Ibm Configuration And Options Guide

The popularity of the Internet and the affordability of IT hardware and software have resulted in an explosion of applications, architectures, and platforms. Workloads have changed. Many applications, including mission-critical ones, are deployed on a variety of platforms, and the System z® design has adapted to this change. It takes into account a wide range of factors, including compatibility and investment protection, to match the IT requirements of an enterprise. This IBM® Redbooks® publication discusses the IBM zEnterprise System, an IBM scalable mainframe server. IBM is taking a revolutionary approach by integrating separate platforms under the well-proven System z hardware management capabilities, while extending System z qualities of service to those platforms. The zEnterprise System consists of the IBM zEnterprise 114 central processor complex, the IBM zEnterprise Unified Resource Manager, and the IBM zEnterprise BladeCenter® Extension. The z114 is designed with improved scalability, performance, security, resiliency, availability, and virtualization. The z114 provides up to 18% improvement in uniprocessor speed and up to a 12% increase in total system capacity for z/OS®, z/VM®, and Linux on System z over the z10TM Business Class (BC). The zBX infrastructure works with the z114 to

enhance System z virtualization and management through an integrated hardware platform that spans mainframe, POWER7TM, and System x technologies. The federated capacity from multiple architectures of the zEnterprise System is managed as a single pool of resources, integrating system and workload management across the environment through the Unified Resource Manager. This book provides an overview of the zEnterprise System and its functions, features, and associated software support. Greater detail is offered in areas relevant to technical planning. This book is intended for systems engineers, consultants, planners, and anyone wanting to understand the zEnterprise System functions and plan for their usage. It is not intended as an introduction to mainframes. Readers are expected to be generally familiar with existing IBM System z technology and terminology.

This IBM® Redbooks® publication provides system administrators and developers with the knowledge to configure an IBM WebSphere® Application Server Version 8 runtime environment, to package and deploy applications, and to perform ongoing management of the WebSphere environment. As one in a series of IBM Redbooks publications and IBM Redpapers publications for V8, the entire series is designed to give you in-depth information about key WebSphere Application Server features. In this book, we provide a detailed exploration of the

WebSphere Application Server V8 runtime administration process. This book includes configuration and administration information for WebSphere Application Server V8 and WebSphere Application Server Network Deployment V8 on distributed platforms and WebSphere Application Server for z/OS® V8. The following publications are prerequisites for this book: WebSphere Application Server V8.0 Technical Overview, REDP-4756 IBM WebSphere Application Server V8 Concepts, Planning, and Design Guide, SG24-7957

This IBM® Redbooks® publication provides information about the concepts, planning, and design of IBM WebSphere® Application Server V8 environments. The target audience of this book is IT architects and consultants who want more information about the planning and designing of application-serving environments, from small to large, and complex implementations. This book addresses the packaging and features in WebSphere Application Server V8 and highlights the most common implementation topologies. It provides information about planning for specific tasks and components that conform to the WebSphere Application Server environment. Also in this book are planning guidelines for WebSphere Application Server V8 and WebSphere Application Server Network Deployment V8 on distributed platforms and for WebSphere Application Server for z/OS® V8.

This book contains information about migration considerations when moving from previous releases.
This IBM® Redbooks publication introduces and describes the IBM Elastic Storage® Server 3000 (ESS 3000) as a scalable, high-performance data and file management solution. The solution is built on proven IBM Spectrum® Scale technology, formerly IBM General Parallel File System (IBM GPFS). IBM Elastic Storage System 3000 is an all-Flash array platform. This storage platform uses NVMe-attached drives in ESS 3000 to provide significant performance improvements as compared to SAS-attached flash drives. This book provides a technical overview of the ESS 3000 solution and helps you to plan the installation of the environment. We also explain the use cases where we believe it fits best. Our goal is to position this book as the starting point document for customers that would use ESS 3000 as part of their IBM Spectrum Scale setups. This book is targeted toward technical professionals (consultants, technical support staff, IT Architects, and IT Specialists) who are responsible for delivering cost-effective storage solutions with ESS 3000.
This IBM® Redbooks® publication describes the positioning of the IBM Systems Director in the complete management range. It also compares the IBM Systems Director with the IBM Flex Systems Manager (FSM) and describes the environments for

which each tool is best suited. This publication helps you plan, install, tailor, and configure the IBM Systems Director on different platforms. It contains information about required system resources and which network ports are used. It shows how to use the Workload Estimator to select the appropriate hardware for IBM Systems Director server and provides information about the IBM Systems Director Editions. Best practices are covered for the basic management tasks that are available in IBM Systems Director, including how to perform discovery; how to collect inventory on discovered resources; how to deploy agent, driver, and firmware updates; how to manage hardware events; and other miscellaneous tasks. An overview of best practices is provided for using IBM Systems Director VMControlTM. Systems Director VMControl is a cross-platform product that assists you in rapidly deploying virtual appliances to create virtual servers that are configured with the operating system and software applications that you want. It also enables you to group resources into system pools, which enable you to centrally manage and control the different workloads in your environment. The following plug-in offerings are described: Energy monitoring and management features offered by IBM Systems Director Active Energy ManagerTM along with the best practice, which needs to be followed in using the IBM Systems Director Active Energy

Manager. The IBM AIX® Profile Manager is a tool that can help implement and monitor the security of all AIX servers in a production environment but also implement and monitor the system compliance of those AIX servers. Best practices and the most important questions to ask before creating Workload Partition Manager (WPAR) and WPAR Manager infrastructure. In addition, how you can manage and relocate WPARs using WPAR Manager graphical interface and the command-line interface. Network Control basic functionalities and how to plan for Network Control deployments and also a number of common scenarios with best practices. The IBM Systems Director Service and Support Manager describes how to set up and how to handle serviceable events. Best practices for the Storage Monitoring and Management capabilities offered by IBM Systems Director server. This book is for IBM IT specialists and IT architects, IBM Business Partners, and clients, who are utilizing or considering implementing IBM Systems Director.

