



# zEnterprise further extends hybrid computing with support for Microsoft Windows and other enhancements

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## At a glance

The zEnterprise™ System (zEnterprise) with its zBX infrastructure offers the ability to efficiently deploy and integrate multi-tier application workloads that span Mainframe, POWER7®, and System x® technologies, all under a single management umbrella.

Today, IBM® is announcing further enhancements and new capabilities for the zEnterprise that can accelerate the journey to smarter computing.

- Operating Environment Support expanded to include Microsoft™ Windows™ on select IBM BladeCenter® HX5 (7873) blades installed in the zBX
- Additional zEnterprise Unified Resource Manager enhancements
  - Integrated management extension capabilities with new application programming interfaces (APIs)
  - Dynamic discovery of storage resources
- New DataPower® XI50z firmware support
- New 1 Gbps optics for the IEDN Top of Rack switch
- Performance improvements to High Performance FICON® for System z® (zHPF) for:
  - QSAM, BPAM, and BSAM access methods
  - Format writes
  - DB2® list prefetch for certain DB2 queries and some DB2 utility operations
- GDPS® disaster recovery support for zEnterprise environment with:
  - Disaster recovery with synchronous remote copy up to 300 km
  - Asynchronous application continuous availability / disaster recovery at unlimited distance
- xDR extension to support z/VSE®
- GDPS reduced HyperSwap® impact and improved scalability

IBM is also announcing:

- EAL5+ Common Criteria certification for z196
- New IBM Implementation Services for System z

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## Overview

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The zEnterprise System is designed and built on the precepts of smarter computing whereby systems are optimized for your business needs. Enterprises are evolving and are no longer just looking to deploy systems as fast as possible, but are instead matching the systems architecture to specific workload requirements. The zEnterprise System embodies this concept by embracing multiple technology platforms. Its unique hybrid computing design provides a whole new paradigm around fit for purpose workload deployment, enabling the integration and management of a diverse set of workloads spanning both mainframe and distributed system resources.

As part of IBM's previously stated plans for the zEnterprise BladeCenter Extension (zBX), IBM is introducing expanded support for running Microsoft Windows on select IBM BladeCenter HX5 (7873) blades installed in the zBX. This capability will greatly expand the System z application portfolio. All zBX resources will continue to be managed by the zEnterprise Unified Resource Manager, which can help to deliver and facilitate end-to-end resource virtualization and policy-based workload monitoring.

As part of IBM's previously stated plans for the zEnterprise Unified Resource Manager, IBM is introducing two important new capabilities. These capabilities extend the management functions with programmatic access to application programming interfaces (APIs) to enable integration between Unified Resource Manager and the broader ecosystem of management tools. The APIs provide access to the underlying functions of the user interface and can be exploited to enable discovery, monitoring, and provisioning of zEnterprise resources.

The second area enhances the capability of the Unified Resource Manager to dynamically discover storage resources. A server administrator will now be able to trigger auto-discovery and configuration support for new storage resources installed in support of blades and z/VM® virtual servers, and make them available when completing workload resource configurations.

In addition, the Unified Resource Manager has been enhanced to support life-cycle management of individual members within a z/VM 6.2 Single System Image (SSI) environment.

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## Key prerequisites

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

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## Planned availability date

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- October 12, 2011
  - Service documentation optional print
- November 18, 2011
  - High Performance FICON for System z enhancements
  - GDPS support for zEnterprise System
  - IBM Implementation Services for System z
- December 16, 2011
  - zBX support for Windows on select System x blades
  - Unified Resource Manager enhancements
  - 1000BASE-SX and 1000BASE-LX optics for zBX
  - New DataPower XI50z firmware support

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## Description

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The world today is changing and becoming smarter and more technological. Every aspect of life is benefiting from the interconnection of systems and the infusion of intelligence into those systems. Nothing is changing more than information technology, and the opportunities for innovation and smarter computing models have never been greater. To take advantage of these opportunities, new systems will need to talk together, share data better, be easier to manage, and be more cost effective.

