

# IBM z15 Model T01 and IBM z15 Model T02 are enhanced to provide increased security, resiliency, performance, and flexibility for mission-critical workloads in a hybrid cloud

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## Overview

IBM z15™ Model T01 and IBM z15 Model T02 are enhanced to help extend the capabilities of the IBM Z<sup>®</sup> family of servers as the platform for mission-critical workloads on a hybrid cloud. These new innovations will benefit all clients across our main pillars: cloud native, encryption everywhere, cyber resiliency, and flexible compute. Key enhancements include:

- Crypto enhancements for Common Cryptographic Architecture (CCA) and Enterprise PKCS #11 (EP11) provide increased functionality and security.
- The new IBM Cloud<sup>®</sup> Infrastructure Center delivers an industry-standard user experience to define and manage the lifecycle of a virtual infrastructure.
- Centralized Service Management enables clients to control and monitor service maintenance across their various and distributed IBM<sup>®</sup> z/VM<sup>®</sup> systems from one z/VM system.
- IBM Data Privacy Passports now exploit the latest release of IBM Hyper Protect Virtual Servers, which delivers improved exploitation of key z15™ features, with more exploitation continuously being introduced.
- The z15 T01 now supports up to 60 crypto hardware security modules (HSMs), supporting 85 domains, which provides over 5,100 virtual HSMs for ultimate scalability.
- The z15 T02 now supports up to 40 crypto HSMs, supporting 40 domains, which provides over 1,600 virtual HSMs.
- The IBM z/OS<sup>®</sup> Authorized Code Scanner, a new, optional, priced feature, helps support clients in their efforts to strengthen the security posture of their z/OS dev/test pipeline.
- Enhanced System Recovery Boost capabilities enable clients to leverage a new class of boost that can be applied to a range of sysplex recovery processes, including sysplex partitioning, CF structure recovery, CF data sharing member recovery, and IBM HyperSwap<sup>®</sup> recovery.
- The new IBM Integrated Accelerator for Z Sort, standard on the z15, can help reduce CPU usage and improve elapsed time for eligible sort workloads.
- 16U Reserved Space is available in the z15 T02 rack for clients utilizing single-phase power and two or fewer PCIe+ drawers.

**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.

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## Feature exchange

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Not applicable

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## Key requirements

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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. IBM Z servers are designed to help enable cloud native development and deployment, achieve encryption everywhere, and provide instant recovery to reduce the impact of downtime. All of these together can help provide the cloud you want with the privacy and security you need.

The z15 T01 and z15 T02 are enhanced in several key areas to help support robust business growth development and acceleration.

### **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***

IBM 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 has added 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 is to assure 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 version 4.7.22, 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 clients to harden their systems, with a virtualization layer compliant with standard certifications needed by our most demanding clients. As z/VM has previously advised in a Statement of Direction in the z/VM 7.2 Preview software announcement (US announce letter # 222-088), 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>®</sup> adapters) and virtual crypto devices, which can be tailored to workload requirements.

### ***Cyber resiliency***

#### ***System Recovery Boost sysplex recovery enhancements***

The initial z15 support for System Recovery Boost provided additional capacity to accelerate image-level recovery (image shutdown and startup) and enabled accelerated processing of workload backlogs that occurred as a result of those image-level events, following the re-IPL. System Recovery Boost provided additional image-level processing capacity and parallelism for the images during their IPL and shutdown boost periods by making use of two underlying z15 technologies:

- Speed Boost -- enabling subcapacity GP processors to run at full-capacity speed

- zIIP boost -- making general-purpose work eligible to run on zIIP processors

With new enhancements to System Recovery Boost, IBM extends the solution to provide value in scenarios beyond just image-level shutdowns and startups. System Recovery Boost now offers a new class of short-term recovery process boosts addressing a specific set of z/OS Parallel Sysplex<sup>®</sup> recovery events, utilizing the same underlying boost technologies previously announced. These Parallel Sysplex recovery events can cause workload disruption while the sysplex is recovering from a component failure or a reconfiguration event, until such time as the recovery processing completes and steady-state sysplex operation is restored.

