloads including those using Java and IBM DB2® for z/OS®. Improved performance is also achieved with system memory management overhead reduction through IBM z/OS enhancements combined with zBC12 hardware support for 2 GB pages. These advantages are expected to be especially useful for industries like financial markets where applications are continually refreshed.

The zBC12 microprocessor chip has been optimized for software performance. With a redesign of cache, there are almost 2X the amount of cache on the chip and 2X the amount in the processor drawer than the prior generation. With a larger cache structure, there is less of a need to access main memory which helps improve the performance of data serving. The zBC12 microprocessor also includes multiple innovative architectures that will allow new software paradigms to be deployed on the platform. The zBC12 supports a general purpose hardware transactional memory architecture called Transactional Execution. It is included in the firmware and initially the chief exploiter is Java. Transactional Execution helps eliminate tension between locks for workloads running in parallel.

This new zEnterprise BC12 offers twice the capacity at the entry level for the same low entry price as its predecessor, the z114.It also delivers significant improvements in availability, security, performance and total system scale to support clients' growth in both traditional and new workloads including consolidation, cloud mobile and analytics

Affordable technology for workload optimization

The zBC12 is available in two models; a single central processing drawer model, the H06 and a two drawer model, the H13 which offers the additional flexibility for I/O and coupling expansion and increased specialty engine capability.

The H06 and H13 are designed with up to 6 and 13 configurable cores respectively which can be configured as general purpose processors (CP) or specialty engines such as the Integrated Facility for Linux (IFL), IBM zEnterprise Application Assist Processor (zAAP), IBM z Integrated Information Processor (zIIP), Internal Coupling Facility (ICF) or additional System Assist Processors (SAPs). The zBC12 also utilizes the Integrated Firmware Processor (IFP) that is standard and not defined by the customer. The IFP is used for infrastructure management of 10GbE RoCE Express and the zEDC Express features. In addition, the H13, provides for up to two "dedicated" spares.

Specialty engines continue to help deliver greater efficiencies and help optimize the capabilities of the platform to support a broad set of applications and workloads, while helping to dramatically improve mainframe economics. The specialty engines can be used independently or can complement each other to optimize workload execution and lower costs. These cost savings are realized by allowing you to purchase additional processing capacity without affecting IBM software pricing and the millions of service units (MSU) rating of the IBM zEnterprise model designation.

The Integrated Facility for Linux (IFL) supports Linux and open standards, which creates a great opportunity for consolidation and infrastructure simplification. Linux on z Systems™ brings a wealth of available applications that can be run in a real or virtual environment within z Systems. Clients are able to reduce labor, energy, software licensing and development costs when consolidating database workloads to Linux on z Systems rather than on Intel® servers. Linux on z Systems enables a total cost of acquisition of less than $1 per day per virtual server.[2]

IBM z Systems Parallel Sysplex® technology allows for greater scalability and availability by coupling mainframes together. Using Parallel Sysplex clustering, z System server groups are designed for up to 99.999 percent availability at the application level. The Internal Coupling Facility (ICF) helps cut the cost of coupling facility functions by reducing the need for an external coupling facility.

Integrating workloads with the simplicity of a single system

The unique and proven hybrid capabilities of the platform are designed to address the complexity and inefficiency of today's multi-architecture data centers. The zBC12 can extend the strengths and capabilities of the mainframe—as in governance, efficiency, extreme virtualization and dynamic resource allocation—to other systems and workloads running on IBM AIX®, Linux, and Microsoft Windows—fundamentally changing the way your data center can be managed.

With the IBM z BladeCenter® Extension (zBX), you can combine z Systems, UNIX and Intel server technologies into a single unified system—integrating workloads with affinity to mainframe applications and data—and manage it all with the same tools, techniques and resources for consistent, automated and reliable service delivery. It attaches to the zBC12 via a secure high-performance private network, and houses the IBM WebSphere® DataPower® Integration Appliance XI50 for zEnterprise (DataPower XI50z) along with select IBM BladeCenter PS701 Express blades or IBM BladeCenter HX5 (7873) blades for increased flexibility in "fit for purpose" application deployment.

