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OpenShift for Developers

A Guide for Impatient Beginners

"O'Reilly Media, Inc." **Keen to build web applications for the cloud? Get a quick hands-on introduction to OpenShift, the open source Platform as a Service (PaaS) offering from Red Hat. With this practical guide, you'll learn the steps necessary to build, deploy, and host a complete real-world application on OpenShift without having to slog through long, detailed explanations of the technologies involved. OpenShift enables you to use Docker application containers and the Kubernetes cluster manager to automate the way you create, ship, and run applications. Through the course of the book, you'll learn how to use OpenShift and the Wildfly application server to build and then immediately deploy a Java application online. Learn about OpenShift's core technology, including Docker-based containers and Kubernetes Use a virtual machine with OpenShift installed and configured on your local environment Create and deploy your first application on the OpenShift platform Add language runtime dependencies and connect to a database Trigger an automatic rebuild and redeployment when you push changes to the repository Get a working environment up in minutes with application templates Use commands to check and debug your application Create and build Docker-based images for your application**

Deploying to OpenShift

A Guide for Busy Developers

"O'Reilly Media, Inc." **Get an in-depth tour of OpenShift, the container-based software deployment and management platform from Red Hat that provides a secure multi-tenant environment for the enterprise. This practical guide describes in detail how OpenShift, building on Kubernetes, enables you to automate the way you create, ship, and run applications in a containerized environment. Author Graham Dumbleton provides the knowledge you need to make the best use of the OpenShift container platform to deploy not only your cloud-native applications, but also more traditional stateful applications. Developers and administrators will learn how to run, access, and manage containers in OpenShift, including how to orchestrate them at scale. Build application container images from source and deploy them Implement and extend application image builders Use incremental and chained builds to accelerate build times Automate builds by using a webhook to link OpenShift to a Git repository Add configuration and secrets to the container as project resources Make an application visible outside the OpenShift cluster Manage persistent storage inside an OpenShift container Monitor application health and manage the application lifecycle This book is a perfect follow-up to OpenShift for Developers: A Guide for Impatient Beginners (O'Reilly).**

DevOps with OpenShift

Cloud Deployments Made Easy

"O'Reilly Media, Inc." **For many organizations, a big part of DevOps' appeal is software automation using infrastructure-as-code techniques. This book presents developers, architects, and infra-ops engineers with a more practical option. You'll learn how a container-centric approach from OpenShift, Red Hat's cloud-based PaaS, can help your team deliver quality software through a self-service view of IT infrastructure. Three OpenShift experts at Red Hat explain how to configure Docker application containers and the Kubernetes cluster manager with OpenShift's developer- and operational-centric tools. Discover how this infrastructure-agnostic container management platform can help companies navigate the murky area where infrastructure-as-code ends and application automation begins. Get an application-centric view of automation—and understand why it's important Learn patterns and practical examples for managing continuous deployments such as rolling, A/B, blue-green, and canary Implement continuous integration pipelines with OpenShift's Jenkins capability Explore mechanisms for separating and managing configuration from static runtime software Learn how to use and customize OpenShift's source-to-image capability Delve into management and operational considerations when working with OpenShift-based application workloads Install a self-contained local version of the OpenShift environment on your computer**

OpenShift in Action

Simon and Schuster **Summary** OpenShift in Action is a full reference to Red Hat OpenShift that breaks down this robust container platform so you can use it day-to-day. Combining Docker and Kubernetes, OpenShift is a powerful platform for cluster management, scaling, and upgrading your enterprise apps. It doesn't matter why you use OpenShift—by the end of this book you'll be able to handle every aspect of it, inside and out! Foreword by Jim Whitehurst, Red Hat. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Containers let you package everything into one neat place, and with Red Hat OpenShift you can build, deploy, and run those packages all in one place! Combining Docker and Kubernetes, OpenShift is a powerful platform for cluster management, scaling, and upgrading your enterprise apps. About the Book OpenShift in Action is a full reference to Red Hat OpenShift that breaks down this robust container platform so you can use it day-to-day. Starting with how to deploy and run your first application, you'll go deep into OpenShift. You'll discover crystal-clear explanations of namespaces, cgroups, and SELinux, learn to prepare a cluster, and even tackle advanced details like software-defined networks and security, with real-world examples you can take to your own work. It doesn't matter why you use OpenShift—by the end of this book you'll be able to handle every aspect of it, inside and out! What's Inside Written by lead OpenShift architects Rock-solid fundamentals of Docker and Kubernetes Keep mission-critical applications up and running Manage persistent storage About the Reader For DevOps engineers and administrators working in a Linux-based distributed environment. About the Authors Jamie Duncan is a cloud solutions architect for Red Hat, focusing on large-scale OpenShift deployments. John Osborne is a principal OpenShift architect for Red Hat. Table of Contents PART 1 - FUNDAMENTALS Getting to know OpenShift Getting started Containers are Linux PART 2 - CLOUD-NATIVE APPLICATIONS Working with services Autoscaling with metrics Continuous integration and continuous deployment PART 3 - STATEFUL APPLICATIONS Creating and managing persistent storage Stateful applications PART 4 - OPERATIONS AND SECURITY Authentication and resource access Networking Security

Kubernetes Operators

Automating the Container Orchestration Platform

O'Reilly Media **Operators** are a way of packaging, deploying, and managing Kubernetes applications. A Kubernetes application doesn't just run on Kubernetes; it's composed and managed in Kubernetes terms. Operators add application-specific operational knowledge to a Kubernetes cluster, making it easier to automate complex, stateful applications and to augment the platform. Operators can coordinate application upgrades seamlessly, react to failures automatically, and streamline repetitive maintenance like backups. Think of Operators as site reliability engineers in software. They work by extending the Kubernetes control plane and API, helping systems integrators, cluster administrators, and application developers reliably deploy and manage key services and components. Using real-world examples, authors Jason Dobies and Joshua Wood demonstrate how to use Operators today and how to create Operators for your applications with the Operator Framework and SDK. Learn how to establish a Kubernetes cluster and deploy an Operator Examine a range of Operators from usage to implementation Explore the three pillars of the Operator Framework: the Operator SDK, the Operator Lifecycle Manager, and Operator Metering Build Operators from the ground up using the Operator SDK Build, package, and run an Operator in development, testing, and production phases Learn how to distribute your Operator for installation on Kubernetes clusters

IBM Storage for Red Hat OpenShift Blueprint Version 1 Release 3

IBM Storage for Red Hat OpenShift is a comprehensive container-ready solution that includes all the hardware & software components necessary to setup and/or expand your Red Hat OpenShift environment. This blueprint includes Red Hat OpenShift Container Platform and uses Container Storage Interface (CSI) standards. IBM Storage brings enterprise data services to containers. In this blueprint, learn how to: · Combine the benefits of IBM Systems with the performance of IBM Storage solutions so that you can deliver the right services to your clients today! · Build a 24 by 7 by 365 enterprise class private cloud with Red Hat OpenShift Container Platform utilizing new open source Container Storage interface (CSI) drivers · Leverage enterprise class services such as NVMe based flash performance, high data availability, and advanced container security IBM Storage for Red Hat OpenShift Container Platform is designed for your DevOps environment for on-premises deployment with easy-to-consume components built to perform and scale for your enterprise. Simplify your journey to cloud with pre-tested and validated blueprints engineered to enable rapid deployment and peace of mind as you move to a hybrid multicloud environment. You now have the capabilities.

