

• IBM LinuxONE, an all-Linux enterprise platform for open innovation comprising the best of Linux and open technology with the best of enterprise computing in ONE platform.  
 - LinuxONE systems are built to be the backbone of the mobile era, setting new standards in transaction volume, speed, resilience, and trust.

• IBM LinuxONE includes two products -- named, given the Linux heritage, after penguins:

1. **IBM LinuxONE Emperor™** - a system enabled for enterprise-grade Linux that is robust and trusted for critical workloads, delivers higher performance and throughput at a lower cost per transaction compared to x86 servers, and is integrated with new open capabilities  
 - Runs on a 5.0 GHz processor  
 - Supports up to 141 customer-configurable LinuxONE cores  
 - Delivers I/O and high availability through 667 dedicated cores  
 - Supports up to 8,000 production workload capable virtual machines in a single footprint  
 - Supports a multilevel cache subsystem and 10 TB memory  
 - Delivers massive I/O capability that can support 30 billion RESTful web interactions a day without fail  
 - Delivers up to 2.2x the performance for the same SQL and NoSQL databases running on commodity Linux platforms

Leverage open technology solutions to meet the demands of the new application economy



2. **IBM LinuxONE Rockhopper™** - an entry point for LinuxONE that embodies the same innovation, value, flexible growth options, industry-leading virtualization, trusted resiliency, secure cloud, enterprise mobility, and operational analytics capabilities as the massively scalable IBM LinuxONE Emperor

- Runs on a 4.3 GHz processor  
 - Supports up to 20 customer-configurable LinuxONE cores  
 - Delivers I/O and high availability through 264 dedicated cores  
 - Supports from hundreds to over a thousand production workload capable virtual machines in a single footprint  
 - Supports a multilevel cache subsystem and 4 TB memory  
 - Delivers significant I/O capability for medium-sized enterprises



**Linux Your Way**

- Embraces the best of Linux and open technology, giving you the freedom to leverage skills, tools, and apps widely embraced by the industry.  
 - Enables you to pick your hypervisor, run time, languages, management, database, and analytics.  
 - Lets you run all the open source software that modern IT loves -- Ubuntu, Red Hat, SUSE, Ruby, Java™, Node.js, Chef, Docker, Mongo, PostgreSQL, Spark, plus others -- on a system that delivers industry-leading strengths of enterprise computing.  
 - Provides a rock-solid foundation for your on-premises cloud strategy.

**Linux Without Limits**

- Delivers virtualization capabilities that can result in a less complex, more economical and flexible Linux infrastructure compared to x86 servers.

**Linux Without Risks**

- Delivers high availability through component reliability, redundancy, and features that assist in providing fault avoidance and tolerance while permitting concurrent maintenance and repair.  
 - Built on the innovation of IBM Systems® RAIM memory technology that has been responsible for zero visible memory failures in the last 5 years, mitigating a known problem on competitive x86 platforms.  
 - Delivers Secure Sockets Layer (SSL) transactions.  
 - Supports the dedicated adapter card for crypto acceleration, Crypto Express5S, for secure co-processing and bulk encryption with clear key and protected key support, helping protect sensitive keys from inadvertent disclosure.  
 - Supports the cryptography ideal for resource-constrained environments such as mobile phones and smart cards while meeting stringent digital signature requirements with support for PKCS #11 standards. Additional standards for the banking and finance industry, such as ANSI, ISO, and EMV, are also supported.  
 - Supports IBM Resiliency Analytics for LinuxONE (orderable as IBM zAware) for near real-time diagnostics to proactively help identify system anomalies and problems faster in the Linux operating environment.  
 - Supports the IBM GDPS® Appliance for clients running z/VM®(R) hypervisor and associated Linux guests, delivering multipatform, high availability, and disaster recovery benefits in case of system, application, or network failure.  
 - Supports IBM Spectrum Scale™ for Linux based on IBM GPFS™ technology for high availability through advanced clustering technologies, dynamic file system management, and data replication.

