

Ibm System X3550 Manual

This IBM® Redpaper™ publication is a comprehensive guide covering the IBM Power 770 (9117-MMD) and Power 780 (9179-MHD) servers that support 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: The IBM POWER7+™ processor, available at frequencies of 3.8 GHz and 4.2 GHz for the Power 770 and 3.7 GHz and 4.4 GHz for the Power 780 The specialized IBM POWER7+ Level 3 cache that provides greater bandwidth, capacity, and reliability The 1 Gb or 10 Gb Integrated Multifunction Card that provides two USB ports, one serial port, and four Ethernet connectors for a processor enclosure and does not require a PCI slot The Active Memory™ Mirroring (AMM) for Hypervisor feature that mirrors the main memory used by the firmware IBM PowerVM® virtualization, including PowerVM Live Partition Mobility and PowerVM Active Memory Sharing Active Memory Expansion that provides more usable memory than what is physically installed on the system IBM EnergyScale™ technology that provides features such as power trending, power-saving, capping of power, and thermal measurement Enterprise-ready reliability, serviceability, and availability Dynamic Platform Optimizer High-performance SSD drawer Professionals who want to acquire a better understanding of IBM Power Systems™ products can benefit from reading this paper.

This IBM® Redbooks® publication consolidates, in one document, detailed descriptions of the hardware configurations and options offered as part of the IBM Midrange System Storage™ 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 provides an introduction to PowerVMTM virtualization technologies on Power System servers. PowerVM is a combination of hardware, firmware, and software that provides CPU, network, and disk virtualization. These are the main virtualization technologies: POWER7, POWER6, and POWER5 hardware POWER Hypervisor Virtual I/O Server Though the PowerVM brand includes partitioning, management software, and other offerings, this publication focuses on the virtualization technologies that are part of the PowerVM Standard and Enterprise Editions. This publication is also designed to be an introduction guide for system administrators, providing instructions for these tasks: Configuration and creation of partitions and resources on the HMC Installation and configuration of the Virtual I/O Server Creation and installation of virtualized partitions Examples using AIX, IBM i, and Linux This edition has been updated with the latest updates available and an improved content organization.

This IBM® Redbooks® publication provides advice and technical information about optimizing and tuning application code to run on systems that are based on the IBM POWER7® and POWER7+™ processors. This advice is drawn from application optimization efforts across many different types of code that runs under the IBM AIX® and Linux operating systems, focusing on the more pervasive performance opportunities that are identified, and how to capitalize on them. The technical information was developed by a set of domain experts at IBM. The focus of this book is to gather the right technical information, and lay out simple guidance for optimizing code performance on the IBM POWER7 and POWER7+ systems that run the AIX or Linux operating systems. This book contains a large amount of straightforward performance optimization that can be performed with minimal effort and without previous experience or in-depth knowledge. This optimization work can: Improve the performance of the application that is being optimized for the POWER7 system Carry over improvements to systems that are based on related processor chips Improve performance on other platforms The audience of this book is those personnel who are responsible for performing migration and implementation activities on IBM POWER7-based servers, which includes system administrators, system architects, network administrators, information architects, and database administrators (DBAs).

This IBM® Redbooks® publication is an IBM and Cisco collaboration that articulates how IBM and Cisco can bring the benefits of their respective companies to the modern data center. It documents the architectures, solutions, and benefits that can be achieved by implementing a data center based on IBM server, storage, and integrated systems, with the broader Cisco network. We describe how to design a state-of-the-art data center and networking infrastructure combining Cisco and IBM solutions. The objective is to provide a reference guide for customers looking to build an infrastructure that is optimized for virtualization, is highly available, is interoperable, and is efficient in terms of power and space consumption. It will explain the technologies used to build the infrastructure, provide use cases, and give guidance on deployments.

