

DOAG 2014

18.November 2014

Hintergrund

zu

Oracle Mainframe Datenbanken für extreme Anforderungen

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Die folgenden Information sind im Wsentlichen aus folgendem IBM Redbook entnommen:

Experiences with Oracle Database 12c Release 1 on Linux on System z

IBM Mainframe - general

Oracle Database 12c Release 1 is now supported on Linux on IBM® System z®. This platform offers many advantages to customers who rely upon the IBM mainframe systems to run their businesses. Linux on System z takes advantage of the qualities of service in the System z hardware and in IBM z/VM®, making it a robust industrial strength version of Linux. This provides an excellent platform for hosting Oracle solutions that run in an enterprise.

The mainframe is the core of the computing environment for many companies. Those companies include: state and federal government agencies, universities, retail, energy, manufacturing, banks, and insurance companies. More specifically:

- Ninety-six of the world's top 100 banks, 23 of the 25 top U.S. retailers, and nine of the world's 10 largest insurance companies run System z.
- Seventy-one percent of global Fortune 500 companies are System z clients.
- Nine out of the top 10 global life and health insurance providers process their high-volume transactions on a System z mainframe.
- Mainframes process roughly 30 billion business transactions per day, including most major credit-card transactions, stock trades, and money transfers, as well as manufacturing processes and ERP systems.

The mainframe is celebrating its 50th birthday in 2014. But, there have been generational differences between the mainframe introduced in 1964 and today's mainframe. The automobile is more than 100 years old, but no one suggests that automobiles are an old or outdated technology.

Are the cars of today different from the cars of 1964? Absolutely. Likewise, today's mainframe is faster, has more capacity, is more reliable and energy efficient than the mainframe of the 1960s, '70s, '80s, or even those delivered three years ago in 2010.

The modern mainframe, known as the IBM zEnterprise® System, delivered in 2010 improved single-system image performance by 60 percent, while keeping within the same energy envelope when compared to previous generations. And the zEnterprise EC12, which shipped in 2012, has up to 50 percent more total system capacity, as well as availability and security enhancements. It uses 5.5 GHz hexa-core chips-hardly old technology. It's scalable to 120 cores with 3 TB of memory. Clearly larger (more capacity) and faster than anything available in the '60s, with a smaller physical footprint and better energy consumption characteristics. IBM has a corporate directive for every generation of mainframe: each successive model must be more reliable than the previous one. Incremental and breakthrough improvements have been made over 20 generations of mainframes. Fault tolerance, self-healing capabilities, and concurrent maintainability are characteristics of the mainframe that are lacking in many other systems. The integration of mainframe hardware, firmware and the OS enables the highest reliability, availability and serviceability capabilities in the industry.

Mainframes have been running Linux workloads since 2000 and those workloads on the mainframe are growing. From IBM's 2012 Annual Report: "The increase in MIPS (i.e. capacity) was driven by the new mainframe shipments, including specialty engines, which increased 44 percent year over year driven by Linux workloads."

What about cloud? The cloud is actually an online computer environment consisting of components (including hardware, networks, storage, services and interfaces) in a virtualized environment that can deliver online services (including data, infrastructure, storage and processes) just in time or based on user demand. By this definition of cloud computing, the System z platform has been an internalized cloud for more than 40 years!

Starting in 2007, IBM embarked on its own server-consolidation project called "Project Big Green." The company consolidated 3,900 servers onto 16 mainframes, decreasing energy and floor space by more than 80 percent. The electrical power went from \$600/day to \$32/day

and required floor space dropped from 10,000 to 400 square feet. Cooling costs for those mainframes were less than those of distributed servers handling a comparable load as well. In addition, those mainframes required 80 percent less administration/labor, dropping from more than 25 workers vs. less than five.