Storage Multi-tenancy for Red Hat OpenShift Container

Platform with IBM Storage

IBM Redbooks With IBM® Spectrum Virtualize and the Object-Based Access Control, you can implement multi-tenancy and secure storage usage in a Red Hat OpenShift environment. This IBM Redpaper® publication shows you how to secure the storage usage from the OpenShift user to the IBM Spectrum® Virtualize array. You see how to restrict storage usage in a Red Hat OpenShift Container Platform to avoid the over-consumption of storage by one or more user. These uses cases can be expanded to the use of this control to provide assistance with billing.

IBM Storage for Red Hat OpenShift Blueprint

IBM Redbooks This IBM® Blueprint is intended to facilitate the deployment of IBM Storage for Red Hat OpenShift Container Platform by using detailed hardware specifications to build a system. It describes the associated parameters for configuring persistent storage within a Red Hat OpenShift Container Platform environment. To complete the tasks, you must understand Red Hat OpenShift, IBM Storage, the IBM block storage Container Storage Interface (CSI) driver, and the IBM Spectrum Scale CSI driver. The information in this document is distributed on an "as is" basis without any warranty that is either expressed or implied. Support assistance for the use of this material is limited to situations where IBM Storwize® or IBM FlashSystem® storage devices, Enterprise Storage Server®, and IBM Spectrum® Scale are supported and entitled, and where the issues are not specific to a blueprint implementation. IBM Storage Suite for IBM Cloud® Paks is an offering bundle that includes software-defined storage from IBM and Red Hat. Use this document for more information about how to deploy IBM Storage product licenses that are obtained through Storage Suite for Cloud Paks (IBM Spectrum Virtualize and IBM Spectrum Scale).

Red Hat OpenShift V4.3 on IBM Power Systems Reference Guide

IBM Redbooks This IBM® Redpaper publication describes how to deploy Red Hat OpenShift V4.3 on IBM Power Systems servers. This book presents reference architectures for deployment, initial sizing guidelines for server, storage, and IBM Cloud® Paks. Moreover, this publication delivers information about initial supported Power System configurations for Red Hat OpenShift V4.3 deployment (bare metal, IBM PowerVM® LE LPARs, and others). This book serves as a guide for how to deploy Red Hat OpenShift V4.3 and provide start guidelines and recommended practices for implementing it on Power Systems and completing it with the supported IBM Cloud Paks. The publication addresses topics for developers, IT architects, IT specialists, sellers, and anyone who wants to implement a Red Hat OpenShift V4.3 and IBM Cloud Paks on IBM Power Systems. This book also provides technical content to transfer how-to skills to the support teams, and solution guidance to the sales team. This book compliments the documentation that is available at IBM Knowledge Center, and also aligns with the educational offerings that are provided by the IBM Systems Technical Education (SSE).

Using the IBM Block Storage CSI Driver in a Red Hat OpenShift Environment

IBM Redbooks RedHat OpenShift container platform is one of the leading enterprise-grade container orchestration platforms. It is designed for rapid deployment of web applications, databases, and microservices. Categorized as a container orchestration Platform as a Service (PaaS), it is based on open industry standards, such as the Container Runtime Interface - Open (CRI-O) and Kubernetes. OpenShift allow developers to focus on the code, while the platform manages the complex IT operations and processes. Although open-source, community-driven container orchestration platforms are available, such as OKD and Kubernetes, this IBM® Redpaper® publication focuses on Red Hat OpenShift. It describes the basic concepts of OpenShift persistent storage architecture and its integration into IBM Cloud® Paks. The deployment of the IBM block storage CSI driver also is discussed. This publication also describes the concepts, technology and current working practices for installing the Container Storage Interface (CSI) plug-in for Kubernetes to use IBM Enterprise Storage platforms for persistent storage coupled with Red Hat OpenShift Container Platform (OCP). This publication also provides an overview of containers, Kubernetes, and OpenShift for context (it is expected that the reader has a working knowledge of these underlying technologies). It also includes architectural examples of the orchestration platform will be given. This paper serves as a guide about how to deploy the CSI driver for block storage by using the DS8000® and Spectrum Virtualize platforms as persistent storage in a Red Hat OpenShift platform. The publication is intended for storage administrators, IT architects, OpenShift technical specialists and anyone who wants to integrate IBM Enterprise storage on OpenShift V4.3/4.4/4.5 on IBM Power, IBM Z®, and x86 systems.

Hybrid Cloud Apps with OpenShift and Kubernetes

"O'Reilly Media, Inc." Selling your CTO on the merits of OpenShift and Kubernetes is only the beginning. To operate and scale OpenShift, you also need to know how to manage and expose resources to application teams and continuously deliver changes to the applications running in these environments. With this practical book, new and experienced

developers and operators will learn specific techniques for operationalizing OpenShift and Kubernetes in the enterprise. Industry experts Michael Elder, Jake Kitchener, and Brad Topol show you how to run OpenShift and Kubernetes in production and deliver your applications to a highly available, secure, and scalable platform. You'll learn how to build a strong foundation in advanced cluster operational topics, such as tenancy management, scheduling and capacity management, cost management, continuous delivery, and more. Examine the fundamental concepts of Kubernetes architecture Get different Kubernetes and OpenShift environments up and running Dive into advanced resource management topics, including capacity planning Learn how to support high availability inside a single cluster Use production-level approaches for continuous delivery and code promotion across clusters Explore hybrid cloud use cases, including multicluster provisioning, upgrading, and policy support Devise and deliver disaster recovery strategies

