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Oracle SPARC Solaris

for dummies®

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Modernize your hardware and software

Leverage existing investments

Deploy enterprise cloud

Lawrence Miller, CISSP

Oracle Special Edition

About Oracle

To succeed in today's competitive markets, enterprises need to modernize legacy IT infrastructures that hinder business agility and growth. Modernizing infrastructures with new, advanced Oracle technologies that are also cloud-ready, provides enterprises with what they need for immediate performance gains, security improvements, and lower support costs, along with a clear path to the public cloud when they're ready. Oracle SPARC Servers and Engineered Systems running the Oracle Solaris operating system offer a scalable, secure, next-generation infrastructure, purpose-built for running enterprise workloads both on premises and in the cloud. For more information, visit www.oracle.com/servers/sparc.

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Introduction

Successful IT organizations are deploying more efficient infrastructures and processes and redirecting resources to focus on delivering the innovations that drive competitive advantage. By simplifying IT with the latest technologies, organizations can get maximum value from application investments, streamline management, optimize resources, and increase productivity across the enterprise.

A hardware and operating system upgrade can deliver immediate and ongoing benefits, including the following:

- Access to the latest technology advancements
- Improved application performance, availability, and security
- Lower total cost of ownership
- Increased eco-efficiency for reduced power and cooling costs
- Flexibility and scalability to accommodate future growth

Oracle SPARC Solaris For Dummies explains why the right combination of a hardware platform and operating system is so important for your mission-critical enterprise applications, how the SPARC platform and Solaris operating system can help your enterprise realize the benefits

of a hardware and operating system upgrade, and why SPARC and Solaris have been the "go-to" architecture and operating system for enterprise computing environments for more than 20 years!

About This Book

This book explains Oracle SPARC and Solaris in four short chapters covering:

- Why you need to modernize your hardware and software infrastructure (Chapter 1)
- How to migrate your infrastructure to the cloud (Chapter 2)
- How to optimize infrastructure for your business-critical applications (Chapter 3)
- Key advantages of running Oracle SPARC and Solaris (Chapter 4)

Foolish Assumptions

It's been said that most assumptions have outlived their uselessness, but I'll assume a few things nonetheless!

I assume you work as a CIO, CTO, SVP, VP, director, or architect, and you're responsible for some or all of the IT infrastructure components (such as compute, storage, and networking) in an enterprise that has UNIX-based mission-critical apps deployed on on-premises infrastructure, as well as public and/or private cloud resources.

If any of these assumptions describe you, then this book is for you!

Icons Used in This Book

Throughout this book, I occasionally use icons to call out important information. Here's what to expect.

This icon points out information you should commit to your nonvolatile memory, your gray matter, or your noggin — along with anniversaries and birthdays!

Tips are always appreciated, never expected — and I sure hope you'll appreciate these tips! This icon points out helpful suggestions and useful nuggets of information.

This icon points out the stuff your mother warned you about (well, probably not). But these helpful alerts do offer practical advice to help you avoid potentially costly and frustrating mistakes.

Beyond the Book

There's only so much I can cover in 48 short pages, so if you find yourself at the end of this book thinking, "Gosh, this is an amazing book. Where can I learn more?," just go to `www.oracle.com`.

IN THIS CHAPTER

- Recognizing the challenges of obsolescence
- Standardizing your data center infrastructure
- Exploring modern infrastructure options

Chapter 1
Realizing the Value of Modernizing Your Legacy Infrastructure

In this chapter, you learn about the challenges of legacy hardware and software, the importance of choosing the right server operating systems, how modernizing your infrastructure is also an opportunity to standardize

your infrastructure, and the different server infrastructure options available from Oracle.

Modern Infrastructure Means Hardware and Software

Most companies today have at least some aging infrastructure in their data centers that cannot meet the requirements of a modern business. Challenges associated with obsolete infrastructure include

- **Higher security risks:** Legacy software with unpatched security vulnerabilities, slow servers that can't natively encrypt data, and unprotected application memory are just a few examples.
- **Growing costs:** Older hardware and software gets more expensive to operate and service over time, and leads to increased downtime due to more hardware failures.
- **Increasing complexity:** Older, heterogeneous systems are difficult and expensive to manage.
- **Inflexible, long lead-times:** New apps need to be deployed faster to keep the business competitive, but long lead-times for hardware and software provisioning are a bottleneck.