This IBM® Redpaper™ publication is a comprehensive guide covering the IBM Power System S822 (8284-22A) server that supports the IBM AIX® and Linux operating systems (OSes) running on bare metal, and the IBM i OS running under the VIOS. The objective of this paper is to introduce the major innovative Power S822 offerings and their relevant functions: The new IBM POWER8™ processor, which is available at frequencies of 3.42 GHz, and 3.89 GHz Significantly strengthened cores and larger caches Two integrated memory controllers with improved latency and bandwidth Integrated I/O subsystem and hot-pluggable PCIe Gen3 I/O slots Improved reliability, serviceability, and availability (RAS) functions IBM EnergyScale™ technology that provides features such as power trending, power-saving, capping of power, and thermal measurement This publication is for professionals who want to acquire a better understanding of IBM Power Systems™ products. 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 S822 system. 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, can be used to enhance your knowledge of IBM server solutions.

This IBM® Redbooks® publication focuses on operational and managerial aspects for DataPower® appliance deployments. DataPower appliances provide functionality that crosses both functional and organizational boundaries, which introduces unique management and operational challenges. For example, a DataPower appliance can provide network functionality, such as load balancing, and at the same time, provide enterprise service bus (ESB) capabilities, such as transformation and intelligent content-

based routing. This IBM Redbooks publication provides guidance at both a general and technical level for individuals who are responsible for planning, installation, development, and deployment. It is not intended to be a "how-to" guide, but rather to help educate you about the various options and methodologies that apply to DataPower appliances. In addition, many chapters provide a list of suggestions.

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

Businesses of all sizes are faced with the challenge of managing huge volumes of data that are becoming increasingly valuable. But storing this data can be costly, and extracting value from the data is becoming more and more difficult. IT organizations have limited resources and cannot afford to make investment mistakes. The IBM® Storwize® V3500 system provides a smarter solution that is affordable, simple, and efficient, which enables businesses to overcome their storage challenges. IBM Storwize V3500 is the most recent addition to the IBM Storwize family of disk systems. It delivers easy-to-use, entry-level configurations that are specifically designed to meet the modest budgets of small and medium-sized businesses. IBM Storwize V3500 features the following highlights: - Consolidate and share data with low cost iSCSI storage networking. - Deploy storage in minutes and perform storage management tasks quickly and easily through a breakthrough graphical user interface. - Experience peace of mind with proven IBM Storwize family high-availability data protection with snapshot technology and IBM warranty support. - Optimize efficiency by allocating only the amount of disk space needed at the time it is required with high performance, thin-provisioning capabilities.

IBM® PowerHATM SystemMirror for i is the IBM high-availability disk-based clustering solution for the IBM i 7.1 operating system. When combined with IBM i clustering technology, PowerHA for i delivers a complete high-availability and disaster-recovery solution for your business applications running in the IBM System i® environment. PowerHA for i enables you to support high-availability capabilities with either native disk storage or IBM DS8000® or DS6000TM storage servers or IBM Storwize V7000 and SAN Volume Controllers. The latest release of IBM PowerHA SystemMirror for i delivers a brand-new web-based PowerHA graphical user interface that effectively combines the solution-based and task-based activities for your HA environment, all in a single user interface. This IBM Redbooks® publication provides a broad understanding of PowerHA for i. This book is intended for all IBM i professionals who are planning on implementing a PowerHA solution on IBM i.

This IBM® Redbooks® publication gives an overview of Cloud solutions, followed by detailed information and usage scenarios for IBM CloudBurst® in a System x® environment. Cloud computing can be defined as a style of computing in which dynamically scalable resources, such as CPU, storage, or bandwidth, are provided as a service over the Internet. Cloud computing represents a massively scalable, self-service delivery model where processing, storage, networking, and applications can be accessed as services over the Internet. Enterprises can adopt cloud models to improve employee productivity, deploy new products and services faster and reduce operating costs—starting with workloads, such as development and test, virtual desktop, collaboration, and analytics. IBM provides a scalable variety of cloud solutions to meet these needs. This IBM Redbooks publication helps you to tailor an IBM CloudBurst installation on System x to meet virtualized computing requirements in a private cloud environment. This book is intended for IT support personnel who are responsible for customizing IBM CloudBurst to meet business cloud computing objectives.