This IBM® Redbooks® publication consolidates, in one document, detailed descriptions of the hardware configurations and options offered as part of the IBM System Storage DS5000 families of products. This edition covers updates and additional functions available with the IBM System Storage DS® Storage Manager Version 10.77 (firmware level 7.77). This book presents the concepts and functions used in

planning and managing the storage servers, such as multipathing and path failover. The book offers a step-by-step guide to using the Storage Manager to create arrays, logical drives, and other basic (as well as advanced) management tasks. This publication also contains practical information about diagnostics and troubleshooting, and includes practical examples of how to use scripts and the command-line interface. This publication is intended for customers, IBM Business Partners, and IBM technical professionals who want to learn more about the capabilities and advanced functions of the DS5000 series of storage servers with Storage Manager Software V10.77. It also targets those who have a DS5000 storage subsystem and need detailed advice about how to configure it. This book is designed specifically to address the hardware features and configuration of the IBM System Storage DS5000 family and can be used in conjunction with the following IBM Redbooks publications: IBM System Storage DS5000 Series Implementation and Best Practices Guide, SG24-8024 IBM System Storage DS Storage Manager Copy Services Guide, SG24-7822

This IBM® Redbooks® publication describes the features and functions the latest member of the IBM Z® platform, the IBM z15TM Model T02 (machine type 8562). It includes information about the IBM z15 processor design, I/O innovations, security features,

and supported operating systems. The z15 is a state-of-the-art data and transaction system that delivers advanced capabilities, which are vital to any digital transformation. The z15 is designed for enhanced modularity, which is in an industry standard footprint. This system excels at the following tasks: Making use of multicloud integration services Securing data with pervasive encryption Accelerating digital transformation with agile service delivery Transforming a transactional platform into a data powerhouse Getting more out of the platform with IT Operational Analytics Accelerating digital transformation with agile service delivery Revolutionizing business processes Blending open source and Z technologies This book explains how this system uses new innovations and traditional Z strengths to satisfy growing demand for cloud, analytics, and open source technologies. With the z15 as the base, applications can run in a trusted, reliable, and secure environment that improves operations and lessens business risk.

This IBM® Redbooks® publication describes the features and functions the latest member of the IBM Z® platform, the IBM z15TM (machine type 8561). It includes information about the IBM z15 processor design, I/O innovations, security features, and supported operating systems. The z15 is a state-of-the-art data and transaction system that delivers advanced capabilities, which are vital to any digital

transformation. The z15 is designed for enhanced modularity, which is in an industry standard footprint. This system excels at the following tasks: Making use of multicloud integration services Securing data with pervasive encryption Accelerating digital transformation with agile service delivery Transforming a transactional platform into a data powerhouse Getting more out of the platform with IT Operational Analytics Accelerating digital transformation with agile service delivery Revolutionizing business processes Blending open source and Z technologies This book explains how this system uses new innovations and traditional Z strengths to satisfy growing demand for cloud, analytics, and open source technologies. With the z15 as the base, applications can run in a trusted, reliable, and secure environment that improves operations and lessens business risk.

This IBM® RedpaperTM publication provides a broad understanding of a new architecture of the IBM Power System E980 (9080-M9S) server that supports IBM AIX®, IBM i, and Linux operating systems (OSes). The objective of this paper is to introduce the major innovative Power E980 offerings and relevant functions: The IBM POWER9TM processor, which is available at frequencies of 3.55 - 4.0 GHz. Significantly strengthened cores and larger caches. Supports up to 64 TB memory. Integrated I/O subsystem and hot-pluggable Peripheral Component Interconnect Express (PCIe) Gen4 slots, double the bandwidth of Gen3 I/O slots. Supports

EXP12SX and ESP24SX external disk drawers, which have 12 Gb SAS interfaces and double the existing EXP24S drawer bandwidth. New IBM EnergyScaleTM technology offers new variable processor frequency modes that provide a significant performance boost beyond the static nominal frequency. This publication is for professionals who want to acquire a better understanding of IBM Power SystemsTM products. The intended audience includes the following roles: Clients Sales and marketing professionals Technical support professionals IBM Business Partners Independent software vendors (ISVs) This paper expands the current set of IBM Power Systems documentation by providing a desktop reference that offers a detailed technical description of the Power E980 server. This paper does not replace the current marketing materials and configuration tools. It is intended as an extra source of information that, together with existing sources, can be used to enhance your knowledge of IBM server solutions.