The zBX itself is designed with integrated IBM certified components, tested and packaged together by IBM to help you save time getting blades integrated into your system after it is delivered. To improve availability, hardware redundancy is built into the zBX at various levels—the power infrastructure, rack mounted network switches, power and switch units in the

BladeCenter chassis and redundant cabling for support and data connections to the z Systems. Best of all, support for the zBX is included with z Systems hardware maintenance services (24x7 with z Systems Support Specialist Representative) and the z Systems maintenance strategy is extended to DataPower XI50z and any installed blades.

The innovative IBM z Unified Resource Manager (zManager) handles the job of managing system resources across the entire environment. It can help achieve throughput goals by providing hardware and platform management for the system as a whole. Presenting resources simply as a single virtualized heterogeneous system, zManager provides "workload context" that can be used to identify and optimize the physical and virtual system resources that support an application for performance and availability. This capability extends the strategic role of the mainframe as a premier Smarter Computing solution and reduces the number of skills necessary for managing your IT infrastructure.

Efficient and agile cloud computing foundation

Cloud computing promises greater business agility and performance at a lower cost. Further cost savings, flexibility and performance benefits can result from creating the IT infrastructure with purpose-built components that help eliminate the traditional fixed-hardware boundaries of CPU, memory, network and storage. IBM z Systems is designed to create a centrally managed and controlled set of IT resources that provide an ideal private secure enterprise cloud for the rapid and flexible delivery of high value services.

Unlike other proclaimed cloud solutions that are defined by a siloed architecture resource pool, the zBC12 leaps beyond this approach by including heterogeneous compute resources in the pool that can be fully optimized and all managed at the platform level to meet business requirements.

With 156 available capacity settings and granular cost structure offered across either model of the zBC12, you have the freedom to choose the right capacity setting for your needs with the flexibility to scale on demand as workload demands increase.

The zBC12 offers a range of scaling capabilities:

- Scale up—from 50 to over 4,900 general purpose MIPS in a single footprint
- Scale out—a single zBC12 IFL can consolidate up to 32 x86 cores (using Intel Sandy Bridge series processors) or over 400 in a single footprint[3]
- Scale within—specialty engines, cryptographic processors, hypervisors
- Scale beyond its traditional boundaries—when configured with the zBX—supports the integration of up to 112 distributed blade servers or DataPower XI50z[4]

The capabilities of the new zBC12 also provide a uniquely powerful, highly scalable and comprehensive solution for Linux-based IT optimization and cloud computing on z Systems. That is why IBM offers a dedicated z Systems Linux server called the IBM Enterprise Linux Server (ELS) with the new zBC12. The ELS is particularly suitable for consolidating workloads from x86 and UNIX architectures with the ability to run up to hundreds of virtual Linux servers on one physical ELS, which in turn can result in a significant IT simplification and cost savings to reinvest in growing your business.

There is a portfolio of IBM solutions that are designed to take your current virtualized environment from "cloud-ready" (for example, merely using virtualization and simple deployment tooling) to "cloud-active" which can incorporate self provisioning, monitoring and charge back models, all in a highly secure environment.

A private cloud with the new IBM z/VM® 6.3 as virtualization foundation can provide improved economies of scale with support for 1 TB of real memory and improved price performance with higher and more efficient utilization of CPU hardware resources. Coupled with advanced virtualization features such as multi-system virtualization and Live Guest Relocation, z Systems with z/VM and Linux provides a foundation for deploying private clouds for workloads that scale both horizontally and vertically at a low TCO with industry leading qualities of service.

Clouds can also be deployed using z/OS. This platform lets you run multiple disparate workloads with different service levels for those hosted workloads with isolation or multitenancy. The IBM approach for cloud on z/OS is focused on the ability to provision multiple workloads in a single z/OS instance.

The other critical component of cloud is security. The zBC12 delivers unmatched security for running multiple critical applications with the knowledge they will appear isolated from each other. It not only provides a foundation for secure cloud for data, enabling improved service, but also delivers unmatched security and reliability to meet today's business demands.

