

IBM LinuxONE III Model LT2

Highlights

- Supports more responsive and cost-effective cloud native development
 - Runs OpenShift and traditional workloads concurrently and efficiently
 - Provides hardware based trusted execution environments (TEEs)
 - Protects data after it leaves the LinuxONE server
 - Compresses data for faster transfers and efficient storage
 - Allows co-locating IBM storage in the same frame
 - Offers option for installing NVMe storage inside a LinuxONE IO drawer
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We believe your data is yours. We believe the insights you gain from your data are yours to use in the pursuit of your business objectives. We designed the IBM LinuxONE III Model LT2 (LinuxONE III LT2) with this belief at the core.

IBM LinuxONE III LT2 is designed to help enable cloud native development and deployment, achieve encryption everywhere, and provide high availability and resiliency. All of these benefits together help provide the cloud you want with the privacy and security you need. The IBM LinuxONE III LT2 is the newest entry model into the IBM LinuxONE family of servers. It delivers a single-frame, efficient design with a low entry cost that can easily coexist with other platforms in a cloud data center.

Today's business challenges require innovative solutions. Enterprises are adopting open architectures to drive such innovation; however, this innovation comes with risk. Security breaches are becoming more prevalent and increasingly strict regulations are demanding higher standards for businesses to protect client data. In addition, clients expect 24x7 availability while developers demand simplicity and flexibility.

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Cloud native development

Transforming digital workloads and shifting to cloud requires rapid development using agile and DevOps principles across the entire application development cycle. Achieving these enterprise shifts requires a security-rich and stable technology infrastructure that performs consistently and seamlessly integrates workloads across organization—even as enterprise assets grow.

IBM compilers and runtimes exploit the latest IBM LinuxONE III LT2 architecture to deliver optimized performance, improved resource use and capabilities for your business applications. Businesses can boost productivity by using the latest language features, compiler innovations and modern frameworks.

The new IBM Cloud Paks, along with Red Hat OpenShift Container Platforms, will assist in modernization and automation to develop, deploy, and manage cloud-native applications. Red Hat OpenShift is an enterprise containers and Kubernetes platform that provides a common environment for cloud-native workloads. IBM Cloud Paks are complete solutions that provide a common, consistent and integrated environment for cloud-native workloads. Cloud Paks run on top of Red Hat's OpenShift Container Platform. In addition, the recently introduced IBM Hyper Protect Virtual Servers are the first customer-managed, IBM LinuxONE and architecture-based virtual servers offered for use in hybrid clouds.

Encryption Everywhere

Secure Execution for Linux is a new trusted execution environment (TEE) hardware capability introduced with the IBM LinuxONE III LT2, available for all models of the LinuxONE III generation. Engineered to help protect against insider and outsider threats in multi-tenanted cloud environments, it is designed to prevent users and even system administrators from accessing sensitive data in Linux-based virtual environments. As part of the IBM Confidential Computing Agenda, Secure Execution is a scalable solution that protects the confidentiality and integrity of data by isolating it at the virtual machine level for your hybrid cloud.

With pervasive encryption providing encryption of data in-flight and at rest combined with Secure Execution for Linux providing protection of data in use, IBM Data Privacy Passports adds protection for data after it leaves the LinuxONE server or even the datacenter. Only the people with a need to know within the organization have access to data in the clear. The IBM Data Privacy Passports solution exploits the latest release of IBM Hyper Protect Virtual Servers, which delivers improved exploitation of key IBM LinuxONE III security features.

Beyond these security benefits are the ones required to address the next technology evolution. Quantum computing capabilities, and their use, are growing—and will explode over the next 10 to 20 years. This shift will force the entire industry to evolve, as quantum computing could break cryptographic algorithms that are currently secure.

To keep up, enterprises must adopt crypto agility, so they can quickly shift from one implemented algorithm to another. IBM LinuxONE is starting down the path for crypto agility by supporting lattice-based cryptographic digital signing algorithms as part of the base system.

These enhancements are supported by IBM LinuxONE III and allow an organization to prove that all data originating from their system of record is secured throughout their enterprise and eco-system, meeting all company policies and regulatory requirements with configurable and verifiable automation.

Cyber Resiliency

You can improve your resiliency with the optional IBM GDPS Virtual Appliance from IBM Global Technology Services. To run the GDPS Virtual Appliance, you will need to dedicate one central processor (included with virtual appliance) to running the virtual appliance. The GDPS Virtual Appliance allows your LinuxONE system to run with an even more robust reliability, availability and serviceability (RAS) level, with minimal impact to power consumption and efficiency.