The IBM zEnterprise System (zEnterprise) is a perfect fit in this world of smarter computing, being both the next step in the evolution of System z leadership and a premier solution for centrally managed enterprise cloud environments. It is a true hybrid computing system comprised of virtualized heterogeneous resources that are integrated, managed as a single system, and optimized to your business objectives. The zEnterprise includes a central processing complex (CPC), either the IBM zEnterprise 196 (z196) or the new IBM zEnterprise 114 (z114), the zEnterprise BladeCenter Extension (zBX) with its integrated optimizers and/or select IBM blades, and the management fabric that ties it all together, the zEnterprise Unified Resource Manager (Unified Resource Manager).

Today IBM fulfills the Statement of Direction for the zBX and introduces support for Microsoft Windows on IBM System x blades as described in Hardware Announcement [111-078](#), dated April 12, 2011, "zEnterprise support for Microsoft Windows."

The zEnterprise ensemble is designed to simplify managing a heterogeneous system infrastructure. It does this through use of:

- Operational controls
- Virtual server life-cycle management
- Hypervisor management
- Energy management
- Network management
- Workload awareness and performance management
- Resource awareness

An ensemble node consists of the zEnterprise CPC and the optionally attached zEnterprise BladeCenter Extension (zBX) located within 25 meters. An ensemble consists of from one to eight ensemble nodes, at least one of which must include a zBX. The Unified Resource Manager provides advanced end-to-end management capabilities for the diverse systems in the ensemble.

The document "IBM BladeCenter HX5 (7873) planning information for the IBM zEnterprise System," document number ZSL03128-USEN, includes supported software and hardware configurations. It can be found at

[http://www.ibm.com/common/ssi/cgi-bin/ssialias?infotype=SA&subtype=WH&apname=STGE\\_ZS\\_ZS\\_USEN&htmlfid=ZSL03128USEN&attachment=ZSL03128USEN](http://www.ibm.com/common/ssi/cgi-bin/ssialias?infotype=SA&subtype=WH&apname=STGE_ZS_ZS_USEN&htmlfid=ZSL03128USEN&attachment=ZSL03128USEN)

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### IBM zEnterprise Unified Resource Manager enhancements

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#### Support for Microsoft Windows

Microsoft Windows is now a supported operating system running on select IBM BladeCenter HX5 (7873) blades installed in the IBM zEnterprise BladeCenter Extension Model 002, expanding access to an even wider scope of applications for integration between System z and System x blades for multi-tiered applications. Supported configurations and operating system levels can be found at

[http://www.ibm.com/common/ssi/cgi-bin/ssialias?infotype=SA&subtype=WH&apname=STGE\\_ZS\\_ZS\\_USEN&htmlfid=ZSL03128USEN&attachment=ZSL03128USEN](http://www.ibm.com/common/ssi/cgi-bin/ssialias?infotype=SA&subtype=WH&apname=STGE_ZS_ZS_USEN&htmlfid=ZSL03128USEN&attachment=ZSL03128USEN)

## **Application programming interface support**

Application programming interfaces (APIs) now provide access to Unified Resource Manager capabilities for inventory, provisioning, configuration, operational control, monitoring, and workload optimization of the heterogeneous physical and logical resources of a zEnterprise environment. The capabilities available using the APIs are consistent with their counterparts provided by the Hardware Management Console (HMC) user interface and may be exploited to enable discovery, monitoring, and provisioning use cases.

## **Dynamic discovery of storage resources**

The server administrator can trigger discovery of storage resources through the HMC user interface to aid in assigning storage resources to virtual servers.

## **New 1 Gbps optics for the IEDN Top of Rack switch**

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To accommodate installations which have a 1 Gbps infrastructure, we are making available 1000BASE-SX 850nm 550m SFP and 1000BASE-LX 1310nm 10km SFP optic modules for customer-managed data network ports J31 to J37 on the IEDN Top of Rack switch.

Ports J38 and J39 on each of the IEDN Top of Rack switches are reserved and should not be used. Any optics should be moved to available ports in the J31 to J37 range. This allows up to seven ports for the customer-managed data network on each switch.

## **New DataPower XI50z firmware support**

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DataPower XI50z users can now also take advantage of the following capabilities that were made available with DataPower version 4.0.1:

- Support for the WebSphere® Transformation Extender Pack for HL7 Version 4.3.2.1 used with IBM WebSphere Transformation Extender Version 8.3.0.4 with limitations on card settings.
- WebSphere MQ File Transfer Edition (MQFTE) URL Opener - Use the MQFTE URL Opener to support MQFTE integration with DataPower services.
- MQFTE Front Side Protocol Handler - Use the MQFTE Front Side Handler to handle MQFTE protocol communications with DataPower services.
- Support for WebSphere Service Registry and Repository (WSRR) 7.5.0.0.