Data Ready

Business analytics are more critical than ever before. Having the right insight allows decision makers, regardless of industry, to act smarter and faster, driving better business outcomes. The zBC12 plays a critical role in business analytics because z Systems is the right place to store your data thanks to legendary security, availability and ease of management. What's more, with z Systems you get the scale and performance your business requires along with IBM z Unified Resource Manager (zManager) to configure, monitor and govern workloads deployed across multiple z Systems assets.

Data analytics solutions on the zBC12 include the IBM Smart Analytics System 9710 and the IBM DB2 Analytics Accelerator for zOS which are designed to help you to efficiently store, manage, retrieve, and analyze vast amounts of data. The IBM DB2 Analytics Accelerator blends IBM z Systems and Netezza technologies to deliver, mixed workload performance for complex analytic needs. It runs complex queries up to 2,000x faster while retaining single record lookup speed and eliminates costly query tuning while offloading query processing. This enables businesses to derive fast, compelling insights in a secure, highly available environment, without unnecessary cost or complexity.

DB2 for z/OS is engineered for the z Systems platform and takes full advantage of the hardware components such as the zIIP, integrated hardware compression, and Licensed Internal code to maximize the performance of analytical workloads. The use of large pages is designed to improve DB2 performance on all servers. The zBC12, with additional function available on z/OS V1.13, is able to support 1 MB pageable large pages by exploiting Flash Express (see below).

In addition, there is a wealth of IBM business analytics and data warehousing software solutions on z Systems which are designed to cost effectively exploit the unique capabilities of the z Systems platform for delivering fast, reliable, and scalable business information for optimized business performance. To learn more please visit the Analytics on z Systems website.

IBM zEnterprise Data Compression

A new z/OS V2.1 capability, IBM zEnterprise Data Compression (zEDC), is designed to support a new data compression function for low-latency compression. zEDC uses a new feature of the zBC12 PCIe drawer called zEDC Express. Applications that today are using the industry standard zlib compression for large files may find compression with zEDC to

be more efficient and help improve wall clock time. With compression of large files, zEDC may be helpful for large cross-platform file transfers. BSAM/QSAM extended format data, can realize benefits from zEDC to help reduce disk space and improve effective bandwidth without significant CPU overhead.

Mobile Ready

Computing continues to extend its reach and mobile is the latest extension to become fully embedded in the fabric of enterprise IT. Today there are 34 million devices connected and 91 percent of mobile users keep their device within arm's reach 100 percent of the time. From a business perspective it is really transforming and creating new business models and evidence shows that 75 percent mobile shoppers take action after receiving a location based message.

Mobile is about transacting. Whether shopping, purchasing, searching for or providing information, collaborating or seeking service, mobile enabled people and objects are seeking not simply to connect, but to complete tasks when, where and how they wish. With thousands of transactions daily performed on z Systems, mobile is a natural connection to z Systems.

IBM Worklight® provides a world-class mobile application platform that enables organization to rapidly develop both customer-facing and enterprise apps using state-of-the-art frameworks and tools. Whether requirements call for a cross-platform HTML5 browser based app, a native app, or a hybrid solution, Worklight's enterprise application store and support for native SDKs, APIs and public app stores ensures organization can develop, deploy and manage apps that utilize z Systems data.

Security is top of mind for any mobile apps that use z Systems data. IBM Endpoint Manager for Mobile Devices provides that secure base by providing unified management and control of security for all mobile platforms that connect to the zBC12. By taking care of things like detecting rooted/jail-broken devices and enforcing other security policies like password strength, Endpoint Manager lets developers focus on the security challenges unique to the mobile apps they build, maintain, and integrate with the zBC12.