- **Lack of capacity:** Older hardware lacks the capacity, growth, and performance to adequately meet rapidly growing IT needs being driven by the reality of mobile computing, analytics, and the Internet of Things (IoT).

To address these challenges and stay competitive, businesses must modernize their infrastructure — both hardware and software. It doesn't make sense to purchase the latest and greatest servers, only to run older operating systems and applications that can't take advantage of newer technology such as multiple cores, 64-bit processors, in-memory computing, and built-in security capabilities.

Likewise, it doesn't make sense — and often isn't even possible (ever notice those minimum hardware specifications for software?) — to run the latest and greatest operating systems applications on legacy hardware.

Thus, businesses must modernize their infrastructure, but there's more to it than simple life-cycle management. This isn't just about planning and budgeting your next round of hardware and software upgrades. Modernizing your infrastructure is a strategic decision. Done correctly, a modern infrastructure provides a clear path to the cloud. Some applications will move directly to the cloud, while others may need to stay on-premises. Either way, a modern infrastructure enables businesses to leverage the benefits of the cloud in a fully optimized, hybrid environment.

ORACLE SOLARIS 11: SECURITY. SPEED. SIMPLICITY

Cloud computing presents many opportunities to deliver better, faster services to users, but it also brings a number of challenges. Applications must roll out quickly and scale seamlessly to handle increasing demand, and information needs to be available to the people who need it, when they need it, while being protected from internal and external threats.

Oracle Solaris 11 brings the performance, reliability, security, and scalability of the industry's top UNIX operating system to the cloud, helping speed application deployment, slash costs, and increase flexibility with virtualization built in at no additional cost.

Featuring innovative technologies to accelerate the adoption of enterprise-scale workloads in the cloud, Oracle Solaris 11 provides fast, intelligent provisioning capabilities, fully virtualized networking features for increased flexibility with reduced costs, improved data management, and

simplified administration with fully integrated security systems.

Upgrading to Oracle Solaris 11 can help you deliver the following:

- **Total protection** for data, applications, and users, with world-class security designed into the operating system, not bolted on afterward
- **Speed** with no-compromise virtualization, allowing enterprise workloads to be run within a virtual environment at no performance cost as if they were being run in a bare-metal environment
- **Simpler data management** with improved data integrity and near-zero administration with Oracle Solaris ZFS

Designed for the Cloud

Oracle Solaris 11 combines key computing elements — virtualization, security, deployment, availability, and performance — into a robust and flexible foundation for public, private, and hybrid cloud deployments.

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It's the first enterprise operating system engineered for the cloud, delivering the following:

- **Virtualization in every dimension:** Network virtualization, zero overhead virtualization
- **Instant provisioning:** Safe, intelligent provisioning and rapid update
- **Integrated hardware and software security:** Data protection at line speed, secure live migration
- **Complete visibility:** Safe, pervasive observability of production workloads

TIP

A modern infrastructure will provide many benefits that come with newer technology including better security, faster response time, more capacity, reduced environmental and management costs, greater flexibility, and improved price/performance.

Standardize Hardware and UNIX Operating Systems

Your choice of OS is more than a technical decision because it has far-reaching implications for your data center infrastructure and the business-critical applications that your enterprise uses.

If you plan to standardize your entire data center on an x86 server platform, your choice of operating systems includes UNIX (such as Oracle Solaris for x86), Linux (such as Oracle Linux), and Microsoft Windows Server.

The Oracle SPARC server infrastructure offers a more massively scalable and highly reliable server architecture than the x86 infrastructure for your business-critical systems and applications. SPARC servers run Oracle Solaris, which provides security, speed, and simplicity, supporting enterprise applications on-premises and in cloud environments.


TIP

Oracle VM Server for SPARC — which is included free with Oracle SPARC hardware — allows you to run virtualized Oracle Solaris environments simply.