Building a Red Hat OpenShift Environment on IBM Z

IBM Redbooks Cybersecurity is the most important arm of defense against cyberattacks. With the recent increase in cyberattacks, corporations must focus on how they are combating these new high-tech threats. When establishing best practices, a corporation must focus on employees' access to specific workspaces and information. IBM Z® focuses on allowing high processing virtual environments while maintaining a high level of security in each workspace. Organizations not only need to adjust their approach to security, but also their approach to IT environments. To meet new customer needs and expectations, organizations must take a more agile approach to their business. IBM® Z allows companies to work with hybrid and multi-cloud environments that allows more ease of use for the user and efficiency overall. Working with IBM Z, organizations can also work with many databases that are included in IBM Cloud Pak® for Data. IBM Cloud Pak for Data allows organizations to make more informed decisions with improved data usage. Along with the improved data usage, organizations can see the effects from working in a Red Hat OpenShift environment. Red Hat OpenShift is compatible across many hardware services and allows the user to run applications in the most efficient manner. The purpose of this IBM Redbooks® publication is to: Introduce IBM Z and LinuxONE platforms and how they work with the Red Hat OpenShift environment and IBM Cloud Pak for Data Provide examples and the uses of IBM Z with Cloud Paks for Data that show data gravity, consistent development experience, and consolidation and business resiliency The target audience for this book is IBM Z Technical Specialists, IT Architects, and System Administrators.

Mastering CloudForms Automation

An Essential Guide for Cloud Administrators

"O'Reilly Media, Inc." Learn how to work with the Automate feature of CloudForms, the powerful Red Hat cloud management platform that lets you administer your virtual infrastructure, including hybrid public and private clouds. This practical hands-on introduction shows you how to increase your operational efficiency by automating day-to-day tasks that now require manual input. Throughout the book, author Peter McGowan provides a combination of theoretical information and practical coding examples to help you learn the Automate object model. With this CloudForms feature, you can create auto-scalable cloud applications, eliminate manual decisions and operations when provisioning virtual machines and cloud instances, and manage your complete virtual machine lifecycle. In six parts, this book helps you: Learn the objects and concepts for developing automation scripts with CloudForms Automate Customize the steps and workflows involved in provisioning virtual machines Create and use service catalogs, items, dialogs, objects, bundles, and hierarchies Use CloudForm's updated workflow to retire and delete virtual machines and services Orchestrate and coordinate with external services as part of a workflow Explore distributed automation processing as well as argument passing and handling

IBM Storage for Red Hat OpenShift Container Platform V3.11 Blueprint Version 1 Release 1

IBM Redbooks IBM Storage for Red Hat OpenShift Container Platform is a comprehensive container-ready solution that includes all the hardware & software components necessary to setup and/or expand your Red Hat OpenShift Container Platform V3.11 environment. IBM Storage, bringing enterprise data services to containers. In this blueprint, learn how to: • Combine the benefits of IBM Systems with the performance of IBM Storage solutions so that you can deliver the right services to your clients today! • Build a 24 by 7 by 365 enterprise class private cloud with Red Hat OpenShift Container Platform • Leverage enterprise class services such as NVMe based flash performance, high data availability, and advanced container security IBM Storage for Red Hat OpenShift Container Platform: designed for your DevOps environment for on-premises deployment with easy-to-consume components built to perform and scale for your enterprise. Simplify your journey to cloud with pre-tested and validated blueprints engineered to enable rapid deployment and peace of mind as you move to a hybrid multicloud environment. You now have the capabilities.

Deploying SAP Software in Red Hat OpenShift on IBM Power Systems

IBM Redbooks This IBM® Redpaper publication documents how to containerize and deploy SAP software into Red Hat OpenShift 4 Kubernetes clusters on IBM Power Systems by using predefined Red Hat Ansible scripts, different configurations, and theoretical knowledge, and it documents the findings through sample scenarios. This paper documents the following topics: Running SAP S/4HANA, SAP HANA, and SAP NetWeaver on-premises software in containers that are deployed in Red Hat OpenShift 4 on IBM Power Systems hardware. Existing SAP systems running on IBM Power Systems can be repackaged at customer sites into containers that use predefined Red Hat Ansible scripts. These containers can be deployed multiple times into Red Hat OpenShift 4 Kubernetes clusters on IBM Power Systems. The target audiences for this paper are Chief Information Officers (CIOs) that are interested in containerized solutions of SAP Enterprise Resource Planning (ERP) systems, developers that need containerized environments, and system administrators that provide and manage the infrastructure with underpinning automation. This paper complements the documentation that is available at IBM Knowledge Center, and it aligns with the educational materials that are provided by IBM Garage™ for Systems Education.

IBM Cloud Pak for Data

An enterprise platform to operationalize data, analytics, and AI

Packt Publishing Ltd Build end-to-end AI solutions with IBM Cloud Pak for Data to operationalize AI on a secure platform based on cloud-native reliability, cost-effective multitenancy, and efficient resource management Key Features Explore data virtualization by accessing data in real time without moving it Unify the data and AI experience with the integrated end-to-end platform Explore the AI life cycle and learn to build, experiment, and operationalize trusted AI at scale Book Description Cloud Pak for Data is IBM's modern data and AI platform that includes strategic offerings from its data and AI portfolio delivered in a cloud-native fashion with the flexibility of deployment on any cloud. The platform offers a unique approach to addressing modern challenges with an integrated mix of proprietary, open-source, and third-party services. You'll begin by getting to grips with key concepts in modern data management and artificial intelligence (AI), reviewing real-life use cases, and developing an appreciation of the AI Ladder principle. Once you've gotten to grips with the basics, you will explore how Cloud Pak for Data helps in the elegant implementation of the AI Ladder practice to collect, organize, analyze, and infuse data and trustworthy AI across your business. As you advance, you'll discover the capabilities of the platform and extension services, including how they are packaged and priced. With the help of examples present throughout the book, you will gain a deep understanding of the platform, from its rich capabilities and technical architecture to its ecosystem and key go-to-market aspects. By the end of this IBM book, you'll be able to apply IBM Cloud Pak for Data's prescriptive practices and leverage its capabilities to build a trusted data foundation and accelerate AI adoption in your enterprise. What you will learn Understand the importance of digital transformations and the role of data and AI platforms Get to grips with data architecture and its relevance in driving AI adoption using IBM's AI Ladder Understand Cloud Pak for Data, its value proposition, capabilities, and unique differentiators Delve into the pricing, packaging, key use cases, and competitors of Cloud Pak for Data Use the Cloud Pak for Data ecosystem with premium IBM and third-party services Discover IBM's vibrant ecosystem of proprietary, open-source, and third-party offerings from over 35 ISVs Who this book is for This book is for data scientists, data stewards, developers, and data-focused business executives interested in learning about IBM's Cloud Pak for Data. Knowledge of technical concepts related to data science and familiarity with data analytics and AI initiatives at various levels of maturity are required to make the most of this book.