Trusted Infrastructure

The zBC12 delivers a trusted infrastructure with unmatched security for critical business processes, applications and data to reduce risk. To help secure sensitive data and business transactions, z Systems has security built into its DNA. The zBC12 is designed for the highest levels of security with PR/SM certified at Common Criteria Evaluation Assurance Level 5+ (EAL5+) certification for security of logical partitions on the processor core. Bulk encryption is available with clear key support and protected key support helps protect sensitive keys from inadvertent disclosure. Secure sockets layer (SSL) transactions and secure co-processing is delivered with support for the Crypto Express4S feature. The zBC12 supports Elliptic Curve Cryptography (ECC) that is ideal for resource-constrained environments such as mobile phone and smart cards while meeting stringent for digital signature requirements with new support for PKCS #11 standards. Additional standards for the banking and finance industry, such as ANSI, ISO, and EMV are also supported by the zBC12.

z Systems has earned a well-deserved reputation for industry-leading reliability and high availability (HA)—the zBC12 is no exception. Many types of planned outages, such as planned maintenance, upgrades or configuration changes are avoided through support for non-disruptive configuration changes and dynamic replacement capabilities. Unplanned outages are mostly avoided or their effects significantly mitigated through robust support for recovery after a failure.

The zBC12 continues to offer fault tolerant memory through Redundant Array of Independent Memory (RAIM) to support memory availability. The zBC12 supports up to 496 GB of

customer purchased usable RAIM-protected memory—an industry exclusive currently available only on z Systems. The increased available capacity and fault tolerant memory on the server can help improve throughput for workloads such as DB2, WebSphere and Linux. Beyond the customer purchased memory, there is an additional 16 GB of memory for the Hardware System Area (HSA) which holds the I/O configuration data for the server.

Flash Express

The Flash Express feature is designed to help improve availability and performance when running z/OS V1.13 (with additional function) and later. Using Flash Express can bolster availability by eliminating paging- related delays during workload transitions such as the start of day processing in trading environments. Using it for 1 MB pageable large pages can improve performance for Java, or during diagnostic collection. Flash Express can help organizations meet the most aggressive service level agreements letting them compete more effectively where time is at a premium. Flash Express is easy to configure and operates transparently, providing rapid time to value. It can also be used by Linux workloads for temporary storage functions.

IBM zAware

Another feature, IBM z Advanced Workload Analysis Reporter (zAware), is designed to offer near real time diagnostics to help you identify potential problems in your z Systems environment. It is an analytics solution executed in firmware, which intelligently examines OPERLOG message logs for potential deviations, inconsistencies or anomalies. The large quantity of operational messages in the logs makes it too difficult for operations personnel to review and analyze it easily. IBM zAware automatically processes the large log data to help staff pinpoint unusual behavior quickly, using a simple graphical user interface (GUI) for easy drill-down. IBM zAware is particularly helpful for isolating anomalies in IT systems which experience problems that are complex, rare or involve multiple systems. Any message with a well-formed message ID will be analyzed. With rapid identification of message anomalies, organizations can accelerate their response to resolve problems, focus their efforts more precisely, address IT problems quickly, minimize availability lapses and intervene in IT problems before they become more severe.

On-Demand Offerings

The zBC12 also continues to build on the zEnterprise capacity on-demand offerings that provide real-time elasticity for growth and contraction when needed. Permanent and temporary capacity is available to help satisfy capacity requests that are long-term or short-term (such as capacity spikes or for testing new applications). Defining processor cores as Capacity Back-up (CBU) can help provide reserved emergency capacity for multiple processor configurations. And Capacity for Planned Events (CPE), a variation on CBU, is available when there is unallocated capacity available in a server.

High Speed Communication Fabric

High-speed connectivity out to the data and the network is critical to achieving sufficient levels of transaction throughput and enabling resources inside and outside the server to maximize application performance. The industry standard PCIe I/O drawer provides improved performance and granularity support for FICON®, OSA-Express, including the new OSA-Express5S, Crypto Express, and Flash Express, an internal solid state disk. The zBC12 continues to offer High Performance IBM FICON for z Systems (zHPF) for OLTP workload performance optimization. zHPF can now convert 100 percent of DB2 I/O's for improved bandwidth and response time.

