IBM LinuxONE Emperor™ II

IBM LinuxONE™ is an enterprise Linux server engineered to deliver cloud services that are secure, fast and instantly scalable. The newest member of the family, IBM LinuxONE Emperor™ II, is designed for businesses where the following may be required:

- protecting sensitive transactions and minimizing business risk
- accelerating the movement of data, even with the largest databases
- growing users and transactions instantly while maintaining operational excellence
- accessing an open platform that speeds innovation

Unmatched performance, vertical scaling

Emperor II is available with up to 170 configurable cores using the world's fastest commercial processor for impressive performance and massive scaling. It can support thousands of virtual servers on a single footprint with no database sharding or distributed server farms needed. This results in a less complex infrastructure with fewer components, less management, lower space requirements, and less software costs than x86 servers. Massive memory and I/O bandwidth support fast in-memory workloads and real-time analytics that bring more insights and new business value.

Emperor II provides unrivaled performance and vertical scale to support larger workloads with less latency and less administration complexity. It allows you to share and over-commit system resources to meet your client's expectations. This unique vertical scale allows Emperor II to scale up to **two million Docker containers** in a single system[1] and move data faster than alternative platforms with higher data processing throughput.

It has the ability to host 20x larger databases without the added cost and latency of fragmenting data across server farms. There are 640 additional processors that are not part of the general processor count. These additional processors are dedicated to I/O processing to increase I/O speeds and assure data integrity, and do not contribute to software licensing costs. On x86 this work is done with standard processors that drive incremental hardware, software, and administrative costs.

With 32 terabytes of real memory, Emperor II can open opportunities such as in-memory data marts, large buffer pools for data access, and in-memory analytics while giving you the necessary room to fine-tune applications for optimal performance. Java improvements such as pause-less garbage collection enables vertical scaling while maintaining predictable results. Built to run at processor utilization rates as high as 100 percent, Emperor II will scale capacity on demand and ease the management of your Linux infrastructure through one powerhouse system.

Industry leading security without reengineering

Starting with security features such as EAL 5+ isolation and cryptographic key protection, the security capabilities of Emperor II are unmatched. EAL5+ is a regulatory certification for logical partitions (LPARs) verifying separation of partitions to improve security. This means you can run many virtual servers concurrently, leveraging the ability of Emperor II to isolate and protect each virtual server, as if they were running on physically separated servers.

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Within a single footprint, Emperor II is engineered to avoid or instantly recover from failures to minimize business disruptions. The industry's best availability (99.999 percent)[2] is realized through component redundancy, self-diagnostic monitoring, and features that assist in providing fault avoidance and tolerance, as well as permitting concurrent maintenance.

Establishing a perimeter around core data using encryption is one of the most impactful ways to protect data and prevent against loss. The Emperor II platform provides pervasive encryption capabilities designed to guard data more efficiently, with no application changes, making it a smart choice for data protection. An IBM exclusive, Secure Service Container technology, builds upon the industry-leading isolation of IBM's logical partitions to provide a virtual lockbox for each workload. The reason—even with the highest levels of peer isolation, organizations realize they also need vertical isolation to protect sensitive data from insider threats including administrative staff who manage the infrastructure. By restricting system administrator access to the container, this technology protects against the misuse of privileged user credentials.

Next generation apps, enterprise service
Emperor II provides an impressive platform for all kinds of workloads, especially those that require high levels of availability, security or scalability. When your IT infrastructure needs to be expanded, the efficiency, flexibility and qualities of Emperor II are best in class. Its design allows you to grow capacity inside the server—on the fly—without affecting the running environment. It can support exponential growth with up to 170 cores and up to 85 logical partitions for secured workload isolation, and HiperSockets™ for high speed internal partition-to-partition communications. Scaling within a single server helps eliminate the need to constantly buy, configure, and manage new services to handle growth. Emperor II also supports 32 terabytes of memory, which can provide impressive response time for in-memory applications as well as provide support for richer transactional analytics.

As a shared, immutable ledger for recording transactions, blockchain is a revolutionary technology. It allows all members of a supply chain to share a digital ledger that is updated every time a transaction occurs. Members can view ledger progress in a common, transparent, and accessible record. Cryptographically enforced privacy ensures that members only see the parts of the ledger relevant to them, and that transactions are secure, authenticated, and verifiable. Businesses and customers around the globe need to interface with each other to exchange assets such as currency, services, and information. Experts believe that blockchain will do for transactions what the Internet did for information. Designed for secure, data-serving workloads, IBM chose LinuxONE to run the IBM Blockchain Platform, illustrating the power and confidence in this system.

Open technology is driving the future. And IBM is leading the charge with continued investment in the Linux and open source ecosystem. Emperor II provides a unique platform for Linux solutions requiring high availability, security or scalability, and supports a wealth of new open source products such as Docker, MongoDB, Go, PostgreSQL, Node.js, Python, Scala, Spark and MariaDB. Emperor II allows clients to leverage transformative technologies like blockchain, gain cognitive insights through the use of Spark analytics, scale vertically with unmatched speed, provide highly-secure data serving capabilities, and take advantage of application programming interfaces (APIs) to create and deliver innovative, new customer services.

Snapshot

- ✓ The world's premier system for secure, scalable data serving and cloud services
- ✓ Industry leading security capabilities
- ✓ Performance and scale within a single footprint
- ✓ A foundation for next-generation, open source applications
- ✓ Enterprise service and integration with all cloud types

[1] Performance result is extrapolated from IBM internal tests running in a z14 LPAR with 10 dedicated IFLs and 16 GB memory 1000 BusyBox Docker containers with ApacheHTTP. Results may vary. Operating system was SLES 12 SP2 (SMT mode). Docker 1.12 was used.

[2] Laura DiDio, *ITIC 2017 Global Reliability Survey Mid-Year Update*, ITIC 14 June 2017.

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