DataPower XI50z users at firmware version 4.0.1 can now also take advantage of the following capabilities that were made available with DataPower version 3.8.2:

- Secure Cloud Connector - The Secure Cloud Connector (SCC) can provide secure workload solutions and leverage the power of cloud computing. The SCC provides secure tunnels between a DataPower appliance in an enterprise data center and an endpoint in the cloud. The SCC can verify the identity of a remote cloud instance and provide end-to-end encryption for a wide variety of network traffic between the cloud instance and an enterprise data center.
- Enhanced integration with IBM z/OS® Communications Server Sysplex Distributor - Supports an IPv6 control connection from the Sysplex Distributor to send and receive information about IPv6 Distributed DVIPAs and ports.
- Support for complex data types for Oracle data sources. TABLE, VARRAY, and OBJECT complex data types are supported. A new integration guide (Oracle database connectivity and complex SQL data types) has been added to the documentation to explain the usage scenarios of this functionality.
- Support for IBM Tivoli® Security Policy Manager version 7.1.0.2.
- Support for Microsoft Internet Explorer version 8.

The release notes for DataPower 3.8.1, 3.8.2, and 4.0.1 are available at

<http://www.ibm.com/support/docview.wss?uid=swg27018504>

## High Performance FICON for System z enhancements

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### Performance enhancements for QSAM, BPAM, and BSAM access methods

High Performance FICON for System z (zHPF) has been enhanced to support certain I/O transfers for workloads using QSAM, BPAM, and BSAM access methods. Significant I/O performance improvements are expected without the need for application changes. This builds upon existing zHPF support for VSAM, Extended Format sequential, zFS, and PDSE data sets and provides support for these QSAM, BPAM, and BSAM data set types when a new parameter is specified in the IGDSMSxx member of parmlib:

- Basic nonextended format physical sequential data sets
- Basic and large format sequential data sets

The zHPF enhancement for QSAM, BPAM, and BSAM access methods is exclusive to the zEnterprise servers and applies to all supported FICON features (CHPID type FC). It is supported by the IBM System Storage® DS8700 and DS8800 series and z/OS.

For more information, refer to the [Software requirements](#) section.

### Performance improvements for format writes

zHPF has been enhanced to support format writes. This capability applies to all of the same data set types that were originally supported by the Modified Indirect Data Address Word (MIDAW) facility and zHPF, in addition to QSAM, BPAM, and BSAM data sets described above. The performance value of these enhancements are highest for small blocks, which are typically used for databases.

DB2 utilities use format writes. Those utilities that load or restore data into a table space or index with a 4K page size are expected to experience the most benefit.

The zHPF enhancement for format writes is exclusive to the zEnterprise servers and applies to all supported FICON features (CHPID type FC). It is supported by the IBM System Storage DS8700 and DS8800 series and z/OS.

For more information, refer to the [Software requirements](#) section.

### Performance improvements for zHPF DB2 list prefetch in FICON Express8S environments

zHPF has been enhanced to provide improvements for DB2 list prefetch processing.

zHPF list prefetch is supported by the FICON Express4 and FICON Express8 features. However, those features limit the number of discontinuities that a single zHPF channel program can have to 22. If the number exceeds 22, z/OS splits the operation into two I/Os. This applies to 4K pages, since DB2 for z/OS typically reads 32x4K pages. The FICON Express8S features remove this limitation. This results in fewer I/Os when using the FICON Express8S features.

The zHPF enhancement for DB2 list prefetch is exclusive to the zEnterprise servers and applies to the FICON Express8S features (CHPID type FC) exclusively. It is supported by the IBM System Storage DS8700 and DS8800 series and z/OS.

For more information on IBM System Storage support of these zHPF enhancements, refer to Hardware Announcement [111-172](#), dated October 11, 2011, "IBM System Storage DS8000® series (M/T 242X) offers higher scalability, additional tiering capabilities, and additional drive options to address today's price/performance requirements."