IBM zEnterprise BC12 (zBC12) at a glance		
zEnterprise BC12 (2828)		
Models	H06	H13
Processor Core Types: CP*/IFL/ICF/zAAP†/zIIP†/Std SAP/Addl SAP/Spares/IFP		
Minimum‡	0 / 0 / 0 / 0 / 0 / 0 / 2 / 0 / 0 / 1	0 / 0 / 0 / 0 / 0 / 0 / 2 / 0 / 2 / 1
Maximum	6 / 6 / 6 / 3 / 3 / 2 / 2 / 0 / 1	6 /13 / 13 / 6 / 6 / 2 / 2 / 2 / 1
Coupling Links		
IC maximum	32	32
Maximum # external coupling links	40§	56§
ISC-3 maximum	32**	32**
12x InfiniBand® maximum	8	16
1x InfiniBand maximum	16	32
CHPID maximum	128	128
Features installed in the I/O Drawer (Carry Forward ONLY)††		
FICON Express8/FICON Express4/ OSA-Express3 1GbE & 1000BASE-T / OSA-Express3 10GbE		
Minimum	0 / 0 / 0 / 0	0 / 0 / 0 / 0
Maximum	32 / 32 / 32 / 16	32 / 32 / 32 / 16
HiperSockets™	Up to 32	Up to 32
Features installed in the PCIe I/O Drawer		
FICON Express8S / OSA-Express5S 1GbE & 1000BASE-T / OSA-Express5S 10GbE / OSA-Express4S 1GbE & 1000BASE-T / OSA-Express4S 10GbE		
Minimum	0 / 0 / 0 / 0 / 0	0 / 0 / 0 / 0 / 0
Maximum	128 / 96 / 48 / 96 / 48	128 / 96 / 48 / 96 / 48
Flash Express	8 – offered in pairs	8 – offered in pairs
10GbE RoCE Express	16 – Minimum 2 recommended per LPAR	16 – Minimum 2 recommended per LPAR
zEDC Express	8 – Minimum 2 recommended	8 – Minimum 2 recommended

IBM zEnterprise BC12 (zBC12) at a glance		
Cryptographic Features (The maximum number of Cryptographic PCIe adapters supported on zBC12 is 16)		
Crypto Express4S	Minimum order is 2 features (2 PCIe adapters), maximum is 16 features (16 PCIe adapters)	
Crypto Express3	Minimum order is 2 features (4 PCIe adapters), maximum is 8 features (16 PCIe adapters)	
Crypto Express3-1P	Minimum order is 2 features (2 PCIe adapters), maximum is 8 features (8 PCIe adapters)	
System Memory‡‡		
Minimum	8 GB (plus 16 GB for HSA)	16 GB (plus 16 GB for HSA)
Maximum	240 GB (plus 16 GB for HSA)	496 GB (plus 16 GB for HSA)
Physical Configuration		
Max Weight (Base/w Batteries/w Batteries & Overhead I/O cabling/w batteries, Overhead I/O & Balanced Power)	1802 lbs/2028 lbs/2123 lbs/2235 lbs	2064 lbs/2290 lbs/2385 lbs/2497 lbs
Footprint	30 in. W × 50 in. D or 0.97 sq meters (10.42 sq ft)	30 in. W × 50 in. D or 0.97 sq meters (10.42 sq ft)
Service	36 in. W × 140 in. D or 3.16 sq meters (30.38 sq ft)	36 in. W × 140 in. D or 3.16 sq meters (30.38 sq ft)
Product Dimensions (W × D × H)§§	30.87 × 62 × 79.26 in. (784 × 1575 × 2013 mm)	30.87 × 62 × 79.26 in. (784 × 1575 × 2013 mm)
	4.526 KW, 5.256 KW 15.4 KBTU/hr, 17.9 KBTU/hr	6.309 KW, 7.364 KW 21.5 KBTU/hr, 25.1 KBTU/hr
Air Flow Nominal***	1100 CFM	1230 CFM
Upgradeability		
	Upgradeable from IBM zEnterprise 114 (z114) and System z10 Business Class (z10 BC)	
	Upgradeable within the Model	
	Upgradeable within the zBC12 family (H06 to H13)†††	
	H13 upgradeable to the zEnterprise EC12 (machine type 2827) H20†††	
Supported Operating Systems		
z/OS	z/OS V2.1 z/OS V1.12, 1.13 z/OS V1.11, V1.10 with Lifecycle Extension zBX Ensemble support: z/OS V1.10 or higher	
z/VM	z/VM V5.4, V6.2 and 6.3. z/VM 6.2 for zBX support	
	Red Hat Enterprise Linux (RHEL) 5 and subsequent releases, SUSE Linux Enterprise Server (SLES) 10 (SP4) and SLES 11 SP2	