Although the maximum number of processor sockets and cores continues to increase every year for different server infrastructures, there is an important core difference between the x86 and SPARC architectures.

Processors in the x86 family are based on the Complex Instruction Set Computer (CISC) architecture, compared to Reduced Instruction Set Computer (RISC) architecture. The Scalable Processor Architecture (SPARC) designs are RISC-based.

The CISC architecture uses more complex instructions to perform operations, which can take multiple CPU cycles to complete. In contrast, the RISC architecture uses more simplified instructions that can be executed in a single CPU cycle. The RISC architecture is, therefore, built for speed.


TIP

Recognizing the types of business-critical systems and applications that your organization uses is an important factor that must be considered when standardizing your data center infrastructure. Many core enterprise applications and database systems are based on UNIX- or Linux-based operating systems.

Enterprise Apps Belong on Enterprise-Grade Infrastructure

Although virtualization and cloud computing have enabled many organizations to reduce costs by leveraging commodity server infrastructure, you may be

somewhat hesitant to put your business-critical applications on "commodity" servers.

After all, commodities are things like "coffee that you had for breakfast . . . wheat, which is used to make bread . . . and pork bellies, which is used to make bacon, which you might find in a bacon, lettuce, and tomato sandwich," right? You should deploy your most important enterprise apps on enterprise-grade infrastructure and leave the commodities in the kitchen!

Oracle offers several solutions to meet the unique requirements of your business, including the Oracle's SPARC Server family (SPARC S7, T7, M7, T8, and M8), Oracle Engineered Systems (SuperCluster and MiniCluster), and Oracle Cloud Infrastructure Dedicated – SPARC Model 300.

Oracle's SPARC Server family

Oracle's SPARC Server family features the most advanced systems for enterprise workloads. Co-engineering of hardware and software results in much faster performance for database and Java applications, leading to more efficient software utilization. Breakthrough second-generation Software in Silicon technology in Oracle's newest SPARC M8 processor enables real-time analytics to be performed on online transaction processing (OLTP) databases by accelerating Oracle Database In-Memory queries in Oracle Database 12*c*, and delivers extreme acceleration of Java streams processing. It also

provides full-speed encryption with nearly zero CPU overhead, plus detection and prevention of attacks against critical data in memory. The combination of high performance with unique Software in Silicon features is the foundation to building the best and most secure business-critical cloud infrastructure.

TIP

The Oracle SPARC Server family includes the following:

- **Scale-out servers:** Oracle's SPARC S7 servers, based on the SPARC S7 processor, extend the most advanced enterprise computing platform into scale-out applications and cloud infrastructure, with unique capabilities for information security, core efficiency, and acceleration of analytics, big data, and machine learning, while offering x86 commodity cost points.
- **Midrange servers:** Oracle's SPARC T8 servers, based on the SPARC M8 processor, are the most advanced midrange systems for enterprise workloads, with unique capabilities for information security, database, and Java acceleration.
- **High-end servers:** Oracle's SPARC M8-8 server, based on SPARC M8 processors, are co-engineered with Oracle software, reducing the risk of deploying database and enterprise applications in business-critical environments. With redundancy built in to all major components, and comprehensive,

efficient, resource management capabilities, SPARC M8 servers achieve exceptional uptime and provide the most cost-effective modernization option for competing architectures.

Oracle SPARC Dedicated Compute Service

Oracle Compute Cloud Service – Dedicated Compute Capacity – SPARC Model 300 is an Infrastructure as a Service (IaaS) offering that provides computing, block storage, and networking services running on Oracle Cloud that takes full advantage of the revolutionary Security in Silicon encryption, in-memory data protection technology, and breakthrough analytics acceleration in Oracle's SPARC M7 processor. The SPARC Model 300 service allows enterprises to run application, database, and analytics workloads for production, development (dev), and test environments faster and with less hardware and software than competing cloud infrastructures. Oracle is the only global cloud provider that offers both SPARC- and x86-based infrastructure, delivering unmatched simplicity, security, and operating efficiency.