This IBM® Redpaper™ publication is a comprehensive guide that covers the IBM Power System S824L (8247-42L) server that supports the Linux operating systems. The objective of this paper is to introduce the major innovative Power S824L offerings and their relevant functions: The new IBM POWER8™ processor, which is available at frequencies of 3.02 GHz and 3.42 GHz A processor that is designed to accommodate high-wattage adapters, such as NVIDIA graphics processing units (GPUs), that provide acceleration for scientific, engineering, Java, big data analytics, and other technical computing workloads Based on OpenPOWER technologies Two integrated memory controllers with improved latency and bandwidth Improved reliability, serviceability, and availability (RAS) functions IBM EnergyScale™ technology that provides features, such as power trending, power-saving, power capping, and thermal measurement This publication is for professionals who want to acquire a better understanding of IBM Power Systems™ products. 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 S824L server. 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, can be used to enhance your knowledge of IBM server solutions.

This IBM® Redbooks® publication represents a compilation of best practices for deploying and configuring IBM Midrange System Storage™ 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 (HACMP™) and General Parallel File System (GPFS™). 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).

This book provides an overview of modern boot firmware, including the Unified Extensible Firmware Interface (UEFI) and its associated EFI Developer Kit II (EDKII) firmware. The authors have each made significant contributions to developments in these areas. The reader will learn to use the latest developments in UEFI on modern hardware, including open source firmware and open hardware designs. The book begins with an exploration of interfaces exposed to higher-level software and operating systems, and commences to the left of the boot timeline, describing the flow of typical systems, beginning with the machine restart event. Software engineers working with UEFI will benefit greatly from this book, while specific sections of the book address topics relevant for a general audience: system architects, pre-operating-system application developers, operating system vendors (loader, kernel), independent hardware vendors (such as for plug-in adapters), and developers of end-user applications. As a secondary audience, project technical leaders or managers may be interested in this book to get a feel for what their engineers are doing. The reader will find:

- An overview of UEFI and underlying Platform Initialization (PI) specifications
- How to create UEFI applications and drivers
- Workflow to design the firmware solution for a modern platform
- Advanced usages of UEFI firmware for security and manageability

IBM® SmartCloud™ Entry provides a fully integrated software stack for transforming a virtualized environment to a cloud environment. The intuitive self-service portal allows users to get up and running quickly. Built-in workload metering and additional tools enable tight controls and planning. The IBM Reference Configuration for VMware on IBM System x® with SmartCloud Entry provides an affordable, easy to deploy, private cloud architecture with configurations based on leading-edge technology from IBM, VMware, and Juniper Networks. The reference configuration is for midsized companies that need simpler and affordable IT solutions, without compromising on functionality. IBM and VMware, world leaders in enterprise-class IT solutions, are now bringing IT solutions tailored to the midmarket. This IBM Redpaper™ publication provides setup, configuration, and deployment details for the reference configuration and is intended for IT professionals who are familiar with software and hardware setup and configuration.

This IBM® Redpaper™ publication is a comprehensive guide covering the IBM Power 750 and Power 760 servers supporting IBM AIX®, IBM i, and Linux operating systems. The goal of this paper is to introduce the major innovative Power 750 and Power 760 offerings and their prominent functions: The IBM POWER7+™ processor is available at frequencies of 3.1 GHz, 3.4 GHz, 3.5 GHz, and 4.0 GHz. The larger IBM POWER7+ Level 3 cache provides greater bandwidth, capacity, and reliability. The newly introduced POWER7+ dual chip module (DCM). New 10GBase-T options for the Integrated Multifunction Card that provides two USB ports, one serial port, and four Ethernet connectors for a processor enclosure and does not require a PCI slot. New IBM PowerVM® V2.2.2 features, such as 20 LPARs per core. The improved IBM Active Memory™ Expansion technology provides more usable memory than is physically installed in the system. Professionals who want to acquire a better understanding of IBM Power Systems™ products should read this paper. This Redpaper expands the current set of IBM Power Systems documentation by providing a desktop reference that offers a detailed technical description of the 750 and 760 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. For additional reading: A Technote is available that explains the performance architecture of this server. It is of interest to those migrating workloads from existing Power 750 servers. It can be found at: [Architecture of the IBM POWER7+ Technology-Based IBM Power 750 and IBM Power 760 Technote](#)

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.

Lenovo System x® and BladeCenter® servers and Lenovo Flex System™ 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.