IBM zEnterprise BC12 (zBC12) at a glance		
IBM z/VSE®	z/VSE V4.3 with PTF's z/VSE V5.1 with PTFs and subsequent releases	
z/TPF	z/TPF 1.1	
AIX (on BladeCenter PS701 Express blades installed in IBM zEnterprise BladeCenter Extension Model 003 or zBX Model 004)	AIX 5.3, AIX 6.1 and AIX 7.1 and subsequent releases IBM PowerVM® Enterprise Edition	
Linux on System x (on IBM BladeCenter HX5 blades installed in IBM zEnterprise BladeCenter Extension Model 003 or zBX Model 004)	Model 003 – Red Hat RHEL 5.5 and up, 6.0 and up. SLES 10 (SP4) and up, SLES 11 SP1 and up – 64 bit only Model 004 – same as above plus Red Hat RHEL 7.0 and up. SLES 12 and up	
Microsoft Windows (on IBM BladeCenter HX5 blades installed in IBM zEnterprise BladeCenter Extension Model 003 and zBX Model 004)	Microsoft Windows Server 2012 R2, Microsoft Windows Server 2012, Microsoft Windows Server 2008 R2 and Microsoft Windows Server 2008 (SP2) (Datacenter Edition recommended) – 64-bit only	
Hypervisors		
IBM BladeCenter PS701 Express blades installed in zBX Model 003	PowerVM Enterprise Edition VIOS 2.2.2	
IBM BladeCenter PS701 Express blades installed in zBX Model 004	PowerVM Enterprise Edition VIOS 2.2.3	
IBM BladeCenter HX5 (7873) blades installed in zBX Model 003	KVM Red Hat Enterprise Virtualization Hypervisor (RHEV-H) 6.4	
IBM BladeCenter HX5 (7873) blades installed in zBX Model 004	KVM Red Hat Enterprise Virtualization Hypervisor (RHEV-H) 6.5	
IBM zEnterpriseBladeCenter Extension (zBX) Model 003 and zBX Model 004 (ibm.com/systems/z/hardware/zbx)		
IBM WebSphere DataPower Integration Appliance XI50 for zEnterprise‡‡‡	Minimum: 0 Maximum: 28	Minimum: 0 Maximum: 28
IBM BladeCenter PS701 Express blades§§§	Minimum: 0 Maximum: 112	Maximum: 0 Maximum: 112
IBM BladeCenter HX5 blades§§§	Minimum: 0 Maximum: 56	Maximum: 0 Maximum: 56

The PCIe I/O drawer also includes a new optional feature which can help reduce latency and lower CPU overhead. This high speed networking link can be used to optimize server-to-server communications when compared to traditional TCP/IP communications. Coupled with a new z/OS V2.1 function capability called Shared Memory Communications - Remote Direct Memory Access (SMC-R), it offers great time to value because applications can seamlessly use this capability without requiring any application changes. The new PCIe feature to support SMC-R is the 10GbE RoCE Express.

Environmentals built for data centers of the future

For ease of installation, the zBC12 is a single frame, air cooled system that supports either top or bottom exit I/O and power; raised floor and non-raised floor options and high-voltage DC power, providing increased flexibility to accommodate small data center installations and support for future data center design and efficiencies. In addition, the zBX has an optional rear door heat exchanger that can help further reduce energy consumption.