Kubernetes Patterns

Reusable Elements for Designing Cloud-Native Applications

O'Reilly Media The way developers design, build, and run software has changed significantly with the evolution of microservices and containers. These modern architectures use new primitives that require a different set of practices than most developers, tech leads, and architects are accustomed to. With this focused guide, Bilgin Ibryam and Roland Huß from Red Hat provide common reusable elements, patterns, principles, and practices for designing and implementing cloud-native applications on Kubernetes. Each pattern includes a description of the problem and a proposed solution with Kubernetes specifics. Many patterns are also backed by concrete code examples. This book is ideal for developers already familiar with basic Kubernetes concepts who want to learn common cloud native patterns. You'll learn about the following pattern categories: Foundational patterns cover the core principles and practices for

building container-based cloud-native applications. Behavioral patterns explore finer-grained concepts for managing various types of container and platform interactions. Structural patterns help you organize containers within a pod, the atom of the Kubernetes platform. Configuration patterns provide insight into how application configurations can be handled in Kubernetes. Advanced patterns covers more advanced topics such as extending the platform with operators.

Exam Ref 70-532 Developing Microsoft Azure Solutions

Microsoft Press Prepare for Microsoft Exam 70-532—and help demonstrate your real-world mastery of the skills needed to develop Microsoft Azure solutions. Designed for experienced IT professionals ready to advance their status, Exam Ref focuses on the critical thinking and decision-making acumen needed for job success. Focus on the expertise measured by these objectives: Create and manage Azure Resource Manager Virtual Machines Design and implement a storage and data strategy Manage identity, application, and network services Design and implement Azure PaaS compute, web, and mobile services This Microsoft Exam Ref: Organizes its coverage by exam objectives Features strategic, what-if scenarios to challenge you Assumes you have experience designing, programming, implementing, automating, and monitoring Microsoft Azure solutions, and are proficient with tools, techniques, and approaches for building scalable, resilient solutions About the Exam Exam 70-532 focuses on skills and knowledge for building highly available solutions in the Microsoft Azure cloud. About Microsoft Certification This exam is for candidates who are experienced in designing, programming, implementing, automating, and monitoring Microsoft Azure solutions. Candidates are also proficient with development tools, techniques, and approaches used to build scalable and resilient solutions. See full details at: microsoft.com/learning

IBM PowerVC Version 2.0 Introduction and Configuration

IBM Redbooks IBM® Power Virtualization Center (IBM® PowerVCTM) is an advanced enterprise virtualization management offering for IBM Power Systems. This IBM Redbooks® publication introduces IBM PowerVC and helps you understand its functions, planning, installation, and setup. It also shows how IBM PowerVC can integrate with systems management tools such as Ansible or Terraform and that it also integrates well into a OpenShift container environment. IBM PowerVC Version 2.0.0 supports both large and small deployments, either by managing IBM PowerVM® that is controlled by the Hardware Management Console (HMC), or by IBM PowerVM NovaLink. With this capability, IBM PowerVC can manage IBM AIX®, IBM i, and Linux workloads that run on IBM POWER® hardware. IBM PowerVC is available as a Standard Edition, or as a Private Cloud Edition. IBM PowerVC includes the following features and benefits: Virtual image capture, import, export, deployment, and management Policy-based virtual machine (VM) placement to improve server usage Snapshots and cloning of VMs or volumes for backup or testing purposes Support of advanced storage capabilities such as IBM SVC vdisk mirroring of IBM Global Mirror Management of real-time optimization and VM resilience to increase productivity VM Mobility with placement policies to reduce the burden on IT staff in a simple-to-install and easy-to-use graphical user interface (GUI) Automated Simplified Remote Restart for improved availability of VMs ifor when a host is down Role-based security policies to ensure a secure environment for common tasks The ability to enable an administrator to enable Dynamic Resource Optimization on a schedule IBM PowerVC Private Cloud Edition includes all of the IBM PowerVC Standard Edition features and enhancements: A self-service portal that allows the provisioning of new VMs without direct system administrator intervention. There is an option for policy approvals for the requests that are received from the self-service portal. Pre-built deploy templates that are set up by the cloud administrator that simplify the deployment of VMs by the cloud user. Cloud management policies that simplify management of cloud deployments. Metering data that can be used for chargeback. This publication is for experienced users of IBM PowerVM and other virtualization solutions who want to understand and implement the next generation of enterprise virtualization management for Power Systems. Unless stated otherwise, the content of this publication refers to IBM PowerVC Version 2.0.0.

Deployment and Usage Guide for Running AI Workloads on Red Hat OpenShift and NVIDIA DGX Systems with IBM Spectrum Scale

IBM Redbooks This IBM® Redpaper publication describes the architecture, installation procedure, and results for running a typical training application that works on an automotive data set in an orchestrated and secured environment that provides horizontal scalability of GPU resources across physical node boundaries for deep neural network (DNN) workloads. This paper is mostly relevant for systems engineers, system administrators, or system architects that are responsible for data center infrastructure management and typical day-to-day operations such as system monitoring, operational control, asset management, and security audits. This paper also describes IBM Spectrum® LSF® as a workload manager and IBM Spectrum Discover as a metadata search engine to find the right data for an inference job and automate the data science workflow. With the help of this solution, the data location, which may be on different storage systems, and time of availability for the AI job can be fully abstracted, which provides valuable information for data scientists.

Business Continuity Solution with Red Hat OpenShift and IBM Spectrum Virtualize for Public Cloud on Microsoft Azure

IBM Redbooks The focus of this Blueprint is to facilitate the deployment of the hybrid cloud business continuity solution with Red Hat OpenShift Container Platform (RHOCP) on Microsoft Azure Cloud and Container Storage Interface (CSI) driver plug-in for IBM Block Storage and IBM® Spectrum Virtualize for Public Cloud (SV4PC) on Microsoft Azure Cloud. This solution is designed to protect the data by using IBM Storage-based Global Mirror Replication, and the "volume replication" feature from IBM block storage CSI driver for IBM Storage. For demonstration purposes, MySQL containerized database is installed on the persistent volume (PV) that is created on the on-premises IBM FlashSystem® Storage. This storage is connected to the RHOCP cluster in the vSphere environment. CSI driver plug-in for IBM Block Storage (FS9100) and SV4PC on Azure is installed on Red Hat OCP on Azure and On-premises Red Hat OCP. The volume or logical unit number (LUN) from on-premises IBM FlashSystem Storage (FS9100) is replicated to IBM SV4PC on Microsoft Azure Cloud by using the IBM storage global mirror replication feature and the IBM CSI volume replication feature. The information in this document is distributed on an as-is basis without any warranty that is either expressed or implied. Support assistance for the use of this material is limited to situations where IBM Spectrum® Virtualize for Public Cloud is supported and entitled, and where the issues are specific to this Blueprint implementation.