The IBM® Hardware Management Console (HMC) provides to systems administrators a tool for planning, deploying, and managing IBM Power Systems™ 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

This IBM® Redbooks® publication is a detailed technical guide to the IBM System Storage® SAN Volume Controller (SVC), which is powered by IBM Spectrum™ Virtualize V8.2.1. IBM SAN Volume Controller is a virtualization appliance solution that maps virtualized volumes that are visible to hosts and applications to physical volumes on storage devices. Each server within the storage area network (SAN) has its own set of virtual storage addresses that are mapped to physical addresses. If the physical addresses change, the server continues running by using the same virtual addresses that it had before. Therefore, volumes or storage can be added or moved while the server is still running. The IBM virtualization technology improves the management of information at the block level in a network, which enables applications and servers to share storage devices on a network.

In today's infrastructure, it is common to build networks based on 10 Gb Ethernet technology. The IBM® portfolio of 10 Gb systems networking products includes Top-of-Rack switches, and the embedded switches in the IBM BladeCenter® family. In 2010, IBM formed the IBM System Networking business (by acquiring BLADE Network Technologies), which is now focused on driving data center networking by using the latest Ethernet technologies. The main focus of this IBM Redbooks® publication is on the IBM System Networking 10Gb Switch Modules, which include both embedded and Top-of-Rack (TOR) models. After reading this book, you can perform basic to advanced configurations of IBM System Networking 10Gb Switch Modules. In this publication, we introduce the various 10 Gb switch models that are available today and then describe in detail the features that are applicable to these switches. We then present two architectures that use these 10 Gb switches, which are used throughout this book. These designs are based on preferred practices and the experience of authors of this book. Our intention is to show the configuration of the different features that are available with IBM System Networking 10Gb Switch Modules. We follow the three-tier Data Center design, focusing on the Access and Aggregation Layers, because those layers are the layers that IBM System Networking Switches use.

This IBM® Redpaper™ is a comprehensive guide covering the Power 550 server. The goal of this paper is to introduce the innovative Power 550. It introduces major hardware offerings and discusses their prominent functions, including:

- o The POWER6 processor available at frequencies of 3.5 GHz, 4.2 GHz, and 5.0 GHz.
- o The specialized POWER6 DDR2 memory that provides greater bandwidth, capacity, and reliability.
- o The 1 Gb or 10 Gb Integrated Virtual Ethernet adapter that brings native hardware virtualization to this server
- o EnergyScale technology that provides features such as power trending, power-saving, capping of power, and thermal measurement
- o PowerVM Live Partition Mobility
- o Mainframe continuous availability brought to the UNIX environment

This Redpaper expands the current set of IBM System p documentation by providing a desktop reference that offers a detailed technical description of the 550 system. This Redpaper does not replace the latest marketing materials and 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® Redpaper™ publication is a comprehensive guide covering the IBM Power System E850 (8408-E8E) server that supports IBM AIX®, and Linux operating systems. The objective of this paper is to introduce the major innovative Power E850 offerings and their relevant functions: The new IBM POWER8™ processor, available at frequencies of 3.02 GHz, 3.35 GHz, and 3.72 GHz Significantly strengthened cores and larger caches Two integrated memory controllers with improved latency and bandwidth Integrated I/O subsystem and hot-pluggable PCIe Gen3 I/O slots I/O drawer expansion options offer greater flexibility Improved reliability, serviceability, and availability (RAS) functions IBM EnergyScale™ technology that provides features such as power trending, power-saving, capping of power, and thermal measurement This publication is for professionals who want to acquire a better understanding of IBM Power Systems™ products. The intended audience includes the following roles: Clients Sales and marketing professionals Technical support professionals IBM Business Partners Independent software vendors 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 E850 system. 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, can be used to enhance your knowledge of IBM server solutions.