The popularity of the Internet and the affordability of information technology (IT) hardware and software have resulted in an explosion dramatic increase in the number of applications, architectures, and platforms. Workloads have changed. Many applications, including mission-critical ones, are deployed on a variety of platforms, and the IBM® System z® design has adapted to this change. It takes into account a wide range of factors, including compatibility and investment protection, to match the IT requirements of an enterprise. This IBM Redbooks® publication provides information about the IBM

zEnterprise® BC12 (zBC12), an IBM scalable mainframe server. IBM is taking a revolutionary approach by integrating separate platforms under the well-proven System z hardware management capabilities, while extending System z qualities of service to those platforms. The zEnterprise System consists of the zBC12 central processor complex, the IBM zEnterprise Unified Resource Manager, and the IBM zEnterprise BladeCenter® Extension (zBX). The zBC12 is designed with improved scalability, performance, security, resiliency, availability, and virtualization. The zBC12 provides the following improvements over its predecessor, the IBM zEnterprise 114 (z114): Up to a 36% performance boost per core running at 4.2 GHz Up to 58% more capacity for traditional workloads Up to 62% more capacity for Linux workloads The zBX infrastructure works with the zBC12 to enhance System z virtualization and management through an integrated hardware platform that spans mainframe, IBM POWER7®, and IBM System x® technologies. The federated capacity from multiple architectures of the zEnterprise System is managed as a single pool of resources, integrating system and workload management across the environment through the Unified Resource Manager. This book provides an overview of the zBC12 and its functions, features, and associated software support. Greater detail is offered in areas relevant to technical planning. This book is intended for systems engineers, consultants, planners, and anyone who wants to understand zEnterprise System functions and plan for their usage. It is not intended as an

introduction to mainframes. Readers are expected to be generally familiar with existing IBM System z technology and terminology.

The IBM® Hardware Management Console (HMC) provides to systems administrators a tool for planning, deploying, and managing IBM Power SystemsTM servers. This IBM Redbooks® publication is an extension of IBM Power Systems HMC Implementation and Usage Guide, SG24-7491 and also merges updated information from IBM Power Systems Hardware Management Console: Version 8 Release 8.1.0 Enhancements, SG24-8232. It explains the new features of IBM Power Systems Hardware Management Console Version V8.8.1.0 through V8.8.4.0. The major functions that the HMC provides are Power Systems server hardware management and virtualization (partition) management. Further information about virtualization management is in the following publications: IBM PowerVM Virtualization Managing and Monitoring, SG24-7590 IBM PowerVM Virtualization Introduction and Configuration, SG24-7940 IBM PowerVM Enhancements What is New in 2013, SG24-8198 IBM Power Systems SR-IOV: Technical Overview and Introduction, REDP-5065 The following features of HMC V8.8.1.0 through HMC V8.8.4.0 are described in this book: HMC V8.8.1.0 enhancements HMC V8.8.4.0 enhancements System and Partition Templates HMC and IBM PowerVM® Simplification Enhancement Manage Partition Enhancement Performance and Capacity Monitoring HMC V8.8.4.0 upgrade changes

IBM® Systems Director is a platform management

foundation that streamlines the way that physical and virtual systems are managed. Using industry standards, IBM Systems Director supports multiple operating systems and virtualization technologies. This paper provides guidance and preferred practices about how to install and configure IBM Systems Director Version 6.3. Also, installation guidance, fundamental topics, such as discovery and inventory, and more advanced topics, such as troubleshooting and automation, are covered. This paper is meant to be a partner to the comprehensive documentation in the IBM Systems Director Information Center. This paper is aimed at IT specialists who are planning to install and configure IBM Systems Director on Microsoft Windows, Linux, or IBM AIX®.

As we all know, large ocean going ships never collide with icebergs. However, occasionally life deals out some unexpected pleasures for us to cope with. Surviving any disaster in life is usually a lot easier if you have prepared adequately by taking into account the likely problems, solutions, and their implementation. In this IBM Redbooks publication, we limit ourselves to those situations in which it is likely that a SAN will be deployed. We present the IBM SAN portfolio of products, going a little under the surface to show the fault tolerant features that they utilize, and then describe solutions with all these features taken into account. Each of these solutions was built on practical experience, in some cases with cost in mind, in some cases with no cost in mind. Any well-thought-out SAN design will have taken every single one of these concerns into account, and

either formulated a solution for it, or ignored it, but nonetheless understanding the potential exposure. With these points in mind, in this book we have two objectives: to position the IBM SAN products that are currently in our portfolio; and to show how those products can be configured together to build a SAN that not only allows you to survive most forms of disaster, but also provides performance benefits. So, make sure that you know what to do if you hit an iceberg!

The popularity of the Internet and the affordability of IT hardware and software have resulted in an explosion of applications, architectures, and platforms. Workloads have changed. Many applications, including mission-critical ones, are deployed on a variety of platforms, and the System z® design has adapted to this change. It takes into account a wide range of factors, including compatibility and investment protection, to match the IT requirements of an enterprise. The zEnterprise System consists of the IBM zEnterprise 196 central processor complex, the IBM zEnterprise Unified Resource Manager, and the IBM zEnterprise BladeCenter® Extension. The z196 is designed with improved scalability, performance, security, resiliency, availability, and virtualization. The z196 Model M80 provides up to 1.6 times the total system capacity of the z10TM EC Model E64, and all z196 models provide up to twice the available memory of the z10 EC. The zBX infrastructure works with the z196 to enhance System z virtualization and management through an integrated hardware platform that spans mainframe, POWER7TM, and System x® technologies. Through the Unified Resource

Manager, the zEnterprise System is managed as a single pool of resources, integrating system and workload management across the environment. This IBM® Redbooks® publication provides an overview of the zEnterprise System and its functions, features, and associated software support. Greater detail is offered in areas relevant to technical planning. This book is intended for systems engineers, consultants, planners, and anyone wanting to understand the zEnterprise System functions and plan for their usage. It is not intended as an introduction to mainframes. Readers are expected to be generally familiar with existing IBM System z technology and terminology. The changes to this edition are based on the System z hardware announcement dated July 12, 2011.