Whether on premises or in the cloud, IBM LinuxONE III LT2 helps avoid or recover from failures and helps minimize business disruptions. Designed into the server are component reliability, redundancy, and features that assist in providing fault avoidance and tolerance. Its resiliency is the ability to adapt to planned or unplanned events while keeping services and operations running continuously.



IBM LinuxONE III LT2

Flexible Compute

IBM LinuxONE III Model LT2 comes in a single 19-inch, 40U frame designed with redundant power, cooling and line cords to install in virtually any existing datacenter. The LT2 features include:

- Intelligent power distribution units (iPDUs)
- Choice of either single-phase or 3-phase power
- Support for A3 operating class as defined by the American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE)[\[1\]](#)
- A new optional Hardware Management Appliance (HMA) can be ordered with the IBM LinuxONE III to provide hardware management console (HMC) and Support Element (SE) functions within the 19" frame, eliminating the need for a separate HMC outside of the server
- Option to install internal storage – an optional feature for LinuxONE servers is the IBM Adapter for NVMe carrier card, which gets installed in the LinuxONE I/O drawers. Each carrier card will accommodate one Non-Volatile Memory Express (NVMe) solid state drive (SSD) that you purchase separately. Up to 16 carrier cards can be installed in the I/O drawers of the LinuxONE servers, giving you the shortest path to the data with most efficient communication protocol (NVMe). The cards are configured using the Dynamic Partition Management console. You can boot Linux from an SSD installed in the IBM Adapter for NVMe carrier card if the SSD has a valid boot image.

- Option to install co-located storage – whether or not you use internally installed storage in the IBM Adapter for NVMe carrier cards, if your LinuxONE III Model LT2 server has single-phase power and there is enough unused space available in the LT2 frame, you can reserve space in the frame for installing IBM storage. Choose between reserving 16U of space for the direct attached (via the IBM FICON host bus adapter) IBM DS8910F Model 993 storage unit or reserving 8U of space for either the IBM FlashSystem 9200 or the IBM FlashSystem 7200 units along with the IBM 8977-T32 SAN Switch.

The IBM LinuxONE III LT2 twelve-core processor chip leverages the density and efficiency of 14 nm silicon-on-insulator technology. The way you choose the maximum number of active cores in your LinuxONE III LT2 system is through the five different “Max” features. Order the Max4 feature to get a maximum of four active cores, the Max13 for a maximum of 13 active cores, and so on for Max21, Max31, and Max65.

The LT2 design incorporates a combination of processor drawers and input/output (I/O) drawers. The Central Processing Complex (CPC) drawers house the processors, the level 4 cache, the memory, and the interconnections to other CPC drawers and I/O drawers in the frame. The I/O drawers use an enhanced Peripheral Component Interconnect Express (PCIe) bus and are called PCIe+ I/O drawers. The LT2 can be installed on either raised floors or non-raised floors and offers both top exit and bottom exit options for I/O and power cables. All cabling is routed to the back of the frame with new brackets to contain cables. The doors are designed for acoustics and optimized for air flow. The frame requires 3-phase power.

The on-chip compression accelerator provides faster compression while using less CPU time. All Linux guests in the system may use the accelerator and applications for compression.

A LinuxONE server can support various Linux distributions, including Red Hat Enterprise Linux, SUSE Linux Enterprise Server and Ubuntu server. Choose a single distribution or run more than one at the same time on the same physical server, with or without a software hypervisor. The IBM LinuxONE server can run various Linux workloads independently on a single server – no need to physically separate your database virtual machines from your app server virtual machines. As a result, you gain infrastructure benefits from tight colocation of data and applications, fast internal communications and integrated high availability^[1].

Maximize the bottom line

With the challenges of modern workloads that require innovative solutions come the increased cost and risk to meet those demands. The new IBM LinuxONE III LT2 offers new solutions to companies looking for an innovative platform. With integrated accelerators that power pervasive encryption, booted virtualization performance and specialty processors to accelerate Linux workloads, companies can lower their total cost of ownership (TCO) without sacrificing security, ease of development, or availability and resiliency.

LinuxONE provides powerful and flexible Linux environments that work in harmony with your existing workloads. It offers encryption everywhere, high availability and resiliency, and cloud native development to provide modern solutions for your business challenges.

[1] ASHRAE Thermal Guideline Classes for IT Equipment Spaces, 4th Edition, ASHRAE, 2015

Why IBM?

IBM has been committed to Linux since 1999. As you transform your business and differentiate yourself in a trust economy, IBM remains your partner. We have the total expertise—in systems, software, delivery, support and financing—to help you create a secure, open, and intelligent foundation for the future. Our experts can help you configure, design and implement a solution optimized for the needs of your business.

For more information

Detailed System Specifications:

<https://www.ibm.com/downloads/cas/MVJVYR6B>

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