Boosted processor capacity is automatically provided to mitigate these short-term recovery impacts and restore normal sysplex operation as quickly as possible following these recovery events. The boosted processor capacity can also continue to be provided for a short time following restoration of steady-state operation, to provide workload catch-up following the recovery activity.

The solution automatically provides boosted processor capacity and parallelism for the following specific recovery events:

- **Sysplex partitioning recovery:** Boosts all surviving systems in the sysplex as they recover and takes on additional workload following the planned or unplanned removal of a system from the sysplex.
- **CF structure recovery:** Boosts all systems participating in CF structure recovery processing, including CF structure rebuild, duplexing failover, and re-duplexing.
- **CF data-sharing member recovery:** Boosts all systems participating in recovery following the termination of a CF locking data-sharing member, such as a Db2<sup>®</sup> IRLM or SMSVSAM instance.
- **HyperSwap recovery:** Boosts all systems participating in a HyperSwap recovery process to recover from the failure of a storage subsystem.

The new short-duration recovery process boost periods are a separate and distinct class of boosts from the existing image-level IPL and shutdown boost periods. Each participating image may receive boosts as follows:

- One IPL boost for image startup (60 minutes)
- One shutdown boost for image shutdown (30 minutes), of each type
- Several recovery process boosts, each of less than 5 minutes duration, with a total usage of no more than 30 minutes of recovery process boost time in a consecutive 24-hour period.

During these boost periods, either Speed Boost, zIIP boost, or both, may be applied under the control of the z/OS BOOST= system parameter.

The use of System Recovery Boost upgrade temporary capacity record activations for recovery process boosts is not supported. The System Recovery Boost upgrade temporary capacity is for use only in conjunction with image-level IPL and shutdown boosts.

Use of the recovery process boosts requires:

- z15 T01 or z15 T02 with new LPAR firmware support for recovery process boosts.
- z/OS software support PTFs for z/OS 2.3 or z/OS 2.4. The z/OS PTFs will be included in a z/OS FIXCAT specifically for System Recovery Boost support, named "IBM.Function.SystemRecoveryBoost".

### **z/VSE<sup>®</sup> System Recovery Boost support**

With the PTFs for DY47832, z/VSE 6.2 provides native support for the System Recovery Boost feature of the z15 T01 and z15 T02. This support enables z/VSE to boost general purpose processors (CPs) running at subcapacity to full capacity for a

limited time. The speed boost will last up to 60 minutes during IPL and standalone dump processing and up to 30 minutes during system shutdown.

### ***z/OS Authorized Code Scanner***

The z/OS Authorized Code Scanner is a new, optional, priced feature that provides automated system integrity testing in a dev/test environment as part of DevSecOps modernization. It scans for program calls (PCs) and supervisor calls (SVCs) available to all address spaces on a z/OS image and generates a series of tests that dynamically scan them for integrity. The boundary between an unauthorized caller and a PC or SVC routine running authorized is essential to the system integrity of the z/OS solution stack. The output of this scan provides in-depth diagnostics whenever a potential vulnerability is found to facilitate remediation in order to further strengthen the security posture of the client's configuration of z/OS.

### ***IBM Secure Execution for Linux<sup>(R)</sup>***

IBM z15 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 Linux on Z 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

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

z/VM virtualization technology and its enablement for Geographically Dispersed Parallel Sysplex (GDPS<sup>(R)</sup>) and HyperSwap allows clients to achieve the same high availability (HA) and disaster recovery (DR) capabilities they are used to for z/OS workloads and IBM Storage for their underlying z/VM Guests, including Linux guests. Improved z/VM GDPS capability, as requested by clients, 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 clients to maintain the z/VM systems up-to-date and compliant with service enhancements, including security fixes, in a timely manner.

