

# IBM LinuxONE III Model LT1 and IBM LinuxONE III Model LT2 are enhanced to deliver increased security, flexibility, scalability, and reliability for mission-critical workloads in a hybrid cloud

## Table of contents

<a href="#">1 Overview</a>	<a href="#">6 Product number</a>
<a href="#">1 Key requirements</a>	<a href="#">7 Publications</a>
<a href="#">2 Planned availability date</a>	<a href="#">9 Technical information</a>
<a href="#">2 Description</a>	<a href="#">11 Terms and conditions</a>
<a href="#">5 Product positioning</a>	<a href="#">11 Prices</a>
<a href="#">5 Statement of general direction</a>	

## Overview

IBM<sup>®</sup> LinuxONE III Model LT1 and IBM LinuxONE III Model LT2 are enhanced to help extend the capabilities of the IBM LinuxONE family of servers as the platform for mission-critical workloads on a hybrid cloud. These new innovations will benefit all clients across our four main pillars: cloud native, encryption everywhere, cyber resiliency, and flexible compute.

- IBM Secure Execution for Linux<sup>®</sup> furthers the Confidential Computing agenda through the implementation of a trusted execution environment (TEE) on the LinuxONE platforms.
- Workload and cryptographic algorithm enhancements enable Common Cryptographic Architecture (CCA) to support new standards.
- The new IBM Cloud<sup>®</sup> Infrastructure Center delivers industry-standard user experience to define and manage the lifecycle of a virtual infrastructure.
- IBM Data Privacy Passports now exploit the latest release of IBM Hyper Protect Virtual Servers, which delivers improved exploitation of key LinuxONE III features, with more exploitation continuously being introduced.
- LinuxONE III LT1 now supports up to 60 crypto hardware security modules (HSMs), supporting 85 domains, which provides over 5,100 virtual HSMs for ultimate scalability.
- LinuxONE III LT2 now supports up to 40 crypto HSMs, supporting 40 domains, which provides over 1,600 virtual HSMs.
- New support for coupling links enables LinuxONE to participate in the Server Time Protocol Coordinated Timing Network (STP CTN).
- Initial program load boot support from NVMe devices is now available.
- An 8U Reserved Space (#0150) and a 16U Reserved Space (#0151) feature is available for LinuxONE III LT2 (single frame) clients utilizing single-phase power.

**Note:** Review the [z15 T02 and LinuxONE III LT2 Exception Letter](#) on [Resource Link](#) to understand when this offering has completed its compliance certification in your geography. Failure to do so may result in a non-compliant machine configuration.

## Key requirements

See the [Hardware requirements](#) and [Software requirements](#) sections of this announcement.

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## Planned availability date

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September 15, 2020

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## Description

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As we adapt to a new normal, the transformation of digital technologies continues to have a profound impact on creating and accelerating transformations of business activities, processes, competencies, and models. To succeed, businesses must embrace this digital transformation, adopt agile processes and new technologies to deliver new services and experiences that customers and clients demand. LinuxONE servers are designed to help enable cloud native development and deployment and achieve encryption everywhere. All of these together can help to provide the cloud you want with the privacy and security you need.

The new functions and features of LinuxONE III can help accelerate transformation while avoiding cloud security risks and complex migration challenges. With the 19-inch standard frame efficient design, the LinuxONE can easily coexist with other platforms in a cloud data center. LinuxONE III can protect data and simplify compliance with its highly resilient, secure platform and has the power to optimize digital services delivery, accelerate business innovation, and ultimately improve the bottom line.

LinuxONE III LT1 and LinuxONE III LT2 are enhanced in several key areas.