Software Defined Data Center with Red Hat Cloud and Open Source IT Operations Management

IBM Redbooks This IBM® Redbooks® publication delivers a Site Reliability Engineering (SRE) solution for cloud workloads that uses Red Hat OpenStack for Infrastructure as a Service (IaaS), Red Hat OpenShift for Platform as a Service (PaaS), and IT operations management that uses open source tools. Today, customers are no longer living in a world of licensed software. Curiosity increased the demand for investigating the Open Source world for Community Open Source and Enterprise grade applications. IBM as one of the contributors to the Open Source community is interested in helping the software be maintained and supported. Having companies, such as IBM, support the evolution of Open Source software helps to keep the Open Source community striving for enterprise grade open source solutions. Lately, companies are working on deciphering how to take advantage of Enterprise and Community Open Source to implement in their enterprises. The business case for open source software is no longer a mystery and no surprise that most of the new positions in IT enterprises are related to open source projects. The ability of a large enterprise to manage this sort of implementations is to engage in a hypertrophied cooperation, where the ability to not only cooperate with teams and people outside your organization, but also to find new ways of working together and devise new ways to improve the software and its code. A goal for this publication is to help the client's journey into the open source space and implement a private Cloud Container-based architecture with the ability to manage the entire IT Service Management processes from the open source framework. This publication describes the architecture and implementation details of the solution. Although not every piece of this solution is documented here, this book does provide instructions for what was achieved incorporating open source technologies. Moreover, with this publication, the team shares their collaboration experiences working in a team of technologists, open source developers, Red Hat, and the open source community. This publication is for designers, developers, managers, and anyone who is considering starting a Cloud open source project, or users who started that journey. This book also can be a manual to guide the implementation of a technical viable architecture and help those enterprises participate in an open source project but have not done so before. The reader must be familiar with principles in programming and basic software engineering concepts, such as source code, compilers, and patches.

Learn Helm

Improve productivity, reduce complexity, and speed up cloud-native adoption with Helm for Kubernetes

Packt Publishing Ltd A comprehensive introduction to automated application deployment on Kubernetes for beginners
Key Features Effectively manage applications deployed in Kubernetes using Helm
Learn to install, upgrade, share, and manage applications deployed in Kubernetes
Get up and running with a package manager for Kubernetes
Book Description Containerization is currently known to be one of the best ways to implement DevOps. While Docker introduced containers and changed the DevOps era, Google developed an extensive container orchestration system, Kubernetes, which is now considered the frontrunner in container orchestration. With the help of this book, you'll explore the efficiency of managing applications running on Kubernetes using Helm. Starting with a short introduction

to Helm and how it can benefit the entire container environment, you'll then delve into the architectural aspects, in addition to learning about Helm charts and its use cases. You'll understand how to write Helm charts in order to automate application deployment on Kubernetes. Focused on providing enterprise-ready patterns relating to Helm and automation, the book covers best practices for application development, delivery, and lifecycle management with Helm. By the end of this Kubernetes book, you will have learned how to leverage Helm to develop an enterprise pattern for application delivery. What you will learn

- Develop an enterprise automation strategy on Kubernetes using Helm
- Create easily consumable and configurable Helm charts
- Use Helm in orchestration tooling and Kubernetes operators
- Explore best practices for application delivery and life cycle management
- Leverage Helm in a secure and stable manner that is fit for your enterprise
- Discover the ins and outs of automation with Helm

Who this book is for This book is for Kubernetes developers or administrators who are interested in learning Helm to provide automation for application development on Kubernetes. Although no prior knowledge of Helm is required, basic knowledge of Kubernetes application development will be useful.

Red Hat RHCSA/RHCE 7 Cert Guide

Red Hat Enterprise Linux 7 (EX200 and EX300)

Pearson IT Certification Trust the best-selling Cert Guide series from Pearson IT Certification to help you learn, prepare, and practice for exam success. Cert Guides are built with the objective of providing assessment, review, and practice to help ensure you are fully prepared for your certification exam. Master Red Hat RHCSA (EX200) and RHCE (EX300) exam topics

- Assess your knowledge with chapter-opening quizzes
- Review key concepts with exam preparation tasks
- Test yourself with 4 practice exams (2 RHCSA and 2 RHCE)
- Gain expertise and knowledge using the companion website, which contains over 40 interactive exercises, 4 advanced CLI simulations, 40 interactive quizzes and glossary quizzes (one for each chapter), 3 virtual machines and more.

Red Hat RHCSA/RHCE 7 Cert Guide presents you with an organized test preparation routine through the use of proven series elements and techniques. "Do I Know This Already?" quizzes open each chapter and allow you to decide how much time you need to spend on each section. Exam topic lists make referencing easy. Chapter-ending labs help you drill on key concepts you must know thoroughly. Red Hat RHCSA/RHCE 7, Premium Edition eBook and Practice Test focuses specifically on the objectives for the newest Red Hat RHCSA (EX200) and RHCE (EX300) exams reflecting Red Hat Enterprise Linux 7. Expert Linux trainer and consultant Sander van Vugt shares preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual knowledge and hands-on skills. Material is presented in a concise manner, focusing on increasing your understanding and retention of exam topics. Well-regarded for its level of detail, assessment features, comprehensive design scenarios, and challenging review questions and exercises, this study guide helps you master the concepts and techniques that will allow you to succeed on the exam the first time. This study guide helps you master all the topics on the new RHCSA (EX200) and RHCE (EX300) exams, including

- Part 1: RHCSA Basic System Management: Installation, tools, text files, server connections; user, group, and permissions management; network configuration
- Operating Running Systems: Process management, VMs, package installation, task scheduling, logging, managing partitions and LVM logical volumes
- Advanced System Administration: Basic kernel management, basic Apache server configuration, boot procedures/troubleshooting
- Managing Network Services: Using Kickstart; managing SELinux; configuring firewalls, remote mounts, FTP, and time services
- Part 2: RHCE System Configuration/Management: External authentication/authorization, iSCSI SANs, performance reporting, optimization, logging, routing/advanced networking, Bash scripting
- System Security: Configuring firewalls, advanced Apache services, DNS, MariaDB, NFS, Samba, SMTP, SSH, and time synchronization