Actual costs depend on what you're looking at. In terms of hardware acquisition costs, certainly, a single mainframe costs more than a single server or even several servers. But, you would need more individual servers to match the computing capability of a mainframe. Add to that the fact software and labor costs for servers grow linearly: The more servers you add, the more software licenses and systems administrators you need. And yet, the mainframe delivers higher utilization, lower overheads and the lowest total cost-per-user of any platform. When all cost factors are considered fairly, the mainframe is usually the lowest cost alternative.

Often when considering the cost of the mainframe, people only look at the initial hardware purchase and overlook the ongoing maintenance costs. With 100 servers, you have 100 times more chances something will break. So you need an army that has to be ready at any time to fix hardware. Each of those servers has an OS on it, and all of them need patches, upgrades and applications deployed to them on a regular basis. So, you need another army for that. Then your applications are spread all over the place, so when the software fails or gets overloaded, it takes an army to monitor the applications and locate the problem. Servers are cheap to buy, but those savings are eaten away by all of the people required to run and monitor them.

Don't forget electrical and air-conditioning costs also increase when you add servers. Then, you need to make sure that you count ALL the servers.

If managing Linux on System z, you'll find that Linux is Linux regardless of platform. So if you can manage Linux on Intel, you can manage Linux on the mainframe. This means those students coming out of universities that know Linux can, with very little additional training, manage a Linux on System z environment.