### **Cyber resiliency**

#### ***IBM Secure Execution for Linux***

LinuxONE III is designed to protect against the impact of cyberattacks by ensuring isolation of workloads, protecting against insider and external attacks and ensuring continuous service by mitigating impacts of downtime. Confidential Computing is the industry movement around using technology to protect data in use. Secure Execution for Linux furthers the Confidential Computing agenda through the implementation of a TEE on the LinuxONE platforms. With TEE technology, users will be able to achieve higher levels of trust, isolation, and access control over their data assets compared to general-purpose software environments. As more companies move their on-premises workloads to public and private clouds, the need for a highly secure, multitenant hosting solution becomes necessary to ensure the confidentiality and integrity of each application and its data. The high-level benefits include:

- Enhanced security at enterprise scale by isolating workloads
- Access limited to privileged insiders, such as Kubernetes and hypervisor administrators
- Assurance of data confidentiality and integrity

### ***Prepaid token expiration***

Beginning with LinuxONE III LT1 and LinuxONE III LT2, prepaid tokens for On/Off Capacity on Demand (On/Off CoD) will be available five years after the LICCC expiration date.

### ***z/VM<sup>(R)</sup> virtualization technology***

z/VM virtualization technology and its enablement for GDPS<sup>(R)</sup> and HyperSwap<sup>(R)</sup> allows customers to achieve the same HA/DR capabilities they are used for z/OS<sup>(R)</sup> workloads and IBM Storage for their underlying z/VM Guests, including Linux guests. Improved z/VM GDPS capability, as requested by our customers, is provided with Multiple Subchannel Set (MSS) Multi-Target Peer-To-Peer Remote Copy (MT PPRC) support new with z/VM 7.2. Further, with Centralized Service Management it will be

easier for customers to maintain the z/VM Systems up-to-date and compliant with service enhancements, including security fixes, on a timely manner.

## **Encryption everywhere**

### ***CCA Advanced Encryption Standard (AES) ATM PIN<sup>®</sup> processing and key management enhancements***

CCA continues to add functionality to enable client workloads. New industry standards drive workload enhancements. The AES algorithm is being adopted by the banking industry to replace Triple DES (TDES). Standards have been developed for AES key management and AES PIN encryption with ISO-4 format PIN blocks. CCA 7.2 completes support for ISO-4 format PIN blocks across CCA financial services. CCA has also added support for AES encryption of EMV secure messages, as well as EMV-specific PIN Change operations (TDES and AES). Similarly, support has been added for the ANSI X9.24-3 AES Derived Unique Key Per Transaction (DUKPT) standard. This standard defines AES methods for deriving various types of keys for one-time use and static, longer use. AES-DUKPT keys are usable with CCA financial services as well as format-preserving encryption (FPE). This will aid clients in complying with requirements from card brands and payment networks. Clients can also export AES DUKPT keys in ANSI TR-31 key blocks.

### ***CCA data encryption enhancements***

FPE is a set of algorithms used in banking to encrypt customer data without changing its format or length. These algorithms are defined in the ANSI X9.124 standard. Support has been added for three of the algorithms--FF1, FF2, and FF2.1--to use for data encryption, decryption, and translation. These features will be useful to clients whose partners build these algorithms into their devices, anyone wishing to retain format and length for encrypted data, or anyone building point-to-point encryption (P2PE) applications.

### ***CCA public key cryptography enhancements***

A new ECC curve has been added to CCA. The ECC curve secp256k1 is known as the bitcoin curve because it is used in bitcoin public key cryptography. This curve is popular because of its performance characteristics. In CCA, it is usable with the ECDSA digital signature algorithm and ECC Diffie-Hellman services. These services are used for generating and verifying digital signatures and to support protocols for exchanging cryptographic keys with partners.

### ***Cloud crypto enhancements for EP11***

Cloud Hyper Protect Crypto Services is a key management and cloud hardware security module (HSM). It is designed to enable clients to take control of their cloud data encryption keys and cloud hardware security modules (IBM Crypto Express7S) loaded with the EP11 API.

For version 4.7.22, and higher, EP11 is adding re-encrypt support. This support allows for re-encrypting data within the HSM boundary for selected algorithms and modes that support independent encryption and decryption of blocks.