This IBM® Redbooks® publication provides best practice guidance for planning, installing, configuring, and employing the IBM TS7600 ProtecTIER® family of products. It provides the latest best practices for the practical application of ProtecTIER Software Version 3.4. This latest release introduces the new ProtecTIER Enterprise Edition TS7650G DD6 model high performance server. This book also includes information about the revolutionary and patented IBM HyperFactor® deduplication engine, along with other data storage efficiency techniques, such as compression and defragmentation. The IBM System Storage® TS7650G ProtecTIER Deduplication Gateway and the IBM System Storage TS7620 ProtecTIER Deduplication Appliance Express are disk-based data storage systems: The Virtual Tape Library (VTL) interface is the foundation of

ProtecTIER and emulates traditional automated tape libraries. For your existing ProtecTIER solution, this guide provides best practices and suggestions to boost the performance and the effectiveness of data deduplication with regards to your application platforms for your VTL and FSI (systems prior to version 3.4). When you build a ProtecTIER data deduplication environment, this guide can help IT architects and solution designers plan for the best option and scenario for data deduplication for their environments. This book can help you optimize your deduplication ratio, while reducing the hardware, power and cooling, and management costs. This Redbooks publication provides expertise that was gained from an IBM ProtecTIER System Client Technical Specialist (CTS), Development, and Quality Assurance teams. This planning should be done by the Sales Representative or IBM Business Partner, with the help of an IBM System CTS or IBM Solution Architect.

IBM® Cloud Private is an application platform for developing and managing containerized applications across hybrid cloud environments, on-premises and public clouds. It is an integrated environment for managing containers that includes the container orchestrator Kubernetes, a private image registry, a management console, and monitoring frameworks. This IBM Redbooks covers tasks performed by IBM Cloud Private system administrators such as installation for high availability, configuration, backup and restore, using persistent volumes, networking, security, logging and monitoring. Istio integration, troubleshooting and so on.

As part of this project we also developed several code examples and you can download those from the IBM Redbooks GitHub location: https://github.com/IBMRedbooks. The authors team has many years of experience in implementing IBM Cloud Private and other cloud solutions in production environments, so throughout this document we took the approach of providing you the recommended practices in those areas. If you are an IBM Cloud Private system administrator, this book is for you. If you are developing applications on IBM Cloud Private, you can see the IBM Redbooks publication IBM Cloud Private Application Developer's Guide, SG24-8441.

This IBM® Redbooks® publication represents a compilation of best practices for deploying and configuring the IBM System Storage® DS5000 Series family of products. This book is intended for IBM technical professionals, Business Partners, and customers responsible for the planning, deployment, and maintenance of the IBM System Storage DS5000 Series family of products. We realize that setting up DS5000 Storage Servers can be a complex task. There is no single configuration that will be satisfactory for every application or situation. First, we provide a conceptual framework for understanding the hardware in a Storage Area Network. Then, we offer our guidelines, hints, and tips for the physical installation, cabling, and zoning, using the Storage Manager setup tasks. Next, we provide a quick guide to help you install and

configure the DS5000 using best practices. After that, we turn our attention to the performance and tuning of various components and features, including numerous guidelines. We look at performance implications for various application products such as IBM DB2®, Oracle, IBM Tivoli® Storage Manager, Microsoft SQL server, and in particular, Microsoft Exchange server. Then we review the various tools available to simulate workloads and to measure, collect, and analyze performance data. We also consider the IBM AIX® environment, including IBM High Availability Cluster Multiprocessing (HACMPTM) and IBM General Parallel File System (GPFSTM). This edition of the book also includes guidelines for managing and using the DS5000 with the IBM System Storage SAN Volume Controller (SVC) and IBM Storwize® V7000.

This IBM® Redbooks® publication provides options and best practices for deploying SAS Viya 3.5 on IBM POWER9TM servers. SAS Viya is a complex set of artificial intelligence (AI) and analytics solutions that require a properly planned infrastructure to meet the needs of the data scientists, business analysts, and application developers who use Viya capabilities in their daily work activities. Regardless of the user role, the underlying infrastructure matters to ensure performance expectations and service level agreement (SLA) requirements are met or exceeded.

Although the general planning process is similar for deploying SAS Viya on any platform, key IBM POWER9 differentiators must be considered to ensure that an optimized infrastructure deployment is achieved. This guide provides useful information that is needed during the planning, sizing, ordering, installing, configuring, and tuning phases of your SAS Viya deployment on POWER9 processor-based servers. This book addresses topics for IT architects, IT specialists, developers, sellers, and anyone who wants to implement SAS Viya 3.5 on IBM POWER9 servers. Moreover, this publication provides documentation to transfer the how-to-skills to the technical teams, and solution guidance to the sales team. This book compliments the documentation that is available in IBM Knowledge Center and aligns with the educational materials that are provided by the IBM Systems Software Education (SSE).