For more information, refer to the [Software requirements](#) section.

## Prerequisites

The zHPF enhancements require one of the following storage prerequisites:

- IBM System Storage DS8700
  - level 7.6.2.xx.xx (bundle version 76.20.xxx.xx), or later
- IBM System Storage DS8800
  - level 7.6.2.xx.xx (bundle version 86.20.xxx.xx), or later

## GDPS extensions

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### ***GDPS support for the zEnterprise System***

With the zBX exploitation for distributed servers becoming more prevalent in production environments, IBM is enhancing GDPS, its automated end-to-end continuous availability / disaster recovery (CA / DR) solution with support for the zEnterprise environment. This builds upon the existing GDPS ability to:

- Manage data on distributed systems using its Open LUN Management
- Provide a business continuity solution across z/OS, z/VM, and Linux™ applications on System z (xDR)
- Provide coordinated planned/unplanned site switches using the Distributed Cluster Management (DCM) function

The GDPS support for the zEnterprise System includes:

- Disaster recovery with synchronous remote copy up to 300 km  
GDPS/PPRC on z/OS together with either Tivoli System Automation Application Manager (SA AppMan) or Veritas Cluster Server (VCS) on the zBX can be used to support a synchronous remote copy target up to 300 km away. This is an increase from the previously announced distance for SA AppMan of 100 km, allowing more flexibility where the DR site can be positioned. Note that the near-continuous availability capability is still limited to 200 fiber km.
- Application CA / DR at unlimited distance  
GDPS/XRC or GDPS/GM on z/OS together with VCS running on a zBX blade can be used to support an asynchronous remote copy target at unlimited distances away.

### ***xDR extension to support z/VSE***

GDPS extends its xDR capability to provide availability for z/VSE. Using heartbeat signals, GDPS can detect if a z/VSE guest under z/VM is unavailable and restart it in place.

### ***Reduced HyperSwap impact and improved scalability***

In addition to addressing the heterogeneous requirements with zBX, GDPS is reducing the impact of a HyperSwap event by having the disk subsystem proactively notify the host system that it is entering recovery processing in order to trigger a HyperSwap. This reduces outage time for certain events by allowing the former primary PPRC disk to complete its recovery while allowing host I/Os to proceed on the swapped-to disk. This is supported by the IBM System Storage DS8700 and DS8800 series.

Additionally, the IBM DS8700/DS8800 disk subsystems in the GDPS configuration will notify each of the attached hosts of PPRC suspension events at the Logical Subsystem (LSS) level instead of at the individual PPRCed device level, greatly reducing the message traffic between the disk subsystems and the attaching hosts and providing greater scalability during HyperSwap and Freeze events.

## **EAL5+ Common Criteria certification**

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IBM Processor Resource/Systems Manager™ (PR/SM™) logical partition (LPAR) for the zEnterprise 196 servers received a Common Criteria (CC) certification at an EAL5+ level on July 21, 2011. CC Certification at EAL5+ provides assurance that many disparate applications running in different operating environments in separate logical partitions on one zEnterprise 196 server will be secure and distinct from each other. The zEnterprise 196 servers now join the System z10® servers, and previous IBM mainframes, as the world's only servers with the highest level of hardware security certification, Common Criteria Evaluation Assurance Level 5+.

The certification is listed on BSI's website

<https://www.bsi.bund.de/ContentBSI/EN/Topics/Certification/newcertificates.html>

## **IBM Implementation Services for System z**

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Global Technology Services IBM Implementation Services for System z - zBX and Unified Resource Manager offering (6948-L66) will be enhanced to support Linux on System x with the zEnterprise BladeCenter Extension (zBX) infrastructure.

The offering will assist you with the planning, implementation, and deployment of the IBM zEnterprise BladeCenter Extension (zBX) and Unified Resource Manager infrastructure, enabling you to deploy on an integrated platform of System z, POWER7, and System x technologies. This service will help you to accelerate the adoption of IBM zEnterprise technology and realize the value faster.

For more information about the offering, please refer to

<http://www.ibm.com/services/us/en/it-services/server-product-services-for-system-z.html>

## **Availability and service**

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Review the [Warranty period](#) section of this announcement for further information about the increased support provided.