Oracle Cloud delivers a cloud infrastructure that is uniquely designed for business-critical workloads. You can move your business-critical applications and other workloads into the cloud, while maintaining security,

high availability, efficiency, and control. SPARC Model 300 offers extraordinary value through its unique combination of technical innovation and economic advantages:

- **It's simple.** Run your workloads in Oracle's secure cloud and free your team to focus on growth and innovation.
- **It's secure.** Gain a competitive advantage from revolutionary hardware-accelerated strong encryption and hardware-based, in-memory data protection technology.
- **It's cost efficient.** Run your application, database, and analytics workloads much faster with less hardware and software. Use your existing Oracle software licenses.
- **It's flexible.** Deploy the same highly optimized dev, test, and production environments in either Oracle Cloud or your own data center.

SPARC Model 300 has the capacity, predictability, and flexibility to support a wide range of enterprise workloads, including the following:

- **Production applications**
  - The SPARC M7 processor is a more powerful compute platform for cloud-based database,

Java, and analytics applications, when compared to x86 processors.

- Dedicated compute, storage, and networking resources eliminate "noisy neighbor" resource conflicts and "nosy neighbor" security concerns and create a stable and isolated platform for production applications.
- The cloud subscription model eliminates economic barriers to migrating to the most modern infrastructure for your existing UNIX applications.

» **Dev/test platform**

- Speed up the application life cycle by developing and testing on exactly the same hardware and software stack in Oracle Cloud or in your own data center.
- Give your developers access to the breakthrough performance and security features of SPARC M7 without needing to acquire, provision, or operate new hardware.

» **Disaster recovery (DR):** Leverage geographically distributed, highly secure Oracle Cloud data centers as remote DR sites and avoid the cost and complexity of acquiring new systems and data center capacity.

IN THIS CHAPTER

- Considering legacy infrastructure challenges
- Looking to the cloud for the solution
- Understanding business needs in the cloud
- Creating a cloud migration strategy

Chapter 2
Getting Your Infrastructure Ready for Cloud

In this chapter, you look at modern business goals and IT challenges, the rise of cloud solutions, business requirements driving demand in the cloud, and how to migrate from legacy infrastructure to a modern infrastructure on-premises, in the cloud, and beyond!

Addressing Business Goals and IT Challenges

Businesses everywhere and in every industry are under constant pressure in today's highly competitive environment to increase productivity, reduce costs, and improve their business processes.

At the same time, security threats, budget constraints, and explosive data growth are real challenges that IT departments must address while helping the business achieve its goals.

For organizations struggling to operate and maintain legacy infrastructure, these mandates can be insurmountable. Productivity is negatively impacted by poorly performing applications and systems often plagued by significant downtime, operational costs rise as a result of lost productivity, and business innovations and process improvements aren't possible using systems that hardly have the capacity to meet the most basic needs of the business.

Likewise, staying ahead of new security threats and cyberattacks is an everyday challenge, even in modern infrastructure environments. The challenge is exponential in legacy environments with unpatched and unsupported systems and applications with outdated security countermeasures. The cost to repair and maintain these systems continues to grow in an effort to delay costly and

risky upgrades, and capacity is never able to meet the demand of the business.

Fortunately, a modern, cloud-ready infrastructure provides viable solutions for businesses struggling with legacy infrastructure.

Recognizing the Impact of the Cloud

Like the Internet before it, the cloud is impacting every industry and geography. It's happening at an incredible speed, and it is here today! The cloud presents an incredible opportunity for all of us. It's changing how businesses run and people work; it's creating new markets and disrupting existing ones; it's changing how we communicate and share. It's changing the economics of business forever. In the digital economy, cloud is the new model for how IT services will be produced and consumed.

With 88 percent of enterprises now using public clouds according to a recent RightScale *State of the Cloud Report*, it's no wonder the public cloud has entered into what many analysts are calling a hyperinnovation phase. Already conferring enormous benefits around cost, agility, and customer experience, public clouds are transforming business practices and reshaping IT. Beyond that, they're also changing the way organizations compete, as the number of solutions and use cases grows.