Domain Import/Export has been added. It allows for exporting and importing wrapping keys (WKs) and state of a domain without requiring the assistance of card administrators. This is helpful for cloud clients who prefer that the IBM cloud provider not be required to assist them with managing their crypto domains.

Do-not-Disturb mode has been added. This feature is strongly related to the Domain Import/Export feature. With this feature, domains can be configured such that card administrators are no longer allowed to manage a domain, except for zeroizing it. This assures clients that the IBM cloud provider will not be able to modify or extract any information from their crypto domain once it has been set up.

### ***Expanded cryptography enhancements for the Hyper Protect Digital Assets platform***

For EP11 versions 4.7.2, and higher, support has been added for BIP0032. BIP stands for Bitcoin Improvement Proposal. BIP0032 is referred to as a Hierarchical Deterministic Wallet standard, allowing clients to split their digital purse into multiple parts and give interested parties access to those parts of their purse. EP11 implements the special key derivation functions required for BIP0032.

Also, previously in EP11 versions greater than 3.6.15, support was added for the Edwards-curve Digital Signature Algorithm for smaller keys and signatures to drive greater security and speed for the signing and verification used in digital assets transactions.

### ***z/VM virtualization technology***

z/VM virtualization technology has always been very proactive, helping customers to harden their systems, with a virtualization layer compliant with standard certifications needed by our most demanding customers. IBM is pursuing Common Criteria Certifications (EAL 4+ and NIAP Virtualization Protection Profile) and FIPS 140-2 for z/VM 7.2. With encryption, z/VM enables guests to exploit and benefit from HW HSMs (Crypto Express<sup>(R)</sup> adapters) and virtual crypto devices which can be tailored to workload requirements.

### **Flexible compute**

#### ***Coupling link support for LinuxONE III to participate in a Server Time Protocol Coordinated Timing Network (STP CTN)***

On LinuxONE machines today, Server Time Protocol (STP) can connect to a Network Time Protocol (NTP), NTP/Pulse Per Second (NTP/PPS), Precision Time Protocol (PTP), or PTP/Pulse Per Second (PTP/PPS) external primary time reference. However, clients with LinuxONE machines that have Linux on Z operating system images running on them can't synchronize time with their IBM Z<sup>(R)</sup> CPCs running z/OS in a Parallel Sysplex<sup>(R)</sup>. This is due to the inability of the STP CTN to be extended to LinuxONE stemming from the lack of support for coupling links on LinuxONE.

This current support limits time synchronization accuracy to Universal Coordinated Time (UTC) for LinuxONE, as there is no way to provide the high accuracy time synchronization to the z/OS systems in the STP CTN. This limits clients' capability to achieve compliance with the latest government regulations for time synchronization accuracy to UTC across all systems participating in financial trading systems.

By providing support for coupling links on LinuxONE, they can now join and participate in an STP CTN alongside the client z/OS systems in one or more sysplexes. This will enable clients to take advantage of the inherent accuracy of STP CTNs on their LinuxONE, improving their time synchronization accuracy to UTC and comply with the latest regulations.

The coupling links need to be configured from a z/OS machine, so the support is currently limited to networks that include a z/OS sysplex machine connected to LinuxONE not running in DPM mode.

#### ***NVMe boot and IBM Dynamic Partition Manager ( DPM) support***

IBM is committed to continue to grow our NVMe footprint and continues to invest in our NVMe roadmap. To that end, initial program load boot support from IBM NVMe devices is now available on LinuxONE systems. Clients can now have boot support that runs solely on NVMe devices. Open raid software solutions that support NVMe devices can also be used with NVMe devices. In addition, clients can enjoy complete DPM support for NVMe devices. Clients can now use NVMe as storage devices on IBM Z in their DPM/cloud environment.