Summary

The IBM zEnterprise BC12 allows enterprises of all sizes to leverage modern IBM mainframe capabilities to embrace new opportunities. Providing services such as cloud, analytics and mobile computing can help grow your business based on the foundational strengths of z Systems. Whether you want to deploy new applications quickly, grow your business without growing IT costs, consolidate your infrastructure for reduced complexity, or extend the classic strengths of z Systems to heterogeneous workloads, you can rely on the zBC12.

Why IBM?

As you drive business innovation by examining your business processes, technology, products and services, IBM remains your trusted partner. You want smart, robust technology solutions without sending your budget out of control. We have the total expertise—in systems, software, delivery and financing—to help you refresh and optimize your IT for the constant flow of opportunities and challenges you face. Our experts can help you configure, design and implement a z Systems solution optimized for the needs of your business.

For more information

To learn more about the IBM zEnterprise BC12, please contact your IBM representative or IBM Business Partner, or visit the following website: **ibm.com**/systems/zbc12

Additionally, IBM Global Financing can help you acquire the IT solutions that your business needs in the most cost-effective and strategic way possible. We'll partner with credit-qualified clients to customize an IT financing solution to suit your business goals, enable effective cash management, and improve your total cost of ownership. IBM Global Financing is your smartest choice to fund critical IT investments and propel your business forward. For more information, visit: **ibm.com**/financing

* No CP is required if ordering an IFL or ICF only server.

† If ordering a zAAP or a zIIP, one or more general purpose processor (CP) per the specialty engine is required. One CP can satisfy the requirement for either or both of the specialty engines.

‡ Must be configured with a minimum of one CP, IFL or ICF

§ The maximum external links is obtained with a combination of ISC-3 and 1x InfiniBand links. Maximum number of external links for H06 would be 56 if customer ordered RPQ 8P2733 to have a second I/O drawer with 48 ISC-3 links or for H13 the maximum number of external links would be 72.

** ISC-3 links are carry forward only and 32 ISC-3 links are available in one I/O drawer. If 48 ISC-3 links are required, the customer must utilize RPQ 8P2733 to have a second I/O drawer in the configuration.

†† Only one I/O drawer is supported without RPQ 8P2733

‡‡ Can be acquired in increments of 8 GB or 32 GB; Excludes the standard fixed size of 16 GB HSA which is separately managed; RAIM standard.

§§ Optional overhead I/O cabling feature adds 6 in. to the width.

*** Airflow is designed to increase as the local ambient room temperature increases. Nominal airflow assumes 77° F ambient.

††† Upgrading from the H06 to the H13 or from the H13 to zEC12 H20 will require a planned outage.

‡‡‡ The BladeCenter PS701 Express blades, BladeCenter HX5 blades and DataPower XI50z can share the same BladeCenter chassis—note that DataPower XI50z blades are “doublewide” and use two slots. Total zBX capacity cannot exceed 112 total blades.

§§§ The BladeCenter PS701 Express blades, BladeCenter HX5 blades and DataPower XI50z can share the same BladeCenter chassis—note that DataPower XI50z blades are “doublewide” and use two slots. Total zBX capacity cannot exceed 112 total blades.

[1] Based on preliminary internal measurements and projections and compared to the z114. Results may vary by customer based on individual workload, configuration and software levels. Visit LSPR website for more details at: **ibm.com**/servers/resourcelink/lib03060.nsf/pages/lsprindex?OpenDocument

[2] IBM calculations of zEnterprise limits across maximum zBC12 configuration. Results may vary. 3-Year cost for hardware, hardware maintenance, and z/VM.

[3] Values derived from customer real use data, with extrapolation to zBC12. Results may vary depending on workload(s).

[4] The BladeCenter PS701 Express blades, BladeCenter HX5 blades and DataPower XI50z can share the same BladeCenter chassis—note that DataPower XI50z blades are “doublewide” and use two slots. Total zBX capacity cannot exceed 112 total blades.

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