But although the cloud clearly represents the future, many organizations are hampered by first-generation solutions that barely scratch the surface of the modern cloud's potential. Such solutions are often narrow in scope (preventing enterprise-wide information sharing) and fail to acknowledge the reality of a multi-cloud universe, in which data and applications need to be transferred with speed and ease between public, private, and hybrid clouds, and accessed by the myriad devices that customers and employees use.

Driving Business Demands in the Cloud

Businesses today demand the cloud for speed and agility to deliver the following:

- **Compelling apps:** Businesses need more compelling and competitive applications including Internet of Things (IoT) apps, virtual reality (VR), augmented reality (AR), artificial intelligence (AI), and machine learning (ML).
- **Better workflows:** Cloud leads to better workflows such as self-provisioning, dynamically meeting workload requirements, and shorter deployment times.
- **Deeper analytics:** Cloud leads to better analytics with specialized analytics cloud services to enable better decision making in real time.

LATIN AMERICAN BANK SECURES CONTENT AND REALIZES SIGNIFICANT SAVINGS WITH SPARC M7-8 SERVERS

A large commercial bank in Latin America recently deployed new SPARC servers and Oracle storage in order to achieve new levels of security, meet future capacity needs, and reduce costs. These new Oracle systems replaced existing IBM servers and EMC storage.

The solution was based on the Oracle Optimized Solution for Lifecycle Content Management, a blueprint for deploying specific solutions that have been tested and sized for repeatable deployments.

This resulted in a 300 percent cost savings over a three-year period compared to competitor solutions. With a single vendor solution, the bank was able to deploy a fully isolated customer environment for maximum security and cost effectiveness.

- **Reduced costs:** IT departments that move to the cloud no longer pay for hardware or for data centers. Instead, they pay for services as they use them, or on a monthly subscription basis. Expensive capital expenditures (CapEx) shift to predictable operating expenditures (OpEx).

If IT can't deliver cloud services, lines of business (LOBs) will inevitably source cloud services directly.

Planning Your Path to the Cloud

Once you modernize your legacy IT infrastructure and standardize your legacy UNIX systems on Oracle SPARC and Oracle Solaris, you're in a position to begin implementing new on-premises and public cloud services.

The journey begins with moving some existing apps to new on-premises SPARC servers. These might include large and complex business-critical applications. When these applications are deployed on new SPARC servers, a move to the Oracle Cloud is possible, where they can get the full advantage of modern IT both on-premises and in the cloud, because the same technology is used in both environments.

Modernizing and moving business-critical applications to the cloud has two main requirements: The platform must have all the features of a modern platform, and it must be cloud ready.

Oracle offers a modern platform for on-premises compute, as well as a robust cloud option. The strength of the Oracle offering is that the same technology used for the "modern platform" is also used for Oracle Cloud, so the Oracle offerings are "cloud ready." Deploying applications on Oracle on-premises solutions makes it easier to move to the cloud in the future.

Modern business-critical technology has some important requirements, including the following:

- **Security:** Advanced security capabilities are at the top of every IT department's list of requirements. Oracle's SPARC servers with the Oracle Solaris operating system offer a variety of leading security features that don't adversely affect performance, including the following:
  - Built-in, "on by default" accelerated data encryption/decryption
  - Application memory protection with Silicon Secured Memory
  - Least privilege user access model

- One-step patching
- Compliance auditing

- **Scalability and capacity:** Whether on-premises or in the cloud, modern infrastructure must be able to scale on demand to meet any workload size at any time. Oracle SPARC and Oracle Solaris technologies provide scalability and capacity for any size enterprise workloads with the following capabilities:
  - Scales from 1 to 16 processors
  - Up to 512 cores and over 16,000 individual compute threads
  - High-speed I/O and storage
  - Solaris seamlessly scales from one to thousands of cores
- **Performance and efficiency:** Fast response times and great price/performance to get the most out of deployed assets is a key requirement. Key benefits of the latest SPARC M8 processors include the following:
  - Up to two times faster performance for Java, middleware, database, and enterprise applications
  - Extreme acceleration of Oracle Database In-Memory queries, especially for compressed databases

- Ability to accelerate analytics on online transaction processing (OLTP) databases and Java applications, enabling real-time insight on transactional data

» **Real-time analytics:** Provides the ability to query both OLTP and data warehouse data in real time for the latest, up-to-date analytics. Important capabilities include the following:

- Operational data queries
- Easy access to all data
- Instant decision making
- No data warehouses needed
- Greater usage of data
- Flexible queries

Oracle's best-of-breed technologies include servers, storage, hypervisors, and more, used in the Oracle Cloud and in Oracle Engineered Systems. These solutions are packaged as Optimized Solutions, like Enterprise Cloud Infrastructure, that can be purchased and deployed on-premises, or you can use Oracle building blocks to get the ultimate in flexibility.