Data is the new currency of business, the most critical asset of the modern organization. In fact, enterprises that can gain business insights from their data are twice as likely to outperform their competitors; yet, 72 percent of them have not started or are only planning big data activities. In addition, organizations often spend too much money and time managing where their data is stored. The average firm purchases 24% more storage every year, but uses less than half of the capacity it already has. A member of the IBM® Storwize® family, IBM SAN Volume Controller (SVC) Data Platform is a storage virtualization system that enables a single point of control for storage resources to help support improved business application availability and greater resource utilization. The objective is to manage storage resources in your IT infrastructure and to make sure they are used to the advantage of your business, and do it quickly, efficiently, and in real time, while avoiding increases in administrative costs. Virtualizing storage with SVC Data Platform helps make new and existing storage more effective. SVC Data Platform includes many functions traditionally deployed separately in disk systems. By including these in a virtualization system, SVC Data Platform standardizes functions across virtualized storage for greater flexibility and potentially lower costs. SVC Data Platform functions benefit all virtualized storage. For example, IBM Easy Tier® optimizes use of flash storage. And IBM Real-time Compression™ enhances efficiency even further by enabling the storage of up to five times as much active primary data in the same physical disk space. Finally, high-performance thin provisioning helps automate provisioning. These benefits can help extend the useful life of existing storage assets, reducing costs. Integrating these functions into SVC Data Platform also means that they are designed to operate smoothly together, reducing management effort. In this IBM Redbooks® publication, we discuss the latest features and functions of the SVC 2145-DH8 and software version 7.3, implementation, architectural improvements, and Easy Tier.

This IBM® Redpaper™ publication is a comprehensive guide covering the IBM Power 720 and Power 740 servers that support IBM AIX®, IBM i, and Linux operating systems. The goal of this paper is to introduce the innovative Power 720 and Power 740 offerings and their major functions: The IBM POWER7+™ processor is available at frequencies of 3.6 GHz, and 4.2 GHz. The larger IBM POWER7+ Level 3 cache provides greater bandwidth, capacity, and reliability. The 4-port 10/100/1000 Base-TX Ethernet PCI Express adapter is included in base configuration and installed in a PCIe Gen2 x4 slot. The integrated SAS/SATA controller for HDD, SSD, tape, and DVD supports built-in hardware RAID 0, 1, and 10. New IBM PowerVM® V2.2.2 features, such as 20 LPARs per core. The improved IBM Active Memory™ Expansion technology provides more usable memory than is physically installed in the system. High-performance SSD drawer. Professionals who want to acquire a better understanding of IBM Power Systems™ products can benefit from reading 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 Power 720 and Power 740 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, can be used to enhance your knowledge of IBM server solutions.

IBM Power Systems SR-IOV: Technical Overview and Introduction IBM Redbooks

As world activities become more integrated, the rate of data growth has been increasing exponentially. And as a result of this data explosion, current data management methods can become inadequate. People are using the term big data (sometimes referred to as Big Data) to describe this latest industry trend. IBM® is preparing the next generation of technology to meet these data management challenges. To provide the capability of incorporating big data sources and analytics of these sources, IBM developed a stream-computing product that is based on the open source computing framework Apache Hadoop. Each product in the framework provides unique capabilities to the data management environment, and further enhances the value of your data warehouse investment. In this IBM Redbooks® publication, we describe the need for big data in an organization. We then introduce IBM InfoSphere® BigInsights™ and explain how it differs from standard Hadoop. BigInsights provides a packaged Hadoop distribution, a greatly simplified installation of Hadoop and corresponding open source tools for application development, data movement, and cluster management. BigInsights also brings more options for data security, and as a component of the IBM big data platform, it provides potential integration points with the other components of the platform. A new chapter has been added to this edition. Chapter 11 describes IBM Platform Symphony®, which is a new scheduling product that works with IBM Insights, bringing low-latency scheduling and multi-tenancy to IBM InfoSphere BigInsights. The book is designed for clients, consultants, and other technical professionals.