**Enabling technologies and services:**

- IBM Rational collaborative lifecycle management -CLM
- IBM UrbanCode™ deploy
- IBM Application Performance Manager -APM
- IBM WebSphere® Liberty
- IBM Bluemix
- IBM LinuxONE DevOps Services



IBM z13s™ securely delivers hybrid cloud and mobile capabilities along with cyber security within reach of small and mid-size companies.

This announcement extends z Systems™ leadership:

- Trusted, secure, and reliable operations for reduced business risk
  - Stronger and faster protection with integrity of data across a hybrid cloud environment with the new Crypto Express5S.
  - Enhanced public key support for constrained digital environments using cryptography for users of applications such as Google Chrome, Mozilla Firefox, and Apple iMessage, enhancing your cyber security.
  - Ability to minimize reformatting of databases with new exploitation of Visa Format Preserving Encryption (FPE) for payment processing.
  - Faster insight into the health of your Linux™ system with new IBM zAware pattern recognition analytics extended to Linux on z Systems™ for a step into the cognitive era.
- Traditional data serving and transactional processing
  - Up to 20 configurable processors (1.5x more than your zBC12) and 40 LPARs (compared to 30 on a zBC12), allowing businesses to scale as needed.
  - With up to 4 TB of memory, the ability to make business decisions at a faster pace and improve response times to your clients. New memory packaging and pricing open up opportunities such as in-memory data marts and in-memory analytics, giving you the necessary room to tune applications for optimal performance.
  - Economies of scale with simultaneous multithreading delivering more throughput for Integrated Facility for Linux (IFL) and z Integrated Information Processor (zIIP)-eligible workloads.
- Operational efficiency
  - With an enhanced "share all" virtualization environment for both cryptographic and networking features and LPARs, z13s helps businesses improve resource sharing while spending less on hardware capacity.
  - New optional rack-mounted Hardware Management Console, previously unavailable on the zBC12, can help to save space where it is a premium in data centers.
  - Single Instruction Multiple Data (SIMD), a vector processing model providing instruction-level parallelism, can speed workloads such as analytics and mathematical modeling.
- A design for the z13s and z13TM intended to:
  - Optimize internal LPAR to LPAR communications within a CPC transparently, with no changes to applications, using Shared Memory Communications - Direct Memory Access (SMC-D).
  - Improve Time-To-Value with faster deployment and implementation of software solutions delivered as virtual software appliances and firmware appliances with z Appliance Container Infrastructure (zACI).
  - Simplify z Systems hardware and virtual infrastructure management for KVM for IBM z Systems including integrated dynamic I/O management with IBM Dynamic Partition Manager (DPM).
- Full upgradability to z13s from IBM zEnterprise®(R) BC12 and zEnterprise 114, and full upgradability within the z13s family
- Full upgradability to z13 from IBM zEnterprise EC12 and zEnterprise 196, and full upgradability within the z13 family.

Get started today: <http://ibm.com/linuxone/try>  
 March 2016

**IBM LinuxONE offers customers a solution that is:**

- Open: Choose the tools and applications you love
  - Flexible: Meet demand with virtually limitless scale
  - Simple: Fewer servers, less complexity lower cost
  - Efficient: Get unparalleled utilization and speed
  - Trusted: Embedded security and services that never stop
- Key LinuxONE takeaways**
- Build and deploy engaging mobile applications that integrate with core business capabilities.
  - Secure mobile devices, data and enterprise transactions without sacrificing response time.
  - Deliver mobile services on an open and highly responsive infrastructure that scales meeting peaks in mobile workloads.
  - Accelerate adoption using best practices and services.
  - Provide high performing business intelligence and reporting.
  - Gain insights with big data analytics and with next generation database technology.
  - Meet the availability expectations of the business with IT operations analytics cost effectively.
  - Provides unparalleled enterprise qualities of service.
  - Combines exceptional speed and capabilities for supporting business agility and time-to-value for cloud solutions.
  - The vertical scale architecture makes IBM LinuxONE the one of the most efficient and cost-effective cloud platform for database workloads.
  - DevOps solutions for IBM LinuxONE are a win-win combination for the digital enterprise.
  - Enable developer productivity across platforms, languages and operating systems.
  - Understand the ease and strength of integration capabilities between IBM DevOps solutions and open source technologies.