SPARC-based Engineered Systems are another option, purpose-built for maximum simplicity and performance.

Finally, Infrastructure as a Service (IaaS) public cloud offerings are built on the same cloud-ready infrastructure — everything is essentially the same Oracle technology stack, engineered for cloud-based use cases and consumption models.

REMEMBER

Oracle offers a clear and simple path forward for companies that want to move to public cloud in the future. For those companies that want to move to the cloud today, Oracle offers a complete public cloud solution. Workloads can be moved back and forth from on-premises to private cloud to public cloud as the business needs require. Legacy UNIX applications can run on SPARC on-premises or on SPARC cloud services or both.

IN THIS CHAPTER

- Maintaining application compatibility
- Accelerating Oracle Database
- Getting real about virtualization with OVM
- Simplifying infrastructure management
- Ensuring world-class support

Chapter 3

Optimizing Infrastructure for Your Business-Critical Applications

In this chapter, you learn why Oracle runs best on Oracle!

Oracle Applications

Oracle Solaris is designed and tested to protect customer investments in software. Although new functionality may be introduced in new releases, Oracle Solaris is designed with continuity of binary interfaces, so applications built on earlier releases can continue to run.

This enables customers to purchase new systems or upgrade the operating system (OS) on older systems and continue to run their existing applications.

Customers and partners who have purchased Oracle Premier Support (discussed later in this chapter) can receive assistance in resolving compatibility issues identified when moving a binary application from an earlier OS release.

For developers, the OS presents an architecture-neutral application programming interface (API), meaning that a program developed on SPARC architecture can be recompiled to run on x86, and vice versa.

The Oracle Solaris Binary Application Guarantee reflects Oracle's confidence in the compatibility of applications from one release of Oracle Solaris to the next, and is designed to make requalification a thing of the past.

TIP

You can download the Oracle Solaris Binary Application Guarantee at `www.oracle.com/us/products/servers-storage/solaris/solaris-guarantee-program-1426902.pdf`.

Binary compatibility between releases of Oracle Solaris operating system helps protect your long-term investment in the development, training, and maintenance of your applications and assures seamless application portability between dev/test and production environments, as well as portability from on-premises to cloud and back.

Oracle Database

Oracle Database 12*c* is a prominent example of how Oracle software is optimized for Oracle SPARC systems and Oracle Solaris operating system. Key capabilities and advantages of Oracle Database running on Oracle SPARC systems and Oracle Solaris operating system include the following:

- **Oracle Solaris Dtrace integration:** Dtrace is integrated into Oracle Database 12*c* and provides end-to-end visibility into I/O operations. A database administrator can trace I/O requester, I/O device, and the exact time spent in each layer: database, OS, and the storage device.

- **System Global Area (SGA) online resizing without reboot:** Combined with Oracle Solaris Zones and resource management, this feature allows fast startup of an Oracle instance and dynamic memory resizing. When running in a complex, virtualized environment like cloud, this feature helps avoid disruption of database services and enables easy SGA adjustment when the database is under heavy load.
- **Multitenancy running over Oracle Solaris virtualization (Zones and/or Oracle VM server for SPARC):** You can install and run multiple versions of databases and operating systems on the same server to support old and new versions of different applications. If Oracle Solaris ZFS is the underlying file system, you can also take advantage of snapshot capabilities and easily move Zones, in just a few seconds, to a different server. Oracle Solaris 11 network virtualization guarantees complete isolation between applications running on different Zones, even if the Zones are using the same server network interface card (NIC).
- **Built-in end-to-end encryption with no additional cost:** SPARC servers have an encryption engine on each core that will accelerate the most common bulk encryption ciphers, such as Advanced Encryption Standard (AES). SPARC also supports asymmetric key exchange with Rivest-Shamir-Adleman (RSA) and Elliptic Curve Cryptography (ECC), and authentication

or hash functions like Secure Hash Algorithms (SHA) and Message Digest (MD).