#### ***8U Reserved Space (#0150) hardware configuration flexibility (LinuxONE III LT2)***

For clients utilizing single-phase power and fewer than 3 PCIe+ drawers, there is an option to hold 8U Reserved Space (#0150) in the LinuxONE III LT2 rack. This 8U of

space in the frame can be populated by a client with up to two IBM FlashSystem<sup>(R)</sup> 9200 Models 9846-AG8 or 9848-AG8, or up to two IBM FlashSystems 7200 Model 2076-824, along with up to two IBM Storage Networking SAN32C-6 Fabric Switches, in order to reduce the physical footprint in the data center. When the 8U Reserved Space feature is ordered, the LinuxONE III LT2 order will provide additional power ports in redundant power distribution units (PDUs), along with weight ballast and air flow filters as appropriate. Note that IBM would first complete installation of the LinuxONE III LT2 and turn it over to client operation, and then the storage can be added if the 8U Reserved Space has been ordered. This new hardware configuration flexibility feature is perfect for clients who fit into smaller I/O configurations and need the additional ease of a single-footprint approach.

**Note:** Review the [z15 T02 and LinuxONE III LT2 Exception Letter](#) on [Resource Link](#) to understand when this offering has completed its compliance certification in your geography. Failure to do so may result in a non-compliant machine configuration.

### ***16U Reserved Space (#0151) hardware configuration flexibility LinuxONE III LT2)***

For clients utilizing single-phase power and fewer than 3 PCIe+ drawers, there is an option to hold 16U Reserved Space (#0151) in the LinuxONE III LT2 rack. This 16U of space in the frame can be populated by a client with IBM DS8910F Model 993. storage in order to reduce the physical footprint in the data center. When the 16U Reserved Space feature is ordered, the LinuxONE III LT2 order will provide additional power ports in redundant PDUs, along with weight ballast and air flow filters as appropriate. Note that IBM would first complete installation of the LinuxONE III LT2 and turn it over to client operation, and then the storage can be added if the 16U Reserved Space has been ordered. This new hardware configuration flexibility feature is perfect for clients who fit into smaller I/O configurations and need the additional ease of a single-footprint approach.

**Note:** Review the [z15 T02 and LinuxONE III LT2 Exception Letter](#) on [Resource Link](#) to understand when this offering has completed its compliance certification in your geography. Failure to do so may result in a non-compliant machine configuration.

### ***z/VM virtualization technology***

z/VM virtualization technology has always been about driving more agility and better TCO through virtualization without compromising security or scalability. With z/VM 7.2, IBM continues to offer clients a choice to obtain new enhancements through z/VM Continuous Delivery and features already available, like support for 80 Logical Processor, VSwitch Priority Queueing, and Dynamic Crypto, reinforcing the flexibility clients demand. Adding to existing flexibility, through Centralized Service Management, brings agility to the next level.

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## **Product positioning**

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Not applicable

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## **Statement of general direction**

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**Removal of IBF support:** IBM z15<sup>TM</sup> is planned to be the last IBM Z<sup>(R)</sup> server to offer an internal battery feature (IBF). As client data centers continue to improve power stability and uninterruptible power supply (UPS) coordination, IBM Z continues to innovate to help clients take advantage of common power efficiency and monitoring across their ecosystems. Additional support for data center power planning can be requested through your IBM Sales contact.

**TLS 1.0 and TLS1.1 for SE, HMC, and OSC-ICC:** IBM z15 is planned to be the last IBM Z server to support the use of the Transport Layer Security protocol versions 1.0 (TLS 1.0) and version 1.1 (TLS 1.1) for establishing secure connections to the Support Element (SE), Hardware Management Console (HMC), and Open

Systems Adapter (OSA) Integrated Console Controller (ICC) (channel path type OSC).

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## Reference information

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For more information about IBM LinuxONE III LT2, see Hardware Announcement [JG20-0018](#), dated April 14, 2020.

For more information about z/VM<sup>(R)</sup> 7.2, see Product Announcement [JG20-0088](#), dated August 04, 2020.