## **Accessibility by people with disabilities**

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A US Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

[http://www.ibm.com/able/product\\_accessibility/index.html](http://www.ibm.com/able/product_accessibility/index.html)

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

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The 2458 Model 002 is 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.

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## **Product positioning**

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The IBM zEnterprise System and its components, including the zEnterprise BladeCenter Extension (zBX), and the zEnterprise Unified Resource Manager (Unified Resource Manager) were introduced in July of 2010. The introduction of the zEnterprise offered the freedom to support smarter computing with an innovative hybrid computing platform and management construct unmatched in the industry.

The zEnterprise is a true "system of systems," capable of integrating and centrally managing multi-tier applications running across z/OS, Linux on System z, z/

VSE, z/VM, AIX®, Linux on IBM System x, and now Microsoft Windows operating environments. This integration extends the gold standards of the mainframe - superior manageability, governance, and service quality - to workloads connected to System z. This revolutionary, yet simplified, multi-architecture design helps drive operational efficiencies in deployment, integration, and management. It is designed to enhance the freedom and ease of selecting the right architecture and operating system for application deployment within a common management infrastructure for both mainframe and distributed-system resources.

The zBX can host and integrate special purpose workload optimizers like the IBM Smart Analytics Optimizer for DB2 for z/OS, V1.1 and WebSphere DataPower Integration Appliance XI50 for zEnterprise (DataPower XI50z), and select general purpose blades including POWER7 blades (running AIX) and IBM System x blades (running Linux and now Microsoft Windows). Managing everything is the Unified Resource Manager. It can help to deliver and facilitate end-to-end virtualization and resource management according to individual workload requirements.

Today's announcement strengthens the zEnterprise offering by allowing a broader set of applications to run on the zEnterprise, which now includes Microsoft Windows. It further extends the use of IBM System z as a hosting environment for your traditional work as well as home grown or thousands of packaged applications available from ISVs. Front end applications that need access to centralized data serving would be a good fit for running on the System x blades, as well as applications that are a front end to core CICS® or IMS™ transaction processing such as IBM WebSphere.

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## **Statement of general direction**

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### **End of marketing of external Ethernet switch**

The IBM zEnterprise 196 and zEnterprise 114 will be the last servers to offer ordering of the external Ethernet switch.

### **Removal of modem support**

Beginning with the next System z server after the IBM zEnterprise 196 and 114, the new Hardware Management Console (HMC) is intended to no longer provide modem support. As a result, modems will not be allowed for use with the Remote Support Facility (RSF), and the dial-out External Time Source (ETS) option of Server Time Protocol (STP). Only broadband connections will be allowed. The new HMC driver is planned to provide enhanced security by providing Network Time Protocol (NTP) authentication support, when an NTP server is accessed to get accurate time for the STP Coordinated Timing Network (CTN).

Note that the above changes will affect new orders of z196 and z114, as well as upgrades of HMC driver levels to this new version.

Enterprises using modems for RSF or STP should plan on migrating to broadband connections. The currently available NTP server option for ETS, as well as Internet time services available using broadband connections, can be used to provide the same degree of accuracy as dial-up time services.

### **HMC z/VM Tower systems management support**

z/VM 6.2 is intended to be the last release supported by the HMC z/VM Tower systems management support originally introduced with System z9®. The alternative implementation for virtual server and virtual resource management for z/VM V6 continues to be supported by the zEnterprise Unified Resource Manager on a zEnterprise server or later.

### **GDPS/Global Mirror clusters managed by SA AppMan**

GDPS plans to enhance its Distributed Cluster Management (DCM) support for IBM Tivoli System Automation Application Manager (SA AppMan) by extending it

to the GDPS/Global Mirror (GM) offering in addition to the GDPS/PPRC offering available today. This will allow for coordinated disaster recovery across System z and distributed servers at unlimited distances. With GDPS/GM managing replication of data for both System z and the distributed servers under SA AppMan control, this solution can also provide cross-platform data consistency across the System z and distributed servers.

### **GDPS DCM support for stand-alone distributed servers**

GDPS plans on enhancing its DCM support for SA AppMan by extending it to stand-alone distributed servers, building upon the support for clustered distributed servers available today. This capability can benefit distributed servers running on a zBX or on other distributed platforms, which are not members of a clustered network, and will allow continuous availability and disaster recovery across heterogeneous platforms. Support is planned for GDPS/PPRC and GDPS/GM.