This IBM® Redbooks® publication provides operations teams with architectural design patterns and guidelines for the day-to-day challenges that they face when managing their IBM Business Process Manager (BPM) infrastructure. Today, IBM BPM L2 and L3 Support and SWAT teams are constantly advising customers how to deal with the following common challenges: Deployment options (on-premises, patterns, cloud, and so on) Administration DevOps Automation Performance monitoring and tuning Infrastructure management

Scalability High Availability and Data Recovery Federation This publication enables customers to become self-sufficient, promote consistency and accelerate IBM BPM Support engagements. This IBM Redbooks publication is targeted toward technical professionals (technical support staff, IT Architects, and IT Specialists) who are responsible for meeting day-to-day challenges that they face when they are managing an IBM BPM infrastructure. This IBM® Redbooks® publication provides deployment guidelines, workload estimates, and preferred practices for clients who want a proven IBM technology stack for virtualized VMware and Microsoft environments. The result is a Reference Architecture for Virtualized Environments (RAVE) that uses VMware vSphere or Microsoft Hypervisor, IBM System x® or IBM BladeCenter® server, IBM System Networking, and IBM System Storage® N series with Clustered Data ONTAP as a storage foundation. The reference architecture can be used as a foundation to create dynamic cloud solutions and make full use of underlying storage features and functions. This book provides a blueprint that illustrates how clients can create a virtualized infrastructure and storage cloud to help address current and future data storage business requirements. It explores the solutions that IBM offers to create a storage cloud solution addressing client needs. This book also shows how the

Reference Architecture for Virtualized Environments and the extensive experience of IBM in cloud computing, services, proven technologies, and products support a Smart Storage Cloud solution that is designed for your storage optimization efforts. This book is for anyone who wants to learn how to successfully deploy a virtualized environment. It is also written for anyone who wants to understand how IBM addresses data storage and compute challenges with IBM System Storage N series solutions with IBM servers and networking solutions. This book is suitable for IT architects, business partners, IBM clients, storage solution integrators, and IBM sales representatives.

Lenovo System x® and BladeCenter® servers and Lenovo Flex SystemTM compute nodes help to deliver a dynamic infrastructure that provides leadership quality and service that you can trust. This document (simply known as xREF) is a quick reference guide to the specifications of the currently available models of each System x and BladeCenter server. Each page can be used in a stand-alone format and provides a dense and comprehensive summary of the features of that particular server model. Links to the related Product Guide are also provided for more information. An easy-to-remember link you can use to share this guide: http://lenovopress.com/xref Also available is xREF for Products Withdrawn Prior to 2012, a document

that contains xREF sheets of System x, BladeCenter, and xSeries servers, and IntelliStation workstations that were withdrawn from marketing prior to 2012. Changes in the May 18 update: Added the Flex System Carrier-Grade Chassis See the Summary of changes in the document for a complete change history.

This IBM® Redbooks® publication consolidates, in one document, detailed descriptions of the hardware configurations and options offered as part of the IBM Midrange System StorageTM servers, which include the IBM System Storage DS4000® and DS5000 families of products. This edition covers updates and additional functions available with the IBM System Storage DS® Storage Manager Version 10.60 (firmware level 7.60). This book presents the concepts and functions used in planning and managing the storage servers, such as multipathing and path failover. The book offers a step-by-step guide to using the Storage Manager to create arrays, logical drives, and other basic (as well as advanced) management tasks. This publication also contains practical information about diagnostics and troubleshooting, and includes practical examples of how to use scripts and the command-line interface. This publication is intended for customers, IBM Business Partners, and IBM technical professionals who want to learn more about the capabilities and advanced functions of the DS4000 series of storage

servers with Storage Manager Software V10.60. It also targets those who have a DS4000 and DS5000 storage subsystem and need detailed advice about how to configure it.

This IBM® Redbooks® publication helps you install, configure, and maintain the IBM z14. The z14 offers new functions that require a comprehensive understanding of the available configuration options. This book presents configuration setup scenarios, and describes implementation examples in detail. This publication is intended for systems engineers, hardware planners, and anyone who needs to understand IBM Z configuration and implementation. Readers should be generally familiar with current IBM Z technology and terminology. For more information about the functions of the z14, see IBM z14 Technical Introduction, SG24-8450 and IBM z14 Technical Guide, SG24-8451.

In this IBM® Redbooks® publication, you will gain an appreciation of the IBM CICS® Transaction Gateway (CICS TG) product suite, based on key criteria, such as capabilities, scalability, platform, CICS server support, application language support, and licensing model. Matching the requirements to available infrastructure and hardware choices requires an appreciation of the choices available. In this book, you will gain an understanding of those choices, and will be capable of choosing the appropriate CICS connection protocol, APIs for the applications, and

security options. You will understand the services available to the application developer when using a chosen protocol. You will then learn about how to implement CICS TG solutions, taking advantage of the latest capabilities, such as IPIC connectivity, high availability, and Dynamic Server Selection. Specific scenarios illustrate the usage of CICS TG for IBM z/OS®, and CICS TG for Multiplatforms, with CICS Transaction Server for z/OS and IBM WebSphere® Application Server, including connections in CICS, configuring simple end-to-end connectivity (all platforms) with verification for remote and local mode applications, and adding security, XA support, and high availability.

Note: This is a republication of IBM Spectrum Archive Enterprise Edition V1.2.6: Installation and Configuration Guide with new book number SG24-8445 to keep the content available on the Internet along with the recent publication IBM Spectrum Archive Enterprise Edition V1.3.0: Installation and Configuration Guide, SG24-8333. This IBM® Redbooks® publication helps you with the planning, installation, and configuration of the new IBM SpectrumTM Archive V1.2.6 for the IBM TS3310, IBM TS3500, IBM TS4300, and IBM TS4500 tape libraries. IBM Spectrum ArchiveTM EE enables the use of the LTFS for the policy management of tape as a storage tier in an IBM Spectrum ScaleTM based environment. It helps encourage the use of tape as a critical tier in the storage environment. This is the sixth edition of IBM Spectrum Archive Installation and Configuration Guide.