IBM Cloud Pak for Data with IBM Spectrum Scale Container Native

IBM Redbooks This IBM® Redpaper® publication describes configuration guidelines and best practices when IBM Spectrum® Scale Container Native Storage Access is used as a storage provider for IBM Cloud® Pak for Data on Red Hat OpenShift Container Platform. It also provides the steps to install IBM Db2® and several assemblies within IBM Cloud Pak® for Data, including Watson Knowledge Catalog, Watson Studio, IBM DataStage®, Db2 Warehouse, Watson Machine Learning, Watson OpenScale, Data Virtualization, Data Management Console, and Apache Spark. This IBM Redpaper publication was written for IT architects, IT specialists, developers, and others who are interested in installing IBM Cloud Pak for Data with IBM Spectrum Scale Container Native.

Hybrid Cloud Apps with OpenShift and Kubernetes

"O'Reilly Media, Inc." Selling your CTO on the merits of OpenShift and Kubernetes is only the beginning. To operate and scale OpenShift, you also need to know how to manage and expose resources to application teams and continuously deliver changes to the applications running in these environments. With this practical book, new and experienced developers and operators will learn specific techniques for operationalizing OpenShift and Kubernetes in the enterprise. Industry experts Michael Elder, Jake Kitchener, and Brad Topol show you how to run OpenShift and Kubernetes in production and deliver your applications to a highly available, secure, and scalable platform. You'll learn

how to build a strong foundation in advanced cluster operational topics, such as tenancy management, scheduling and capacity management, cost management, continuous delivery, and more. Examine the fundamental concepts of Kubernetes architecture Get different Kubernetes and OpenShift environments up and running Dive into advanced resource management topics, including capacity planning Learn how to support high availability inside a single cluster Use production-level approaches for continuous delivery and code promotion across clusters Explore hybrid cloud use cases, including multicluster provisioning, upgrading, and policy support Devise and deliver disaster recovery strategies

Cloud-native Computing

Technologies and Tools towards Enterprise-scale Microservices-centric Applications

John Wiley & Sons Explore the cloud-native paradigm for event-driven and service-oriented applications In **Cloud-Native Computing: The Technologies and Tools towards Enterprise-scale Microservices-centric Applications**, a team of distinguished professionals delivers a comprehensive and insightful treatment of cloud-native computing technologies and tools. With a particular emphasis on the Kubernetes platform, as well as service mesh and API gateway solutions, the book demonstrates the need for reliability assurance in any distributed environment. The authors explain the application engineering and legacy modernization aspects of the technology at length, along with agile programming models. Descriptions of MSA and EDA as tools for accelerating software design and development accompany discussions of how cloud DevOps tools empower continuous integration, delivery, and deployment. Cloud-Native Computing also introduces proven edge devices and clouds used to construct microservices-centric and real-time edge applications. Finally, readers will benefit from: Thorough introductions to the demystification of digital transformation Comprehensive explorations of distributed computing in the digital era, as well as reflections on the history and technological development of cloud computing Practical discussions of cloud-native computing and microservices architecture, as well as event-driven architecture and serverless computing In-depth examinations of the Akka framework as a tool for concurrent and distributed applications development Perfect for graduate and postgraduate students in a variety of IT- and cloud-related specialties, **Cloud-Native Computing** also belongs in the libraries of IT professionals and business leaders engaged or interested in the application of cloud technologies to various business operations.

Data Serving with FUJITSU Enterprise Postgres on IBM LinuxONE

IBM Redbooks Enterprises require support and agility to work with big data repositories and relational databases. **FUJITSU Enterprise Postgres** is one of the leading relational database management systems (RDBMSs), and it is designed to work with large data sets. As more companies transform their infrastructures with hybrid cloud services, they require environments that protect the safety of their data and business rules. At IBM®, we believe that your data is yours and yours alone. The insights and advantages that come from your data are yours to use in the pursuit of your business objectives. IBM is dedicated to this mission, and the IBM LinuxONE platform is designed around this core statement. IBM LinuxONE is a secure and scalable data serving and computing platform that is made for today's critical workloads. IBM LinuxONE is an all-Linux enterprise platform for open innovation that combines the best of Linux and open technology with the best of enterprise computing in one system. Combining FUJITSU Enterprise Postgres, which is a robust Relational Database Management System (RDBMS) that provides strong query performance and high availability (HA), with IBM LinuxONE can transform your application and data portfolio by providing innovative data privacy, security, and cyber resiliency capabilities, which are all delivered with minimal downtime. This IBM Redbooks® publication describes data serving with FUJITSU Enterprise Postgres 12 that is deployed on IBM LinuxONE, which provides the scalability, business-critical availability, and security that your enterprise requires. This publication is useful to IT architects, system administrators, and others who are interested in understanding the significance of using FUJITSU Enterprise Postgres on IBM LinuxONE. This publication is written for those who are familiar with IBM LinuxONE and have some experience in the use of PostgreSQL.

OpenShift for Developers

"O'Reilly Media, Inc." Ready to build cloud native applications? Get a hands-on introduction to daily life as a developer crafting code on OpenShift, the open source container application platform from Red Hat. Creating and packaging your apps for deployment on modern distributed systems can be daunting. Too often, adding infrastructure value can complicate development. With this practical guide, you'll learn how to build, deploy, and manage a multitiered application on OpenShift. Authors Joshua Wood and Brian Tannous, principal developer advocates at Red Hat, demonstrate how OpenShift speeds application development. With the Kubernetes container orchestrator at its core, OpenShift simplifies and automates the way you build, ship, and run code. You'll learn how to use OpenShift and the Quarkus Java framework to develop and deploy apps using proven enterprise technologies and practices that you can

apply to code in any language. Learn the development cycles for building and deploying on OpenShift, and the tools that drive them Use OpenShift to build, deploy, and manage the ongoing lifecycle of an n-tier application Create a continuous integration and deployment pipeline to build and deploy application source code on OpenShift Automate scaling decisions with metrics and trigger lifecycle events with webhooks