- **Strong Oracle SPARC and Oracle Solaris performance:** The latest SPARC M8 servers have Software in Silicon capabilities that dramatically improve database performance with more than eight times faster in-memory analytics and more than three times faster online transaction processing (OLTP). SQL in Silicon capabilities provide breakthrough hardware SQL acceleration and decompression for Oracle Database In-Memory.

Oracle Virtual Machine

Oracle VM (OVM) Server for SPARC provides highly efficient, enterprise-class virtualization capabilities for supported SPARC servers. Oracle VM Server leverages the built-in SPARC hypervisor to subdivide a platform's resources (CPU, memory, network, and storage) by creating partitions called logical domains (LDoms). Each LDom runs an independent operating system. Oracle VM Server for SPARC provides the flexibility to deploy multiple Oracle Solaris operating systems simultaneously on a single platform. Oracle VM Server also allows you to create up to 128 virtual servers on one system to take advantage of the massive thread scale offered by SPARC servers.

Oracle VM Server for SPARC is integrated with Oracle SPARC servers and the Oracle Solaris operating system. This combination helps to increase flexibility, isolate workload processing, and improve the potential for maximum server utilization.

Oracle VM Server for SPARC delivers the following:

- **Leading price/performance:** The low-overhead architecture provides scalable, near-native CPU and I/O performance without additional license cost, and supports the Software in Silicon features of SPARC servers.
- **Secure live migration:** This enables you to migrate an active domain to another physical machine on the same or different generations of supported SPARC servers while maintaining application services. On-chip cryptographic accelerators deliver secure, wire speed encryption to protect sensitive data during migration — without any additional hardware investment.
- **Oracle VM Server for SPARC templates:** Accelerates the deployment cycle by making it possible to install and run prebuilt guest domains containing Oracle Solaris and applications, using the industry-standard OVF format.

- **Official certification based on real-world testing:** You can use Oracle VM Server for SPARC with the most sophisticated enterprise workloads under real-world conditions, including Oracle Real Application Clusters (RAC).


TIP

Because the SPARC M8 processor cores in Oracle's SPARC servers are faster than competitor systems, software license usage can be lower. If the software in your data center is licensed by the core, then a more powerful core allows you to decrease the number of licenses needed to deliver the same application performance.

Oracle Support

Oracle Support Services can provide exactly the support coverage you need for your business success. Whether you choose an Oracle environment that is on-premises, in the cloud, or a hybrid cloud solution, Oracle can provide end-to-end support and guidance for you, when you need it, how you need it, and where you need it. Oracle Support Services include the following:

- **Oracle Platinum Services:** Helps you maximize the availability and performance of Oracle engineered systems with 24/7 remote fault

monitoring, accelerated response times, and patch deployment services — at no additional cost.

- **Oracle Premier Support:** Provides access to product updates and enhancements, as well as technical assistance and support resources to help you maintain your product, optimize performance, and effectively implement new functionality.
- **Oracle Advanced Customer Support:** Seamlessly builds upon Oracle Premier Support and extends the value of Oracle Platinum services. It delivers tailored, proactive services and business-critical support to maximize the availability, performance, and value of Oracle solutions throughout their entire life cycle.

IN THIS CHAPTER

- Optimizing for performance and efficiency
- Supporting legacy apps on modern infrastructure
- Leveraging real-time analytics
- Securing your systems and apps
- Migrating to the cloud

Chapter 4

Ten Reasons to Run Your Business on SPARC Systems with Oracle Solaris

In this chapter, I give you ten great reasons to choose Oracle SPARC and Oracle Solaris for your business.

Transformational Performance and Efficiency

Gaining higher levels of performance from your technology as IT budgets shrink is a challenge many senior IT professionals face. As your infrastructure ages, it becomes more expensive to own and less flexible to run. Sound like your environment? If so, you're probably limiting your ability to innovate.