For more information about z/VM 7.2, see Software Announcement [JG20-0017](#), dated January 14, 2020.

For more information about IBM z15, see Hardware Announcement [JG19-0039](#), dated September 12, 2019.

For more information about IBM LinuxONE III, see Hardware Announcement [JG19-0017](#), dated September 12, 2019.

For more information about IBM Wave for z/VM 1.2, see Software Announcement [JP19-0499](#), dated September 12, 2019.

For more information about IBM Data Privacy Passports 1.0, see Software Announcement [JP19-0548](#), dated September 12, 2019.

For more information about IBM z14<sup>(R)</sup> Model ZR1, see Hardware Announcement [JG18-0022](#), dated April 10, 2018.

For more information about IBM LinuxONE Rockhopper II, see Hardware Announcement [JG18-0025](#), dated April 10, 2018.

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## Product number

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Description	Machine type	Model	Feature Number
IBM LinuxONE III	8562	LT2	
8U Reserved Space			0150
16U Reserved Space			0151
Description	Machine type	Model	Feature Number
IBM LinuxONE III	8562	LT2	
IBM LinuxONE III	8561	LT1	
ICA SR1.1			0176
Coupling Express <sup>(R)</sup> LR			0433

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## Feature conversions

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Not applicable

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## Publications

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The following publications are available now in the "Library" section of Resource Link<sup>(R)</sup>:

<b>Title</b>	<b>Order Number</b>
IBM 8561 Installation Manual for Physical Planning (IMPP)	GC28-7002
IBM 8562 Installation Manual for Physical Planning (IMPP)	GC28-7011
IBM 8561 Installation Manual for Physical Planning (IMPP) -- Russian version	GC28-7004
IBM 8562 Installation Manual for Physical Planning (IMPP) -- Russian version	GC28-7008
PR/SM Planning Guide	SB10-7175
IOCP User's Guide for ICP IOCP	SB10-7172
Planning for Fiber Optic Links (FICON <sup>(R)</sup> /FCP, Coupling Links, OSA, and zHyperLink Express <sup>(R)</sup> )	GA23-1408

The following publications are shipped with the product and will be available at planned availability in the "Library" section of Resource Link:

<b>Title</b>	<b>Order Number</b>
IBM 8561 Installation Manual	GC28-6997
IBM 8562 Installation Manual	GC28-7009
IBM 8561 Service Guide	GC28-6998
IBM 8562 Service Guide	GC28-7010
IBM 8561 Safety Inspection	GC28-6996
IBM 8562 Safety Inspection	GC28-7007
Service Guide for TKE Workstations (Version 7.0)	GC28-6980
Systems Safety Notices	G229-9054
IBM Important Notices	G229-9056
IBM Z Statement of Limited Warranty	GC28-6979
License Agreement for Machine Code	SC28-6872
License Agreement for Machine Code Addendum for Cryptography	GC27-2635
Systems Environmental Notices and User Guide	Z125-5823

The following publications will be available at planned availability in the "Library" section of Resource Link:

<b>Title</b>	<b>Order Number</b>
IBM 8561 Parts Catalog	GC28-7003
IBM 8562 Parts Catalog	GC28-7012
Service Guide for 2461 Hardware Management Console	GC28-6990
Service Guide for 2461 Support Element	GC28-6991
SNMP Application Programming Interfaces	SB10-7171
Capacity on Demand User's Guide	SC28-6985
CHPID Mapping Tool User's Guide	GC28-6984
Hardware Management Console Web Services API (V2.15.0)	SC27-2638
IBM Dynamic Partition Manager (DPM) Guide	SB10-7176
Secure Service Container User's Guide	SC28-7005
Stand-Alone IOCP User's Guide	SB10-7173
FICON CTC Reference	SB10-7174