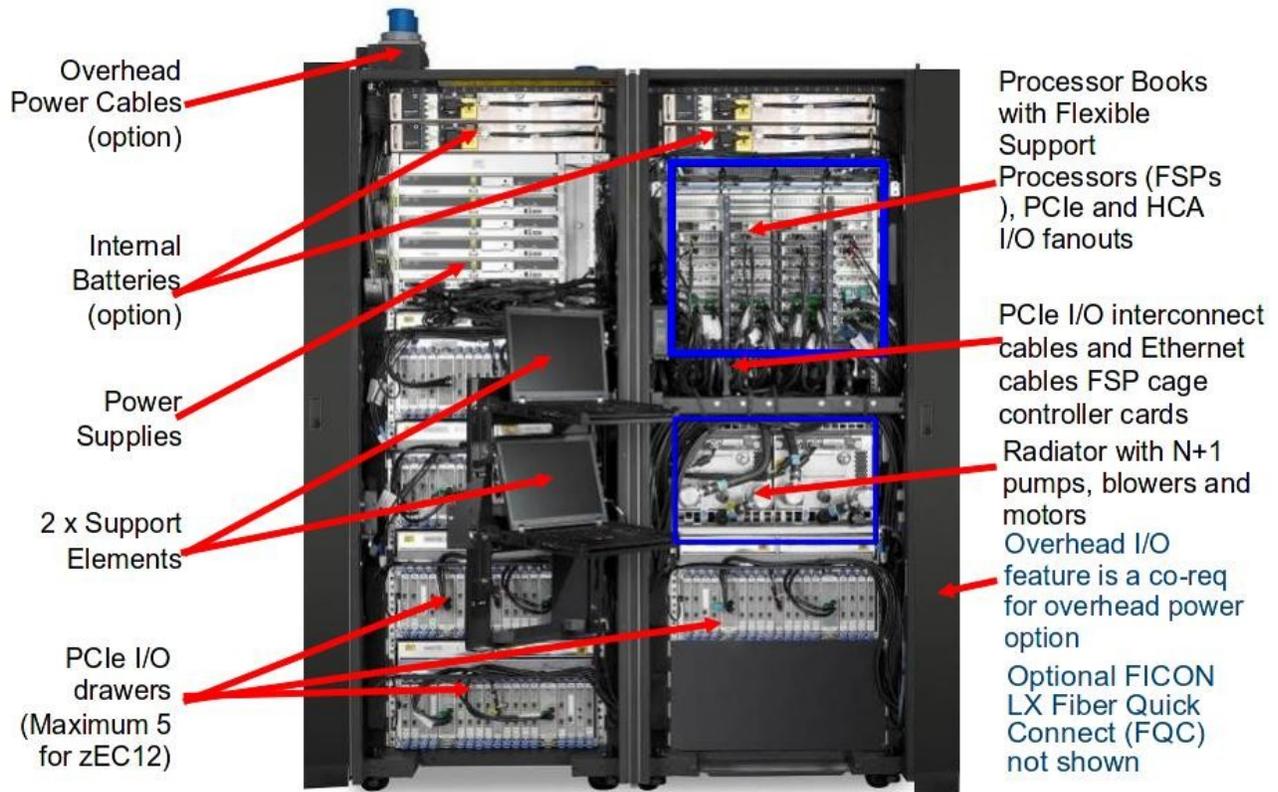
IBM zEnterprise EC12

The IBM zEnterprise EC12 (zEC12) builds on the strengths of its predecessor, the IBM zEnterprise 196. It is designed to help overcome problems in today's IT infrastructures and provide a foundation for the future.

The zEC12 has a redesigned zEnterprise chip. It is the first six-core chip in mainframe history, and operates at an industry-leading, high frequency of 5.5 GHz. The zEC12 is a scalable symmetric multiprocessor (SMP) that can be configured with up to 101 processors that run concurrent production tasks with up to 3 TB of memory.

The zEC12 introduces several PCIe I/O features, such as usage of Storage Class Memory through the Flash Express feature. It also introduces technologies such as the IBM System z Advanced Workload Analysis Reporter (IBM zAware). This appliance has cutting edge pattern recognition analytics that use heuristic techniques, and represents the next

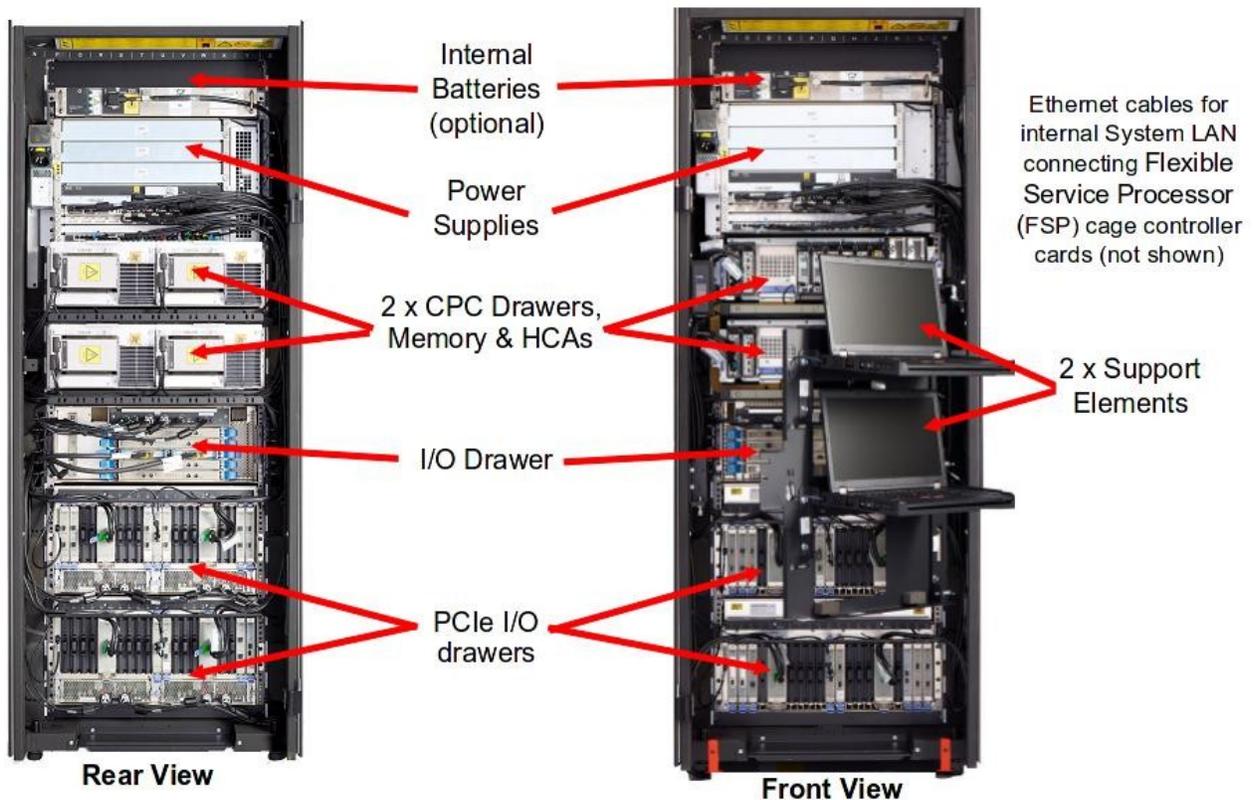
generation of system health monitoring.