The IBM GDPS® Virtual Appliance can deliver multiplatform resiliency capability for the IBM LinuxONE Emperor.

**NOTE:** The solution is targeted to clients, who run the z/VM hypervisor and associated Linux guests, intended to provide high availability and disaster recovery benefits in case of system, application or network failure.

- **Resiliency analytics** for IBM LinuxONE is designed to offer near real-time diagnostics to help identifying potential problems in the Linux environment.
  - It is an analytics solution executed in firmware, which intelligently examines message logs for potential inconsistencies or anomalies.
  - With this capability, organizations can address IT problems quickly, minimize availability lapses and intervene before IT problems become severe.

**LinuxONE Use cases**

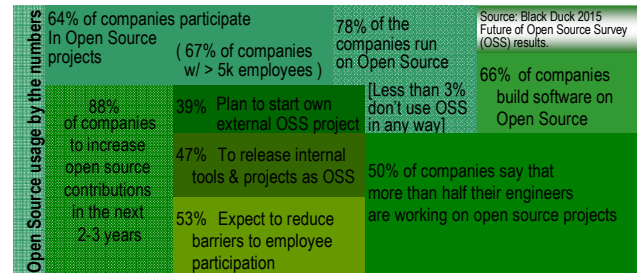
- High performance business intelligence and reporting
  - Big data insights and next generation database
  - IT operational analytics for continuous business availability
  - Enabling technologies and services
  - IBM Cognos®, Cognos Custom Pattern for Linux, IBM DB2®, DB2 Custom Pattern for Linux, DB2 BLU, IBM InfoSphere® BigInsights®, IBM InfoSphere IBM System z® Connector for Hadoop, IT operational analytics, System z Advanced Workload Analysis Reporter (IBM zAware), Apache Spark
  - IBM LinuxONE analytics services
  - Develop, test, deploy and operate enterprise-level applications
  - Accelerate software delivery by enabling collaborative development and automation across organizational silos.
  - Enable developer productivity starting from scratch, open source or IBM Bluemix®, across platforms and languages.
- The system is capable of analyzing transactions in "real time" and can be used to help prevent fraud as it is occurring.

**For compared environments, it is estimated that a cloud environment on an IBM LinuxONE Emperor will have a 32 percent lower total cost of ownership over three years than an x86 Cloud and a 60 percent lower total cost of ownership over three years than a public cloud.**

**NOTE:** Comparison based on IBM Internal tests comparing IBM LinuxONE Emperor cloud with one comparably configured private x86 cloud and one comparably configured public cloud running an aggregation of light, medium and heavy workloads designed to replicate typical IBM customer workload usage in the marketplace.

**Meet regulatory requirements**

- Achieving improved agility using IBM LinuxONE systems is high-performance-secure-logging for auditing in the face of growing regulatory requirements.
- IBM LinuxONE Enterprise Data Compression (EDC) facility allows IBM LinuxONE to offload main processors while speeding compression by up-to 10x.
- IBM LinuxONE offers protected-key function which keeps the encryption key out of main memory and storage, keeping data-at-rest secure, while offering 50x better performance than secure-key function.
- When combining the speed and capability of EDC and protected-key function, IBM LinuxONE offers unmatched agility for quickly, non-intrusively and securely logging snap-shots of system states such as Docker instances or Apache Spark Resilient Distributed Dataset (RDDs) for auditing purposes.



The future of open source, Black Duck, 2015