IBM Spectrum Archive EE can run any application that is designed for disk files on a physical tape media. IBM Spectrum Archive EE supports the IBM Linear Tape-Open (LTO) Ultrium 8, 7, 6, and 5 tape drives in IBM TS3310, TS3500, TS4300, and TS4500 tape libraries. In addition, IBM TS1155, TS1150, and TS1140 tape drives are supported in TS3500 and TS4500 tape library configurations. IBM Spectrum Archive EE can play a major role in reducing the cost of storage for data that does not need the access performance of primary disk. The use of IBM Spectrum Archive EE to replace disks with physical tape in tier 2 and tier 3 storage can improve data access over other storage solutions because it improves efficiency and streamlines management for files on tape. IBM Spectrum Archive EE simplifies the use of tape by making it transparent to the user and manageable by the administrator under a single infrastructure. This publication is intended for anyone who wants to understand more about IBM Spectrum Archive EE planning and implementation. This book is suitable for IBM clients, IBM Business Partners, IBM specialist sales representatives, and technical specialists.

This IBM® RedpaperTM publication is a comprehensive guide covering the IBM Power 770 and Power 780 servers supporting IBM AIX®, IBM i, and Linux® operating systems. The goal of this paper is to introduce the major innovative Power 770 and 780 offerings and their prominent functions, including: Unique modular server packaging The specialized IBM POWER7TM Level 3 cache that provides greater bandwidth, capacity,

and reliability The 1 Gb or 10 Gb Integrated Virtual Ethernet adapter that brings native hardware virtualization up to 64 logical ports on this server IBM PowerVMTM virtualization including PowerVM Live Partition Mobility and PowerVM Active MemoryTM Sharing Active Memory Expansion that provides more usable memory than what is physically installed on the system IBM EnergyScaleTM technology that provides features such as power trending, power-saving, capping of power, and thermal measurement Enterprise-ready reliability, serviceability, and availability Professionals who want to acquire a better understanding of IBM Power SystemsTM products should read this paper. This paper expands the current set of IBM Power Systems documentation by providing a desktop reference that offers a detailed technical description of the 770 and 780 systems. This paper does not replace the latest marketing materials and configuration tools. It is intended as an additional source of information that, together with existing sources, may be used to enhance your knowledge of IBM server solutions.

This IBM® Redbooks® publication helps you install, configure, and maintain the IBM z13TM. The z13 offers new functions that require a comprehensive understanding of the available configuration options. This book presents configuration setup scenarios, and describes implementation examples in detail. This publication is intended for systems engineers, hardware planners, and anyone who needs to understand IBM z SystemsTM configuration and implementation. Readers should be generally familiar with current IBM z Systems

technology and terminology. For details about the functions of the z13, see IBM z13 Technical Introduction, SG24-8250 and IBM z13 Technical Guide, SG24-8251. Server Time Protocol (STP) is a server-wide facility that is implemented in the Licensed Internal Code (LIC) of the IBM® zEnterprise Servers (zEC12, z196 and z114), System z10TM Enterprise Class (z10 EC), System z10 Business Class (z10 BC), IBM System z9® Enterprise Class (z9 EC), System z9 Business Class (z9 BC), and zSeries® z990 and z890 servers. It provides improved time synchronization in a sysplex or non-sysplex configuration. This IBM Redbooks® publication is intended for infrastructure architects and system programmers who need to understand the IBM STP functions. Readers are expected to be generally familiar with System z® technology and terminology. This book provides planning information for Server Time Protocol functions and associated software support. For more detailed installation, operation, and recovery information, refer to the companion books Server Time Protocol Implementation Guide, SG24-7281, and Server Time Protocol Recovery Guide, SG24-7380.

This IBM® Redbooks® publication captures several of the preferred practices and describes the performance gains that can be achieved by implementing the IBM FlashSystem® 9100. These practices are based on field experience. This book highlights configuration guidelines and preferred practices for the storage area network (SAN) topology, clustered system, back-end storage, storage pools and managed disks, volumes, remote copy services, and hosts. It explains how you can optimize

disk performance with the IBM System Storage® Easy Tier® function. It also provides preferred practices for monitoring, maintaining, and troubleshooting. This book is intended for experienced storage, SAN, IBM FlashSystem, SAN Volume Controller and Storwize® administrators and technicians. Understanding his book requires advanced knowledge of these environments. Important, IBM FlashSystem 9200: On 11th February 2020 IBM announced the arrival of the IBM FlashSystem 9200 to the family. This book was written specifically for IBM FlashSystem 9100, however most of the general principles will apply to the IBM FlashSystem 9200. If you are in any doubt as to their applicability to the FlashSystem 9200 then you should work with your local IBM representative. This book will be updated to include FlashSystem 9200 in due course.