### **GRS ring to support FICON channels**

Many customers are migrating from ESCON® channels to FICON channels, and in Hardware Announcement [111-136](#), dated July 12, 2011, "The IBM zEnterprise 114 - Freedom by Design," IBM announced that the zEnterprise 196 (z196) and zEnterprise 114 (z114) generation of servers is intended to be the last to support ESCON channels. Although IBM recommends that you use GRS Star, and for GRS Ring environments recommends XCF communications for CTC management, IBM intends to extend z/OS Global Resource Serialization (GRS) Ring function to natively support FICON channel-to-channel (CTC) connections in the z/OS release following z/OS V1.13, and to make this support available on z/OS V1.11, V1.12, and V1.13.

### **Revision of FICON Express4 support on future System z servers**

In previous statements of direction IBM stated that the IBM zEnterprise 196 and IBM zEnterprise 114 would be the last servers to support FICON Express4 channels. IBM now plans to support carry forward of FICON Express4 10KM LX (#3321) and FICON Express4 SX (#3322) into the server after the zEnterprise System. Refer to Hardware Announcements [110-170](#), dated July 22, 2010, and [111-136](#), dated July 12, 2011.

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion. Information regarding potential future products is intended to outline our general product direction and it 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 our products remains at our sole discretion.

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## **Reference information**

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For more information on the IBM zEnterprise 196, refer to Hardware Announcement [111-121](#), dated July 12, 2011, "IBM zEnterprise 196 enhancements deliver faster access to data."

For more information on the IBM zEnterprise 114, refer to Hardware Announcement [111-136](#), dated July 12, 2011, "The IBM zEnterprise 114 - A new dimension in computing."

For more information on the IBM zEnterprise BladeCenter Extension (zBX) support for System x, refer to Hardware Announcement [111-129](#), dated July 12, 2011, "IBM zEnterprise BladeCenter Extension support for select IBM BladeCenter HX5 blades."

For more information on the zBX, refer to Hardware Announcement [110-177](#), dated July 22, 2010, "IBM zEnterprise BladeCenter Extension (zBX)."

For more information on z/VM V6.2, refer to Software Announcement [211-409](#), dated October 12, 2011, "z/VM V6.2 - Accelerate the journey to smarter computing with multi-system virtualization and virtual server mobility."

For more information on IBM System Storage support for zHPF enhancements, refer to Hardware Announcement [111-172](#), dated October 11, 2011, "IBM System Storage DS8000 series (M/T 242X) offers higher scalability, additional tiering capabilities, and additional drive options to address today's price/performance requirements."

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## Product number

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Description	Machine		Feature
	Type	Model	
IBM zEnterprise BladeCenter Extension	2458	002	
Service Docs Optional Print			0033
1000BASE-LX 1310nm 10km SFP			0634
1000BASE-SX 850nm 550m SFP			0635

Description	Machine		Feature
	Type	Model	
IBM zEnterprise 114	2818	M05	
IBM zEnterprise 114	2818	M10	
Service Docs Optional Print			0033

Description	Machine		Feature
	Type	Model	
IBM zEnterprise 196	2817	M15	
IBM zEnterprise 196	2817	M32	
IBM zEnterprise 196	2817	M49	
IBM zEnterprise 196	2817	M66	
IBM zEnterprise 196	2817	M80	
Service Docs Optional Print			0033

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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® ID and password are required (use IBM ID).

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=111-167>

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## Education support

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Visit the following website for additional information

<http://www.ibm.com/training/us>

Call IBM IT Education Services at 800-IBM-TEACH (426-8322) for catalogs, schedules, and enrollments.