<b>Title</b>	<b>Order Number</b>
Maintenance Information for Fiber Optics (FICON/FCP, Coupling Links, OSA, and zHyperLink Express)	SY27-7696
Integrating the HMC's Broadband RSF into your Enterprise	SC28-6986
Hardware Management Console Security	SC28-6987
SCSI IPL -- Machine Loader Messages	SC28-7006
OSA-Express Customer's Guide and Reference	SA22-7935
OSA/SF on the Hardware Management Console	SC14-7580
OSA Integrated Console Controller User's Guide	SC27-9003

**Resource Link:** Publications for IBM LinuxONE III can be obtained at the [Resource Link](#) website.

Using the instructions on the Resource Link panels, obtain a user ID and password. Resource Link has been designed for easy access and navigation.

### **Journey to LinuxONE Resource:**

The [Journey to LinuxONE](#) content solution explains the experience of working with IBM to obtain and install a LinuxONE III, and provides a brief technical introduction to LinuxONE.

### **HMC and SE console documentation**

At planned availability, the Hardware Management Console (HMC) and Support Element (SE) console documentation (Version 2.15.0) will be available from IBM Resource Link and the consoles.

To access the IBM Publications Center Portal, go to the [IBM Publications Center](#) website.

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided. A large number of publications are available online in various file formats, which can currently be downloaded.

### **National language support**

Not applicable

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## **Services**

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### **IBM Systems Lab Services**

IBM Systems Lab Services offers a wide array of services available for your enterprise. It brings expertise on the latest technologies from the IBM development community and can help with your most difficult technical challenges.

IBM Systems Lab Services exists to help you successfully implement emerging technologies so as to accelerate your return on investment and improve your satisfaction with your IBM systems and solutions. Services examples include initial implementation, integration, migration, and skills transfer on IBM systems solution capabilities and recommended practices. IBM Systems Lab Services is one of the service organizations of IBM's world-renowned IBM Systems Group development labs.

For details on available services, contact your IBM representative or go to the [IBM Systems Lab Services](#) website.



## Global Technology Services

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IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an on-demand business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or go to the [IBM Global Technology Services](#) website.

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or go to the [Resiliency Services](#) website.

Details on education offerings related to specific products can be found on the [IBM Skills Gateway](#) website.

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## Technical information

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### Specified operating environment

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#### Hardware requirements

The hardware requirements for the IBM Z servers, features, and functions are identified. A new driver level is required.

HMC (V2.15.0) plus MCLs and the Support Element (V2.15.0) became available on May 15, 2020. You should review the PSP buckets for minimum Machine Change Levels (MCLs) and software PTF levels before IPLing operating systems.

The new functions available on the Hardware Management Console (HMC) version 2.15.0, as described, apply to IBM z15 and IBM LinuxONE III. However, the HMC version 2.15.0 will also support the systems listed in the table below.

Machine Family	Machine Type	Firmware Driver	SE Version
z14 and Emperor II	3906	36	2.14.1
z14 and Emperor II	3906	32	2.14.0
z14 ZR1 and Rockhopper II	3907	36	2.14.1
z14 ZR1 and Rockhopper II	3907	32	2.14.0
z13 <sup>(R)</sup> and Emperor	2964	27	2.13.1
z13s <sup>(R)</sup> and Rockhopper	2965	27	2.13.1

#### Software requirements

LinuxONE III requires support in z/VM, at a minimum:

- \* z/VM 7.2
- \* z/VM 7.1 with PTFs
- \* z/VM 6.4 with PTFs

**Secure Execution for Linux** requires support in the KVM host and the KVM guest, at a minimum:

IBM supports running the following Linux distributions as a KVM host and guest on:

- SLES 15 SP2.
- Ubuntu 20.04 LTS.
- IBM is working with its Linux distribution partners to provide support in future distribution releases.

IBM supports running the following Linux distributions as a KVM guest only on IBM LinuxONE III:

- SLES 15 SP2
- SLES 12 SP5
- RHEL 8.1
- RHEL 7.8
- Ubuntu 20.04 LTS

**NVMe Boot** requires at a minimum:

- IBM is working with its Linux distribution partners to provide support in future distribution releases.