This IBM® Redbooks® publication represents a compilation of best practices for deploying and configuring IBM Midrange System StorageTM servers, which include the DS4000® and the DS5000 family of products. This book is intended for IBM technical professionals, Business Partners, and customers responsible for the planning, deployment, and maintenance of the IBM Midrange System Storage family of products. We realize that setting up DS4000 and DS5000 Storage Servers can be a complex task. There is no single configuration that will be satisfactory for every application or situation. First, we provide a conceptual framework for understanding the hardware in a Storage Area Network. Then we offer our guidelines, hints, and tips for the physical installation, cabling, and

zoning, using the Storage Manager setup tasks. After that, we turn our attention to the performance and tuning of various components and features, including numerous guidelines. We look at performance implications for various application products such as DB2®, Oracle, Tivoli® Storage Manager, Microsoft® SQL server, and in particular, Microsoft Exchange with IBM Midrange System Storage servers. Then we review the various tools available to simulate workloads and to measure, collect, and analyze performance data. We also consider the AIX® environment, including High Availability Cluster Multiprocessing (HACMPTM) and General Parallel File System (GPFSTM). Finally, we provide a quick guide to the storage server installation and configuration using best practices. This edition of the book also includes guidelines for managing and using the DS4000 and DS5000 with the IBM System Storage SAN Volume Controller (SVC).

Digital business has been driving the transformation of underlying information technology (IT) infrastructure to be more efficient, secure, adaptive, and integrated. IT must be able to handle the explosive growth of mobile clients and employees. It also must be able to process enormous amounts of data to provide deep and real-time insights to help achieve the greatest business impact. This IBM® Redbooks® publication addresses the new IBM z SystemsTM single frame, the IBM z13s server. IBM z Systems servers are the trusted enterprise platform for integrating data, transactions, and insight. A data-centric infrastructure must always be available with a 99.999% or better availability, have flawless data

integrity, and be secured from misuse. It needs to be an integrated infrastructure that can support new applications. It also needs to have integrated capabilities that can provide new mobile capabilities with real-time analytics delivered by a secure cloud infrastructure. IBM z13s servers are designed with improved scalability, performance, security, resiliency, availability, and virtualization. The superscalar design allows z13s servers to deliver a record level of capacity over the prior single frame z Systems server. In its maximum configuration, the z13s server is powered by up to 20 client characterizable microprocessors (cores) running at 4.3 GHz. This configuration can run more than 18,000 millions of instructions per second (MIPS) and up to 4 TB of client memory. The IBM z13s Model N20 is estimated to provide up to 100% more total system capacity than the IBM zEnterprise® BC12 Model H13. This book provides information about the IBM z13s server and its functions, features, and associated software support. Greater detail is offered in areas relevant to technical planning. It is intended for systems engineers, consultants, planners, and anyone who wants to understand the IBM z SystemsTM functions and plan for their usage. It is not intended as an introduction to mainframes. Readers are expected to be generally familiar with existing IBM z Systems technology and terminology.

This IBM® RedpaperTM publication describes the adapter-based virtualization capabilities that are being deployed in high-end IBM POWER7+TM processor-based servers. Peripheral Component Interconnect

Express (PCIe) single root I/O virtualization (SR-IOV) is a virtualization technology on IBM Power Systems servers. SR-IOV allows multiple logical partitions (LPARs) to share a PCIe adapter with little or no run time involvement of a hypervisor or other virtualization intermediary. SR-IOV does not replace the existing virtualization capabilities that are offered as part of the IBM PowerVM® offerings. Rather, SR-IOV compliments them with additional capabilities. This paper describes many aspects of the SR-IOV technology, including: A comparison of SR-IOV with standard virtualization technology Overall benefits of SR-IOV Architectural overview of SR-IOV Planning requirements SR-IOV deployment models that use standard I/O virtualization Configuring the adapter for dedicated or shared modes Tips for maintaining and troubleshooting your system Scenarios for configuring your system This paper is directed to clients, IBM Business Partners, and system administrators who are involved with planning, deploying, configuring, and maintaining key virtualization technologies.

IBM® Spectrum Virtualize Software Version 7.8 provides software-defined storage capabilities across various platforms, including IBM SAN Volume Controller, IBM Storwize® V7000, Storwize V7000 (Unified), Storwize V5000, Storwize V3700, and Storwize V3500. These offerings help clients reduce the complexities and cost of managing their storage in the following ways: Centralizing management of storage volumes to enable administrators to manage

storage volumes from a single point Improving utilization of storage capacity with virtual volumes to enable businesses to tap into previously unused disk capacity Avoiding downtime for backups, maintenance, and upgrades Performing data migration without disruption to applications Enabling all storage devices to be organized into storage pools from which virtual volumes, whether standard, compressed, or thin-provisioned, are created with the characteristics that you want Delivering automation of storage management with SmartCloud Virtual Storage Center, IBM Tivoli® Storage Productivity Center (as applicable by platform), and IBM Tivoli Storage FlashCopy® Manager (as applicable by platform) Increasing the performance efficiency of storage pools with IBM Easy Tier® Restoring data access quickly with near and remote copy capabilities across Fibre Channel (FC), Fibre Channel over Ethernet (FCoE), and IP networks In this IBM Redbooks® publication, which is aimed at storage administrators and technical professionals, we describe the IBM HyperSwap® capability in IBM SpectrumTM Virtualize Software V7.8. HyperSwap delivers high availability (HA) and disaster recovery (DR) in one solution and reuses capital investments to achieve a range of recovery and management options that are transparent to host operations. This book describes how you can use HyperSwap with VMware to create an environment that can withstand

robust workloads.