Red Hat Enterprise Linux 8 Administration

Master Linux administration skills and prepare for the RHCSA certification exam

Packt Publishing Ltd **Develop the skill to manage and administer Red Hat Enterprise Linux and get ready to achieve the RHCSA certification** **Key Features** Learn the most common administration and security tasks and manage enterprise Linux infrastructures efficiently Assess your knowledge using self-assessment questions based on real-world examples Understand how to apply the concepts of core systems administration in the real world **Book Description** Whether in infrastructure or development, as a DevOps or site reliability engineer, Linux skills are now more relevant than ever for any IT job, forming the foundation of understanding the most basic layer of your architecture. With Red Hat Enterprise Linux (RHEL) becoming the most popular choice for enterprises worldwide, achieving the Red Hat Certified System Administrator (RHCSA) certification will validate your Linux skills to install, configure, and troubleshoot applications and services on RHEL systems. Complete with easy-to-follow tutorial-style content, self-assessment questions, tips, best practices, and practical exercises with detailed solutions, this book covers essential RHEL commands, user and group management, software management, networking fundamentals, and much more. You'll start by learning how to create an RHEL 8 virtual machine and get to grips with essential Linux commands. You'll then understand how to manage users and groups on an RHEL 8 system, install software packages, and configure your network interfaces and firewall. As you advance, the book will help you explore disk partitioning, LVM configuration, Stratis volumes, disk compression with VDO, and container management with Podman, Buildah, and Skopeo. By the end of this book, you'll have covered everything included in the RHCSA EX200 certification and be able to use this book as a handy, on-the-job desktop reference guide. This book and its contents are solely the work of Miguel Perez Colino, Pablo Iranzo Gomez, and Scott McCarty. The content does not reflect the views of their employer (Red Hat Inc.). This work has no connection to Red Hat, Inc. and is not endorsed or supported by Red Hat, Inc. What you will learn Deploy RHEL 8 in different footprints, from bare metal and virtualized to the cloud Manage users and software on local and remote systems at scale Discover how to secure a system with SELinux, OpenSCAP, and firewalld Gain an overview of storage components with LVM, Stratis, and VDO Master remote administration with passwordless SSH and tunnels Monitor your systems for resource usage and take actions to fix issues Understand the boot process, performance optimizations, and containers Who this book is for This book is for IT professionals or students who want to start a career in Linux administration and anyone who wants to take the RHCSA 8 certification exam. Basic knowledge of Linux and familiarity with the Linux command-line is necessary.

OpenShift OKD on IBM LinuxONE, Installation Guide

IBM Redbooks **This document provides the step-by-step instructions for installing OpenShift OKD 3.10 on LinuxONE. The intended audience is Systems Architects and Specialists who design, size, and implement solutions on IBM® infrastructures.**

DevOps Culture and Practice with OpenShift

Deliver continuous business value through people, processes, and technology

Packt Publishing Ltd **A practical guide to making the best use of the OpenShift container platform based on the real-life experiences, practices, and culture within Red Hat Open Innovation Labs** **Key Features** Learn how modern software companies deliver business outcomes that matter by focusing on DevOps culture and practices Adapt Open Innovation Labs culture and foundational practices from the Open Practice Library Implement a metrics-driven approach to application, platform, and product, understanding what to measure and how to learn and pivot **Book Description** DevOps Culture and Practice with OpenShift features many different real-world practices - some people-related, some process-related, some technology-related - to facilitate successful DevOps, and in turn OpenShift, adoption within your organization. It introduces many DevOps concepts and tools to connect culture and practice through a continuous loop of discovery, pivots, and delivery underpinned by a foundation of collaboration and software engineering. Containers and container-centric application lifecycle management are now an industry standard, and OpenShift has a leading position in a flourishing market of enterprise Kubernetes-based product offerings. DevOps Culture and Practice with OpenShift provides a roadmap for building empowered product teams within your organization. This guide brings together lean, agile, design thinking, DevOps, culture, facilitation, and hands-on technical enablement all in one book.

Through a combination of real-world stories, a practical case study, facilitation guides, and technical implementation details, *DevOps Culture and Practice with OpenShift* provides tools and techniques to build a DevOps culture within your organization on Red Hat's OpenShift Container Platform. What you will learn: Implement successful DevOps practices and in turn OpenShift within your organization Deal with segregation of duties in a continuous delivery world Understand automation and its significance through an application-centric view Manage continuous deployment strategies, such as A/B, rolling, canary, and blue-green Leverage OpenShift's Jenkins capability to execute continuous integration pipelines Manage and separate configuration from static runtime software Master communication and collaboration enabling delivery of superior software products at scale through continuous discovery and continuous delivery Who this book is for This book is for anyone with an interest in DevOps practices with OpenShift or other Kubernetes platforms. This DevOps book gives software architects, developers, and infra-ops engineers a practical understanding of OpenShift, how to use it efficiently for the effective deployment of application architectures, and how to collaborate with users and stakeholders to deliver business-impacting outcomes.

Learning OpenShift

Packt Publishing Ltd This book is ideal for you if you're a developer experienced with the PHP or Java programming languages and have a basic understanding of using the command line.

IBM Power Systems S922, S914, and S924 Technical Overview and Introduction Featuring PCIe Gen 4 Technology

IBM Redbooks This IBM® Redpaper publication is a comprehensive guide that covers the IBM Power System S914 (9009-41G), IBM Power System S922 (9009-22G), and IBM Power System S924 (9009-42G) servers that use the latest IBM POWER9™ processor-based technology and support the IBM AIX®, IBM i, and Linux operating systems (OSs). The goal of this paper is to provide a hardware architecture analysis and highlight the changes, new technologies, and major features that are being introduced in these systems, such as: The latest IBM POWER9 processor, which is available in various configurations for the number of cores per socket More performance by using industry-leading Peripheral Component Interconnect Express (PCIe) Gen 4 slots Enhanced internal disk scalability and performance with up to 11 NVMe adapters Introduction of a competitive Power S922 server with a 1-socket configuration that is targeted at IBM i customers 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 (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 S914, Power S922, and Power S924 systems. 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.

Red Hat OpenShift on IBM Z Installation Guide

IBM Redbooks This IBM® Redpaper publication provides all the necessary steps to successfully install Red Hat OpenShift 4.4 on IBM Z® or LinuxONE servers. It also provides an introduction to OpenShift nodes, Red Hat Enterprise Linux CoreOS, and Ansible. The steps that are described in this paper are taken from the official pages of the Red Hat website. This IBM Redpaper publication was written for IT architects, IT specialists, and others who are interested in installing Red Hat OpenShift on IBM Z.