The twin challenge of meeting global energy demands in the face of growing economies and populations and restricting greenhouse gas emissions is one of the most daunting ones that humanity has ever faced. Smart electrical generation and distribution infrastructure will play a crucial role in meeting these challenges. We would need to develop capabilities to handle large volumes of data generated by the power system components like PMUs, DFRs and other data acquisition devices as well as by the capacity to process these data at high resolution via multi-scale and multi-period simulations, cascading and security analysis, interaction between hybrid systems (electric, transport, gas, oil, coal, etc.) and so on, to get meaningful information in real time to ensure a secure, reliable and stable power system grid. Advanced research on development and implementation of market-ready leading-edge high-speed enabling technologies and algorithms for solving real-time, dynamic, resource-critical problems will be required for dynamic security analysis targeted towards successful implementation of Smart Grid initiatives. This book aims to bring together some of the latest research developments as well as thoughts on the future research directions of the high performance computing applications in electric power systems planning, operations, security, markets, and grid integration of alternate sources of energy, etc. This IBM® Redpaper™ publication is a comprehensive guide covering the IBM Power 710 (8231-E1D) and Power 730 (8231-E2D) servers that support IBM AIX®, IBM i, and Linux operating systems. This paper also describes the IBM PowerLinux™ 7R1 (8246-L1D and 8246-L1T) and the PowerLinux 7R2 (8246-L2D and 8246-L2T) servers that support the Linux operating system. The goal of this paper is to introduce the innovative Power 710, Power 730, PowerLinux 7R1, and PowerLinux offerings and their major functions: IBM POWER7+™ processor is available at frequencies of 3.6 GHz, 4.2 GHz, and 4.3 GHz. Larger IBM POWER7+ Level 3 cache provides greater bandwidth, capacity, and reliability. Integrated SAS/SATA controller for HDD, SSD, tape, and DVD supports built-in hardware RAID 0, 1, and 10. New IBM PowerVM® V2.2.2 features, such as 20 LPARs per core. Improved IBM Active Memory™ Expansion technology provides more usable memory than is physically installed in the system. Professionals who want to acquire a better understanding of IBM Power Systems™ products can benefit from reading 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 Power 710 and Power 730 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, can be used to enhance your knowledge of IBM server solutions.

This IBM® Redpaper™ publication introduces PowerVM™ Active Memory™ Sharing on IBM Power Systems™ based on POWER6® and later processor technology. Active Memory Sharing is a virtualization technology that allows multiple partitions to share a pool of physical memory. This is designed to increase system memory utilization, thereby enabling you to realize a cost benefit by reducing the amount of physical memory required. The paper provides an overview of Active Memory Sharing, and then demonstrates, in detail, how the technology works and in what scenarios it can be used. It also contains chapters that describe how to configure, manage and migrate to Active Memory Sharing based on hands-on examples. The paper is targeted to both architects and consultants who need to understand how the technology works to design solutions, and to technical specialists in charge of setting up and managing Active Memory

Sharing environments. For performance related information, see:

<ftp://ftp.software.ibm.com/common/ssi/sa/wh/n/pow03017usen/POW03017USEN.PDF>

This IBM® Redpaper™ publication is a comprehensive guide that covers the IBM Power Systems™ LC921 and LC922 (9006-12P and 9006-22P) servers that use the current IBM POWER9™ processor-based technology and supports Linux operating systems (OSes). The objective of this paper is to introduce the offerings and their capacities and available features. These new Linux scale-out systems provide differentiated performance, scalability, and low acquisition cost, and include the following features: Superior throughput and performance for high-value Linux workloads. Low acquisition cost through system optimization (industry-standard memory and industry-standard three-year warranty). Rich I/O options in the system unit. There are 12 large form factor (LFF)/small form factor (SFF) bays for 12 SAS/SATA hard disk drives (HDDs) or solid-state drives (SSDs), and four bays that are available for Non-Volatile Memory Express (NVMe) Gen3 adapters. Includes Trusted Platform Module (TPM) 2.0 Nuvoton NPCT650ABAWX through I2C (for secure boot and trusted boot). Integrated MicroSemi PM8069 SAS/SATA 16-port Internal Storage Controller Peripheral Component Interconnect Express (PCIe) 3.0 x8 with RAID 0, 1, 5, and 10 support (no write cache). Integrated Intel XL710 Quad Port 10 GBase-T PCIe 3.0 x8 UIO built-in local area network (LAN) (one shared management port).