Digital business has been driving the transformation of underlying IT infrastructure to be more efficient, secure, adaptive, and integrated. Information Technology (IT) must be able to handle the explosive growth of mobile clients and employees. IT also must be able to use enormous amounts of data to provide deep and real-time insights to help achieve the greatest business impact. This IBM® Redbooks® publication addresses the IBM Mainframe, the IBM z13TM. The IBM z13 is the trusted enterprise platform for integrating data, transactions, and insight. A data-centric infrastructure must always be available with a 99.999% or better availability, have flawless data integrity, and be secured from misuse. It needs to be an integrated infrastructure that can support new applications. It needs to have integrated capabilities that can provide new mobile capabilities with real-time analytics delivered by a secure cloud infrastructure. IBM z13 is designed with improved scalability, performance, security, resiliency, availability, and virtualization. The superscalar design allows the z13 to deliver a record level of capacity over the prior IBM z SystemsTM. In its maximum configuration, z13 is powered by up to 141 client characterizable microprocessors (cores) running at 5 GHz. This configuration can run more than 110,000 millions of instructions per second

(MIPS) and up to 10 TB of client memory. The IBM z13 Model NE1 is estimated to provide up to 40% more total system capacity than the IBM zEnterprise® EC12 (zEC1) Model HA1. This book provides information about the IBM z13 and its functions, features, and associated software support. Greater detail is offered in areas relevant to technical planning. It is intended for systems engineers, consultants, planners, and anyone who wants to understand the IBM z Systems functions and plan for their usage. It is not intended as an introduction to mainframes. Readers are expected to be generally familiar with existing IBM z Systems technology and terminology.

IBM® Spectrum Protect Plus is a data protection solution that provides near-instant recovery, replication, retention management, and reuse for virtual machines, databases, and applications backups in hybrid multicloud environments. IBM Knowledge Center for IBM Spectrum® Protect Plus provides extensive documentation for installation, deployment, and usage. In addition, build and size an IBM Spectrum Protect Plus solution. The goal of this IBM Redpaper® publication is to summarize and complement the available information by providing useful hints and tips that are based on the authors' practical experience in installing and supporting IBM Spectrum Protect Plus in customer environments. Over time, our aim is to compile a set of best

practices that cover all aspects of the product, from planning and installation to tuning, maintenance, and troubleshooting.

This IBM® Redbooks® publication helps you install, configure, and maintain the IBM z15TM (machine types 8561 and 8562) systems. The z15 systems offers new functions that require a comprehensive understanding of the available configuration options. This book presents configuration setup scenarios, and describes implementation examples in detail. This publication is intended for systems engineers, hardware planners, and anyone who needs to understand IBM Z® configuration and implementation. Readers should be familiar with IBM Z technology and terminology. For more information about the functions of the z15 systems, see IBM z15 Technical Introduction, SG24-8850, IBM z15 (8561) Technical Guide, SG24-8851 and IBM z15 (8562) Technical Guide, SG24-8852.

Along with servers and networking infrastructure, networked storage is one of the fundamental components of a modern data center. Because storage networking has evolved over the past two decades, the industry has settled on the basic storage networking technologies. These technologies are Fibre Channel (FC) storage area networks (SANs), Internet Small Computer System Interface (iSCSI)-based Ethernet attachment, and Ethernet-based network-attached storage (NAS).

Today, lossless, low-latency, high-speed FC SANs are viewed as the high-performance option for networked storage. iSCSI and NAS are viewed as lower cost, lower performance technologies. The advent of the 100 Gbps Ethernet and Data Center Bridging (DCB) standards for lossless Ethernet give Ethernet technology many of the desirable characteristics that make FC the preferred storage networking technology. These characteristics include comparable speed, low latency, and lossless behavior. Coupled with an ongoing industry drive toward better asset utilization and lower total cost of ownership, these advances open the door for organizations to consider consolidating and converging their networked storage infrastructures with their Ethernet data networks. Fibre Channel over Ethernet (FCoE) is one approach to this convergence, but 10-Gbps-enabled iSCSI also offers compelling options for many organizations with the hope that their performance can now rival that of FC. This IBM® Redbooks® publication is written for experienced systems, storage, and network administrators who want to integrate the IBM System Networking and Storage technology successfully into new and existing networks. This book provides an overview of today's options for storage networking convergence. It reviews the technology background for each of these options and then examines detailed scenarios for them by using IBM and IBM Business

Partner convergence products.
This IBM® Redbooks® publication describes the new member of the IBM Z® family, IBM z14TM. IBM z14 is the trusted enterprise platform for pervasive encryption, integrating data, transactions, and insights into the data. A data-centric infrastructure must always be available with a 99.999% or better availability, have flawless data integrity, and be secured from misuse. It also must be an integrated infrastructure that can support new applications. Finally, it must have integrated capabilities that can provide new mobile capabilities with real-time analytics that are delivered by a secure cloud infrastructure. IBM z14 servers are designed with improved scalability, performance, security, resiliency, availability, and virtualization. The superscalar design allows z14 servers to deliver a record level of capacity over the prior IBM Z platforms. In its maximum configuration, z14 is powered by up to 170 client characterizable microprocessors (cores) running at 5.2 GHz. This configuration can run more than 146,000 million instructions per second (MIPS) and up to 32 TB of client memory. The IBM z14 Model M05 is estimated to provide up to 35% more total system capacity than the IBM z13® Model NE1. This Redbooks publication provides information about IBM z14 and its functions, features, and associated software support. More information is offered in areas that are

relevant to technical planning. It is intended for systems engineers, consultants, planners, and anyone who wants to understand the IBM Z servers functions and plan for their usage. It is intended as an introduction to mainframes. Readers are expected to be generally familiar with existing IBM Z technology and terminology.