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

Beginning with z15 T01 and z15 T02, prepaid tokens for On/Off Capacity on Demand (On/Off CoD) will be available five years after the LICCC expiration date.

### ***Flexible compute***

#### ***IBM Integrated Accelerator for Z Sort***

The Integrated Accelerator for Z Sort, standard on z15 mainframes, is designed to optimize elapsed time for eligible sort workloads, which typically occur during client batch windows. Sorting data can be an integral, vital part of Z workloads, including batch processing, database query processing, and utility processing. By providing one sort accelerator per core, you can accelerate frequently used functions to help speed up sorting, shorten batch windows, and improve select database functions, such as reorganization. A new SORTL instruction is exploited by DFSORT and the Db2 Utilities for z/OS Suite the goal of which is to help reduce CPU usage and improve elapsed time for eligible sort workloads. Check the latest DFSORT and

Db2 Utilities for z/OS Suite PTFs for exploitation of the Integrated Accelerator for Z Sort. IBM is currently working with Independent Software Vendors (ISVs) to take advantage of the new feature as well.

### **16U Reserved Space (z15 T02)**

For clients utilizing single-phase power and two or fewer PCIe+ drawers, there is an option to hold 16U Reserved Space (#0151) in the z15 T02 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 z15 T02 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 z15 T02 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.

### **IBM Z Forward Acceleration Initiative**

Earlier this year, the IBM Z Forward Acceleration Initiative was announced. This initiative helps you to make the most of your IBM Z investment, accelerates the transformation of your IT infrastructure, and expedites the adoption of new technologies.

The IBM Z Forward Acceleration Initiative enables you to automatically earn rewards on eligible Z hardware. These rewards can be used for a select set of services.

To learn more about this initiative, visit the [IBM Z Forward Acceleration Initiative](#) web page.

### **Section 508 of the US Rehabilitation Act**

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IBM z15 servers are capable on delivery, when used in accordance with IBM's associated documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act of 1973, 29 U.S.C. Section 794d, as implemented by 36 C.F.R. Part 1194, provided that any assistive technology used with the product properly interoperates with it.

IBM makes no representation about the Section 508 status of third-party products included in this offering. Contact the vendor for specific, current information on the Section 508 status of these products.

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## **Statement of general direction**

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**Removal of IBF support:** IBM z15 is planned to be the last IBM Z 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 TLS 1.1 for SE, HMC, and OSC:** 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 (channel path type OSC).

Statements by IBM regarding its plans, directions, and intent are subject to change or withdrawal without notice at the sole discretion of IBM. Information regarding potential future products is intended to outline general product direction and should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for IBM products remain at the sole discretion of IBM.

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## Reference information

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For more information about z/VM 7.2, see Software Announcement [220-305](#), dated August 04, 2020.

For more information about z/VM 7.2 Preview, see Software Announcement [220-088](#), dated April 14, 2020.

For more information about IBM z15 T02, see Hardware Announcement [120-006](#), dated April 14, 2020.

For more information about IBM LinuxONE III, see Hardware Announcement [119-012](#), dated September 12, 2019.

For more information about IBM Wave for z/VM 1.2, see Software Announcement [219-413](#), dated September 12, 2019.

For more information about IBM Data Privacy Passports 1.0 beta program, see Software Announcement [219-452](#), dated September 12, 2019.

For more information about IBM Data Privacy Passports 1.0, see Software Announcement [220-062](#), dated March 10, 2020.

For more information about IBM z/OS 2.4, see Software Announcement [219-344](#), dated July 23, 2019.

For more information about IBM z14<sup>(R)</sup> ZR1, see Hardware Announcement [118-018](#), dated April 10, 2018.

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## Product number

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Description	Machine type	Model	Feature number
IBM z15	8562	T02	
16U Reserved Space			0151

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

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## Feature conversions

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Not applicable

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## Business Partner information

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If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld<sup>(R)</sup> ID and password are required (use IBMid).