Architecting and Operating OpenShift Clusters

OpenShift for Infrastructure and Operations Teams

Apress Design and architect resilient OpenShift clusters and gain a keen understanding of how hundreds of projects are integrated into a powerful solution. While there are many OpenShift resources available for developers, this book focuses on the key elements of infrastructure and operations that teams need when looking to integrate and maintain this platform. You'll review important concepts, such as repeatable deployment techniques, advanced OpenShift RBAC capabilities, monitoring clusters, and integrating with external services. You'll also see how to run specialized workloads in OpenShift and how to deploy non-web based applications on the platform, all designed to help cultivate best practices as your organization continue evolve in microservices architectures. OpenShift has become the main enterprise Kubernetes distribution and its market penetration continues to growth at rapid rate. While OpenShift's documentation provides a great list of configuration options to work with the platform, it can be a daunting task to wade through. *Architecting and Operating OpenShift Clusters* breaks this content down into clear and useful concepts to provide you with a solid understanding of the OpenShift internal architecture. What You'll Learn Operate high availability in multi-tenant OCP clusters Understand OpenShift SDN models, capabilities, and storage classes Integrate

OCP with existing data center capabilities and CI/CD pipelines Support advanced capabilities like: Istio, Multus, Kubernetes Operators, hybrid deployments Who This Book Is For Cloud architects, OpenShift cluster administrators, and teams supporting developers in OpenShift environments who have a basic understanding of this platform and microservices architectures.

Using Docker

Developing and Deploying Software with Containers

"O'Reilly Media, Inc." Docker containers offer simpler, faster, and more robust methods for developing, distributing, and running software than previously available. With this hands-on guide, you'll learn why containers are so important, what you'll gain by adopting Docker, and how to make it part of your development process. Ideal for developers, operations engineers, and system administrators—especially those keen to embrace a DevOps approach—Using Docker will take you from Docker and container basics to running dozens of containers on a multi-host system with networking and scheduling. The core of the book walks you through the steps needed to develop, test, and deploy a web application with Docker. Get started with Docker by building and deploying a simple web application Use Continuous Deployment techniques to push your application to production multiple times a day Learn various options and techniques for logging and monitoring multiple containers Examine networking and service discovery: how do containers find each other and how do you connect them? Orchestrate and cluster containers to address load-balancing, scaling, failover, and scheduling Secure your system by following the principles of defense-in-depth and least privilege

Production Kubernetes

"O'Reilly Media, Inc." Kubernetes has become the dominant container orchestrator, but many organizations that have recently adopted this system are still struggling to run actual production workloads. In this practical book, four software engineers from VMware bring their shared experiences running Kubernetes in production and provide insight on key challenges and best practices. The brilliance of Kubernetes is how configurable and extensible the system is, from pluggable runtimes to storage integrations. For platform engineers, software developers, infosec, network engineers, storage engineers, and others, this book examines how the path to success with Kubernetes involves a variety of technology, pattern, and abstraction considerations. With this book, you will: Understand what the path to production looks like when using Kubernetes Examine where gaps exist in your current Kubernetes strategy Learn Kubernetes's essential building blocks--and their trade-offs Understand what's involved in making Kubernetes a viable location for applications Learn better ways to navigate the cloud native landscape

IBM Spectrum Scale CSI Driver for Container Persistent Storage

IBM Redbooks IBM® Spectrum Scale is a proven, scalable, high-performance data and file management solution. It provides world-class storage management with extreme scalability, flash accelerated performance, automatic policy-based storage that has tiers of flash through disk to tape. It also provides support for various protocols, such as NFS, SMB, Object, HDFS, and iSCSI. Containers can leverage the performance, information lifecycle management (ILM), scalability, and multisite data management to give the full flexibility on storage as they experience on the runtime. Container adoption is increasing in all industries, and they sprawl across multiple nodes on a cluster. The effective management of containers is necessary because their number will probably reach a far greater number than virtual machines today. Kubernetes is the standard container management platform currently being used. Data management is of ultimate importance, and often is forgotten because the first workloads containerized are ephemeral. For data management, many drivers with different specifications were available. A specification named Container Storage Interface (CSI) was created and is now adopted by all major Container Orchestrator Systems available. Although other container orchestration systems exist, Kubernetes became the standard framework for container management. It is a very flexible open source platform used as the base for most cloud providers and software companies' container orchestration systems. Red Hat OpenShift is one of the most reliable enterprise-grade container orchestration systems based on Kubernetes, designed and optimized to easily deploy web applications and services. OpenShift enables developers to focus on the code, while the platform takes care of all of the complex IT operations and processes. This IBM Redbooks® publication describes how the CSI Driver for IBM file storage enables IBM Spectrum® Scale to be used as persistent storage for stateful applications running in Kubernetes clusters. Through the Container Storage Interface Driver for IBM file storage, Kubernetes persistent volumes (PVs) can be provisioned from IBM Spectrum Scale. Therefore, the containers can be used with stateful microservices, such as database applications (MongoDB, PostgreSQL, and so on).

IBM Power E1050: Technical Overview and Introduction

IBM Redbooks This IBM® Redpaper publication is a comprehensive guide that covers the IBM Power E1050 server (9043-MRX) that uses the latest IBM Power10 processor-based technology and supports IBM AIX® and Linux operating systems (OSs). The goal of this paper is to provide a hardware architecture analysis and highlight the changes, new technologies, and major features that are being introduced in this system, such as: The latest IBM Power10 processor design, including the dual-chip module (DCM) packaging, which is available in various configurations from 12 - 24 cores per socket. Support of up to 16 TB of memory. Native Peripheral Component Interconnect Express (PCIe) 5th generation (Gen5) connectivity from the processor socket to deliver higher performance and bandwidth for connected adapters. Open Memory Interface (OMI) connected Differential Dual Inline Memory Module (DDIMM) memory cards delivering increased performance, resiliency, and security over industry-standard memory technologies, including transparent memory encryption. Enhanced internal storage performance with the use of native PCIe-connected Non-volatile Memory Express (NVMe) devices in up to 10 internal storage slots to deliver up to 64 TB of high-performance, low-latency storage in a single 4-socket system. Consumption-based pricing in the Power Private Cloud with Shared Utility Capacity commercial model to allow customers to consume resources more flexibly and efficiently, including AIX, Red Hat Enterprise Linux (RHEL), SUSE Linux Enterprise Server, and Red Hat OpenShift Container Platform workloads. This publication is for professionals who want to acquire a better understanding of IBM Power products. The intended audience includes: IBM Power customers Sales and marketing professionals Technical support professionals IBM Business Partners Independent software vendors (ISVs) This paper expands the set of IBM Power documentation by providing a desktop reference that offers a detailed technical description of the Power E1050 Midrange server model. 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..