**Crypto Express7S (2 port) (#0898) toleration** , which treats Crypto Express7S cryptographic coprocessors and accelerators as Crypto Express6 coprocessors and accelerators, requires at a minimum:

- SLES 15 SP1 with service.
- SLES 12 SP4.
- RHEL 8.0 with service.
- RHEL 7.7 with service.
- RHEL 6.10 with service.
- Ubuntu 18.04.1 LTS with service.
- Ubuntu 16.04.6 LTS with service.
- For CCA secure-key cryptography, the CCA host package version 6.0.13, or later, is required, available at [CEX7S / 4769 - Linux on Z software](#).
- For EP11 secure-key cryptography, the EP11 host package 2.1.1, or later, is required, available at [ICEX6S / 4768 - Linux on Z software](#).
- z/VM 7.2 for guest exploitation.
- z/VM 7.1 with PTFs for guest exploitation.
- z/VM 6.4 with PTFs for guest exploitation.

**Crypto Express7S (1 port) (#0899) toleration** requires at a minimum:

- SLES 15 SP1 with service.
- SLES 12 SP4.
- RHEL 8.0 with service.
- RHEL 7.7 with service.
- RHEL 6.10 with service.
- Ubuntu 18.04.1 LTS with service.
- Ubuntu 16.04.6 LTS with service.
- For CCA secure-key cryptography, the CCA host package version 6.0.13, or later, is required, available at [CEX7S / 4769 - Linux on Z software](#).
- For EP11 secure-key cryptography, the EP11 host package 2.1.1, or later, is required, available at [CEX6S / 4768 - Linux on Z software](#).
- z/VM 7.2 for guest exploitation.

- z/VM 7.1 with PTFs for guest exploitation.
- z/VM 6.4 with PTFs for guest exploitation.

**Crypto Express7S (#0899) exploitation** requires at a minimum:

- SLES 15 SP2.
- RHEL 8.2.
- Ubuntu 20.04 LTS.
- For CCA secure-key cryptography, the CCA host package version 6.0.13, or later, is required, available at [CEX7S / 4769 - Linux on Z software](#).
- For EP11 secure-key cryptography, the EP11 host package 3.0.1, or later, is required, available at [CEX7S / 4769 - Linux on Z software](#).
- z/VM 7.2 for guest exploitation.
- z/VM 7.1 with PTFs for guest exploitation.
- z/VM 6.4 with PTFs for guest exploitation.

## Planning information

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### **Client responsibilities**

Information on customer responsibilities for site preparation can be found in the [Library](#) section of Resource Link.

### **Cable orders**

Not applicable

## Security, auditability, and control

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The IBM LinuxONE III uses the security and auditability features and functions of host hardware, host software, and application software.

The client is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

## IBM Systems Lab Services

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For details on available services, contact your IBM representative or go to the [IBM Systems Lab Services](#) website.

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## Terms and conditions

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Not applicable

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## Prices

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For all local charges, contact your local IBM representative.

Description	Machine type	Model	Feature number	Price	**	EWFe	MMMC indicator	INIT/MES
IBM LinuxONE III	8562	LT2					x	
8U Reserved Space			0150		**			Both

Description	Machine type	Model	Feature number	Price	**	EWFe	MMMC indicator	INIT/MES
16U Reserved Space			0151		**			Both

\*\* If field installed on a purchased machine, parts removed or replaced become the property of IBM and must be returned.

Description	Machine type	Model	Feature number	Price	**	EWFe	MMMC indicator	INIT/MES
IBM LinuxONE III	8561	LT1					x	
IBM LinuxONE III	8562	LT2					x	
ICA SR1.1			0176		**			Both
Coupling Express LR			0433		**			Both

\*\* If field installed on a purchased machine, parts removed or replaced become the property of IBM and must be returned.

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