[BP Attachment for Announcement Letter 120-050](#)

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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



<b>Title</b>	<b>Order Number</b>
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
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 Z 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.

### **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.

You can also find HMC videos at the [IBM Z Hardware Management Console Videos](#) website.

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.

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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.

Hardware Management Console (HMC) 2.15.0 plus MCLs and the Support Element 2.15.0 became available on September 23, 2019. Review the PSP buckets for minimum Machine Change Levels (MCLs) and software PTF levels before IPLing operating systems.

The new functions available on HMC 2.15.0, as described, apply to IBM z15. However, HMC 2.15.0 will also support the systems listed in the table below:

Machine family	Machine type	Firmware driver	SE version
z14	3906	36	2.14.1
z14	3906	32	2.14.0
z14 ZR1	3907	36	2.14.1
z14 ZR1	3907	32	2.14.0
z13 <sup>(R)</sup>	2964	27	2.13.1
z13s <sup>(R)</sup>	2965	27	2.13.1

#### Software requirements

**Secure Execution for Linux<sup>(R)</sup>** requires support in the KVM host and the KVM guest, at a minimum:

- IBM supports running the following Linux on IBM Z distributions as a KVM host on IBM z15:
  - 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 on IBM Z distributions as a KVM guest on IBM z15:

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

**Sort Acceleration** requires at a minimum:

- z/OS 2.4 with PTFs.
- z/OS 2.3 with PTFs.
- The z/OS PTFs will be included in a z/OS FIXCAT specifically for Sort Acceleration support.
  - IBM.Device.Server.z15-8561.Exploitation
  - IBM.Device.Server.z15T02-8562.Exploitation
  - IBM.Device.Server.z15T02-8562.RequiredService
- zHPF (z High Performance FICON) is required and must be enabled.
- DFSORT exploitation will ship as disabled by default and can be activated via DFSORT installation options without having to modify JCL or programs or it can be enabled for individual jobs.
- 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.
- IBM Db2<sup>(R)</sup> Utilities Suite for z/OS 12.1 with PTFs.

**System Recovery Boost Sysplex Resiliency enhancements** require at a minimum:

- z/OS 2.4 with PTFs.
- z/OS 2.3 with PTFs.
- The z/OS PTFs will be included in a z/OS FIXCAT specifically for System Recovery Boost support, Name IBM.Function.SystemRecoveryBoost.

**z/VSE<sup>(R)</sup> System Recovery Boost Support** requires at a minimum:

- z/VSE 6.2 with PTFs for APAR DY47832

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

- z/OS V2.4 with PTFs.
- z/OS V2.3 with PTFs.
- z/OS V2.2 with PTFs.
- z/OS V2.1 (compatibility only, extended support contract for IBM Software Support Services for z/OS required with PTFs).
- 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.
- z/VSE 6.2 with PTFs.
- 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](#).

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

- z/OS V2.4 with PTFs.
- z/OS V2.3 with PTFs.
- z/OS V2.2 with PTFs.
- z/OS V2.1 (compatibility only, extended support contract for IBM Software Support Services for z/OS required with PTFs).
- 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.
- z/VSE 6.2 with PTFs.
- 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](#).

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

- z/OS V2.4 with Cryptographic Support for z/OS V2.2 --z/OS V2.4 (HCR77D1).
- z/OS V2.3 with Cryptographic Support for z/OS V2.2 --z/OS V2.4 (HCR77D1).
- z/OS V2.2 with Cryptographic Support for z/OS V2.2 --z/OS V2.4 (HCR77D1).
- 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.
- 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](#).

## **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 z15 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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<b>Description</b>	<b>Machine type</b>	<b>Model</b>	<b>Feature number</b>	<b>Price</b>	<b>**</b>	<b>EWFe</b>	<b>MMMC indicator</b>	<b>INIT/MES</b>
IBM z15	8562	T02			**		x	
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.

### **Feature conversion purchase price**

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Not applicable

### **Specify feature codes**

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Not applicable

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