The zEC12 goes beyond previous designs while continuing to enhance the traditional mainframe qualities, delivering unprecedented performance and capacity growth. The zEC12 has a well-balanced general-purpose design that allows it to be equally at ease with compute-intensive and I/O-intensive workloads.

IBM zEnterprise BC12

The IBM zEnterprise BC12 (zBC12) server is the successor to the IBM zEnterprise 114 and is the fourth member of the zEnterprise CPC family. Similar to the IBM zEnterprise EC12 (zEC12), the zBC12 was designed to help overcome problems in today's IT infrastructure and provide a foundation for the future. The zBC12, with up to 13 IFLS, can be used by customers with smaller Oracle workloads.



z/VM

IBM z/VM V6 extends the mainframe virtualization platform to help you reshape and derive more value from your experiences. The new features of z/VM V6.3, such as support for 1 TB of real memory and better performance for larger virtual machines, benefits those businesses running Oracle on the mainframe.

Linux distribution: New versions

Oracle 12c Database is certified to run on Red Hat Enterprise Linux 5.8 and later, RHEL 6.3 and later, and SLES 11 SP2 and later. Use the most current version that is supported by Oracle. At the time of writing, the suggested versions for Oracle Database 12c Release 1 are RHEL 6.4 and SLES 11 SP3. The Virtualization Cookbook for IBM z/VM 6.3, RHEL 6.4, and SLES 11 SP3, SG24-8147 provides more information.

High availability features provided by IBM System z

Oracle's Maximum Availability Architecture can be used to compliment the high-availability features of the mainframe.

Oracle new solutions

Oracle recently made available a group of Oracle Technology products to run on Linux on IBM System z. Supported IBM systems include zEC12, zBC12, z196, z114, z10™ EC, and z10 BC.

Oracle Database 12c R1

Oracle Database 12c Release 1 introduces a new multitenant architecture that makes it easy to deploy and manage database clouds. Innovations such as Oracle Multitenant, for consolidating multiple databases quickly, and Automatic Data Optimization with Heat Map, for compressing and tiering data at a higher density, maximize resource efficiency and flexibility. The IBM System z is an ideal platform for private and public cloud deployments.

Oracle WebLogic Server 12c

Oracle WebLogic Server 12c is available on Linux on IBM System z. It is an application server for building and deploying enterprise Java EE applications with support for new features for lowering cost of operations, improving performance, enhancing scalability, and supporting the Oracle Applications portfolio.

Oracle Agent 12c on Linux on z for Oracle Grid Control

The Oracle Enterprise Manager Agent 12c is available to run on Linux on IBM System z so you can monitor your Oracle 11gR2 and 12c databases with Oracle Enterprise Grid Control server.

Summary

The zEC12/zBC12 models, provide an ideal platform for running Oracle Solutions.

More information:

Experiences with Oracle Database 12c Release 1 on Linux on System z
<http://www.redbooks.ibm.com/abstracts/sg248159.html?Open>

Experiences with Oracle Solutions on Linux for IBM System z
<http://www.redbooks.ibm.com/redbooks/pdfs/sg247634.pdf>

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