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## Publications

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The following publications are available now in the *Library* section of Resource Link®:

Title	Order number
zEnterprise BladeCenter Extension Installation Manual - Physical Planning 2458-002	GC27-2611
zEnterprise 196 System Overview	SA22-1086
zEnterprise 114 System Overview	SA22-1087
System z Functional Matrix	ZSW0-1335

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

Title	Order number
zEnterprise System Hardware Management Console Operations Guide for Ensembles	SC27-2615
System z Hardware Management Console Web Services API	SC27-2616
System z Hardware Management Console Operations Guide	SC28-6905
zEnterprise System Support Element Operations Guide	SC28-6906

The following publications are shipped with the product and available in the *Library* section of Resource Link:

Title	Order number
zEnterprise BladeCenter Extension Model 002 Installation Manual	GC27-2610
zEnterprise BladeCenter Extension Service Guide	GC28-6884

Publications for zBX can be obtained at Resource Link by accessing the following website

<http://www.ibm.com/servers/resourcelink>

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

The following Redpaper publication provides additional information:

Title	Order number
Using IBM System z as the foundation for your information management architecture	REDP4606

For other IBM Redbooks® publications, refer to

<http://www.redbooks.ibm.com/>

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## Services

### Global Technology Services

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 visit

<http://www.ibm.com/services/>

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

<http://www.ibm.com/services/continuity>

For details on education offerings related to specific products, visit

<http://www.ibm.com/services/learning/index.html>

Select your country, and then select the product as the category.

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## Technical information

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### Specified operating environment

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#### *Hardware requirements*

**You should review the PSP buckets for minimum Machine Change Levels (MCLs) and software PTF levels before installing the blades. To support new functions and features, MCLs and PTFs are required.**

Descriptions of the MCLs and PTFs relating to the Unified Resource Manager are available now through Resource Link.

Access Resource Link at

<http://www.ibm.com/servers/resourcelink>

Select:

- Fixes, Hardware, Exception Letters
- Click on zEnterprise 196 or zEnterprise 114
- Click on Driver xx Customer Exception Letter

The most recent driver information is at the top of the list.

#### **Peripheral hardware and device attachments**

The IBM zEnterprise BladeCenter Extension supports the use of the same set of external devices as the IBM BladeCenter HX5 (7873). More information on the HX5 can be found at Hardware Announcement [111-053](#), dated April 06, 2011, "IBM BladeCenter HX5 is a scalable blade server designed to provide new levels of utilization, performance, and reliability for compute- and memory-intensive workloads."

#### *Software requirements*

**Note:** Refer to the z/OS, z/VM, z/VSE subsets of the xxxxDEVICE Preventive Service Planning (PSP) bucket prior to installing a 2458.

The zEnterprise server must be at driver level 93 or greater with the Unified Resource Manager support available on December 16, 2011, for managing the z/VM V6.2 hypervisor from the Unified Resource Manager.

The zEnterprise server must be at driver level 93 or greater with the Unified Resource Manager support available on December 16, 2011, to support the use of AIX 7.1 as an operating system on the POWER7 blades.

The System x support for zBX does not require any additional software support on the zEnterprise beyond what is necessary to support the zBX.

A listing of operating systems supported on the System x can be found in

[http://www.ibm.com/common/ssi/cgi-bin/ssialias?infotype=SA&subtype=WH&appname=STGE\\_ZS\\_ZS\\_USEN&htmlfid=ZSL03128USEN&attachment=ZSL03128USEN](http://www.ibm.com/common/ssi/cgi-bin/ssialias?infotype=SA&subtype=WH&appname=STGE_ZS_ZS_USEN&htmlfid=ZSL03128USEN&attachment=ZSL03128USEN)

Further details on z/VM requirements can be found in

<http://www.vm.ibm.com/service/vmrequirm.html>

**High Performance FICON for System z (zHPF) enhancement for QSAM, BPAM, and BSAM access methods** as well as format writes with all supported FICON features (CHPID type FC) on zEnterprise servers requires at a minimum:

- z/OS V1.13 with PTFs.
- z/OS V1.12 and V1.11 with PTFs.

**zHPF enhancement for DB2 list prefetch** with FICON Express8S features (CHPID type FC) on zEnterprise servers requires at a minimum:

- z/OS V1.13.
- z/OS V1.12 and V1.11 with PTFs.

## **Planning information**

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### ***Customer responsibilities***

Information on customer responsibilities for site preparation can be found in the Library section of Resource Link at

<http://www.ibm.com/servers/resourcelink>

### ***Cable orders***

#### **Cabling responsibilities**

Fiber optic cables, cable planning, labeling, and placement are all customer responsibilities for new installations and upgrades. Fiber optic conversion kits and Mode Conditioning Patch (MCP) cables are not orderable as features on an IBM zEnterprise BladeCenter Extension. Installation Planning Representatives (IPRs) and System Service Representatives (SSRs) will not perform the fiber optic cabling tasks without a services contract.