Dedicated 1 Gb Intelligent Platform Management Interface (IPMI) port. This publication is for professionals who want to acquire a better understanding of IBM Power Systems products. The intended audience includes: Clients Sales and marketing professionals Technical support professionals IBM Business Partners Independent software vendors (ISVs) Hoje em dia, as redes de computadores são indispensáveis para as empresas. Gerentes e administradores devem monitorar os ativos de redes para manter a qualidade do serviço e a satisfação de seus clientes. Para isso, precisam de uma ferramenta capaz de coletar diversas informações que serão usadas para evitar um potencial problema que poderá paralisar algum serviço essencial. Imagine um servidor web ficar indisponível para uma loja virtual de um grande varejista! Com o Zabbix é possível monitorar: Servidores e dispositivos SNMP e IPMI. Páginas web, servidores JBoss, Apache, Tomcat, entre outros. Banco de dados MySQL, PostgreSQL, Oracle, entre outros. Além da função de monitoramento, você poderá visualizar gráficos, mapas de rede e telas em detalhes que irão auxiliá-lo na tomada de decisões, seja para um upgrade de hardware ou até para dimensionamento de recursos como processadores e memória. O livro mostra como instalar e configurar um servidor para monitorar a sua rede, ensina a planejar o crescimento do banco de dados utilizado pelo Zabbix e também como gerenciar hosts e usuários. Além da parte prática, também serão introduzidos conceitos básicos de monitoramento, a arquitetura do Zabbix e os elementos que fazem toda essa infraestrutura funcionar. Este livro foi escrito para administradores e gerentes de redes, analistas e técnicos que trabalham ou desejam se envolver com monitoramento de redes utilizando o Zabbix.

This IBM® Redbooks® publication positions the IBM Systems Director Management Console (SDMC) against the IBM Hardware Management Console (HMC). The IBM Systems Director Management Console provides system administrators the ability to manage IBM Power System® servers as well as IBM Power Blade servers. It is based on IBM Systems Director. This publication is designed for system administrators to use as a deskside reference when managing Virtual Servers (formerly partitions) using the SDMC. The major functions that the SDMC provides are server hardware management and virtualization management.

This IBM® Redbooks® publication helps you install, configure, and maintain the IBM z13™. 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 Systems™ 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.

Complete question bank to crack your .NET interview with real-time examples Key Features 200 dedicated questions on MVC and Angular 100 Questions are given for WPF and WCF Skills 150 Questions are dedicated to data access layer technologies like ADO.NET, EF and LINQ Questions on UML, Design pattern and architecture questions Covers .NET interview SQL Server questions Book also discusses current salary trend for .NET and C# developers so that when you go for an interview you should know what current market rate is ? and you negotiate it fairly. Description Book has been around 10 years in the industry and is the number one chosen friend when a C# developer is looking for a job. So do not look any further. Just pick it up. This book covers more than 1000 real time .NET interview questions ranging across 20 categories like .NET fundamentals, OOP, SQL Server, ADO.NET, MVC6, Angular, JQuery, HTML 5, WPF, WCF and so on. The best part of this book is the DVD which has awesome step by step videos to learn MVC and .NET as soon as possible. What will you learn After reading this book, you will be able to understand .NET Framework, OOPS, ADO .NET. You will be able to know ASP .NET WebForms, ASP.NET MVC, JQuery, Angular, HTML 5 and CSS 3, SQL Server, WPF. Who this book is for This book is built in such a way that it is useful for all categories such as technical or non-technical readers. This book is perfect. If you are a fresher and you want to learn about .NET, or if you are a teacher and you want to teach what is asked during an interview in .NET, this book is very helpful. Table of Contents 1. Top 50 Technical and Non-technical Questions 2. Basic .NET Framework 3. OOPS 4. ADO .NET 5. ASP .NET WebForms 6. ASP.NET MVC (Model View Controller) 7. JQuery 8. Angular 9. HTML 5 and CSS 3 10. SQL Server 11. Removing, Web Services and WCF 12. WPF 13. LINQ and Entity Framework 14. Design patterns, UML, Estimation and Project management 15. Ajax 16. Reports 17. Threading 18. XML 19. .NET Interoperability 20. Extra's 21. Algorithms 22. Learn .NET and MVC About the Author Shivprasad Koirala is a Microsoft ASP.NET MVP, self-employed and mostly into Microsoft technology corporate training. He is hypnotized with training and teaching. Till now he has taken more than

2000 corporate training, 80 published books written, with more than 1000 articles. His LinkedIn profile: <https://in.linkedin.com/in/shivkoirala>

This IBM® Redpaper™ publication describes the adapter-based virtualization capabilities that are being deployed in high-end IBM POWER7+™ 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. [Copyright: c1521f566557c51db03135352f751458](https://www.ibm.com/redpaper/c1521f566557c51db03135352f751458)