The following tasks are required to be performed by the customer prior to machine installation:

- All fiber optic cable planning.
- All purchasing of correct fiber optic cables.
- All installation of any required Mode Conditioning Patch (MCP) cables.
- All installation of any required Conversion Kits.
- All routing of fiber optic cables to correct floor cutouts for proper installation to server.

Additional service charges may be incurred during the server installation if the above cabling tasks are not accomplished as required.

For further details also refer to the *Installation Manual for Physical Planning (IMPP)*, available on Resource Link.

**Note:** IBM Site and Facilities Services can satisfy your fiber optic as well as your copper cabling requirements.

### ***Installability***

The average installation time for an IBM zEnterprise BladeCenter Extension is approximately 13 installer hours. This does not include planning hours. This assumes the Pre-Installation Configuration Service, a full System Assurance Product Review, and implementation of the cable services have been performed. See your IBM representative for details on these services.

## **Security, auditability, and control**

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The IBM zEnterprise BladeCenter Extension uses the security and auditability features and functions of host hardware, host software, and application software.

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

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## **IBM Electronic Services**

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IBM has transformed its delivery of hardware and software support services to help you achieve higher system availability. Electronic Services is a web-enabled solution that offers an exclusive, no-additional-charge enhancement to the service and support available for IBM servers. These services are designed to provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but complementary, elements: Electronic Services news page and Electronic Services Agent.

The Electronic Services news page is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. The news page enables you to gain easier access to IBM resources for assistance in resolving technical problems.

The Electronic Service Agent™ is no-additional-charge software that resides on your server. It monitors events and transmits system inventory information to IBM on a periodic, client-defined timetable. The Electronic Service Agent automatically reports hardware problems to IBM. Early knowledge about potential problems enables IBM to deliver proactive service that may result in higher system availability and performance. In addition, information collected through the Service Agent is made available to IBM service support representatives when they help answer your questions or diagnose problems. Installation and use of IBM Electronic Service Agent for problem reporting enables IBM to provide better support and service for your IBM server.

To learn how Electronic Services can work for you, visit

<http://www.ibm.com/support/electronic>

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## **Terms and conditions**

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### ***Warranty period***

IBM intends to provide improved System x blade service characteristics when those blades are installed in a zBX compared to the standard System x service terms, just as IBM intends to deliver the enhanced System z model of service and support for all IBM blade products that are installed in and supported for use in the zBX. The enhanced service and support for System x blades is intended to be available when the blades are installed in a zBX and activated via their unique System z enablement feature code. This service model includes 24x7 on-site support, including FRU replacement by the client's local Service Support Representative (SSR), during the zBX's warranty period. As such, a customer who installs supported IBM blades and acquires the requisite feature code on the zBX will receive the benefits of the zBX warranty service. This practice will not apply if the blade has been removed from the zBX when a warranty service claim is submitted.

Warranty service upgrades and post-warranty IBM maintenance contracts should not be purchased by customers when ordering an IBM blade for installation in a zBX since System z is providing the higher level of service for blades while they are installed in a zBX.

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## Pricing

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For all local charges, contact your IBM representative.

Description	Mach Type	Mod	Feat	EW Fe	MMMC Indicator	Init/ MES
zBX	2458	002			X	
Service Docs	Optional	Print	0033			Both
1000BASE-LX	1310nm	10km	SFP	0634		Both
1000BASE-SX	850nm	550m	SFP	0635		Both

Description	Mach Type	Mod	Feat	EW Fe	MMMC Indicator	Init/ MES
IBM zEnterprise 114	2818					
		M05			X	
		M10			X	
Service Docs	Optional	Print	0033			Both

Description	Mach Type	Mod	Feat	EW Fe	MMMC Indicator	Init/ MES
IBM zEnterprise 196	2817					
		M15			X	
		M32			X	
		M49			X	
		M66			X	
		M80			X	
Service Docs	Optional	Print	0033			Both

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<http://www.ibm.com/planetwide/us/>

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## Corrections

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**(Corrected on October 21, 2011)**

A planned availability date was added for service documentation optional print.