A modern SPARC infrastructure delivers industry-leading core and processor performance. And with the unique Software in Silicon features, SPARC provides greater Oracle Database efficiency and application acceleration than any other commercial processor. This delivers the scalability and capacity to meet any workload or service-level agreement (SLA). And it lowers the cost of deploying your enterprise workloads.

Hardware Optimized for Your Oracle Software

Shouldn't your IT infrastructure put your business in the best possible position to succeed? Generic systems aren't optimized for running your Oracle Database and applications, and can reduce efficiency and lower performance.

Ultimately, this prevents new applications from driving business innovation.

With performance, security, and efficiency at their core, SPARC servers provide the ideal infrastructure for running your most critical Oracle Databases and applications. Oracle's hardware and software teams have worked together to optimize the entire technology stack, so you can run Oracle workloads faster, securely, and cost-effectively. All SPARC servers along with Oracle SuperCluster and MiniCluster Engineered Systems are architected from chip to application to cloud, delivering full integration, and ensuring the best efficiency for your Oracle applications.

No Need to Start Over

Many of your business-critical applications were designed to run on legacy systems, but they now struggle to meet your changing demands. You need a modern platform that allows you to optimize the value of these apps, and innovate new business models. This typically means building an infrastructure from scratch — and that's risky, time consuming, and costly. What if there were an easier way to modernize your data center?

With Oracle SPARC servers, you can modernize your data center and deliver an infrastructure that supports your legacy applications. With hardware and software

co-engineered to work together, each new SPARC generation delivers greater security, performance, capacity, and efficiency — both on-premises and in the cloud.

Take Data Analytics to New Levels

Are you looking for real-time access to corporate databases so you can make fast, accurate decisions? Most analytics solutions need to extract data from operational databases and load it into data warehouses — often containing stale data.

The unique Software in Silicon features of SPARC servers accelerate database queries and offer data decompression for up to 10x greater analytics performance. As a result, you benefit from real-time analytics and faster business insights.

Write Better Code, Faster

When you complete new applications faster, you get quicker returns and better value. So, how do you make your developers as efficient as possible?

Oracle Developer Studio provides a full suite of development and observation tools that provides secure coding

guidelines and built-in code analysis. Running on SPARC servers, you also get Silicon Secured Memory that can prevent buffer-related threats by quickly locating security-related coding errors.

Open for Business

Do you want to develop and run your own software and avoid expensive license fees? Do you want to prevent software vendor lock-in, and easily modify and adapt your software to meet changing business requirements?

With SPARC servers running Oracle Solaris, developers are free to adopt open-source software, and take advantage of innovative new security and analytics capabilities on your own scripts.

Effortless Security for Your Applications

Security is paramount in today's IT landscape, and protecting your data and applications is critical. Moving and storing unencrypted data makes it highly vulnerable to attack, so how can you protect your data without impacting application performance?

By deploying SPARC servers with built-in encryption, you can dramatically improve application and data security without performance penalty. What's more, Software in Silicon features and Oracle Solaris innovations provide added protection for your data at rest, in motion, and in memory.

Secure at Every Layer of the Stack

Cyberattacks are on the rise, and outdated IT is at serious risk. So, how are you protecting your most critical business asset — your data? Many respondents to a recent CSO Market Pulse survey feel their databases are most vulnerable. The same survey shows IT organizations spend only 15 percent of their security budget on database protection.

SPARC servers and the Oracle Solaris operating system together deliver multiple layers of defense to improve security across your whole stack. These include always-on encryption, protection for applications in memory, access controls, automated patching, and security compliance auditing.

Solaris Binary Compatibility Guarantee

Oracle has a long history of delivering binary compatibility across processor generations, and this continues with SPARC M8 processor-based systems. In fact, binary compatibility is guaranteed by Oracle, ensuring your application investment is protected well into the future. This enables you to run applications unchanged across Oracle Solaris releases and ensures that recompiled applications will work on SPARC systems. Oracle has committed to providing support for the Solaris operating system through at least 2034.

A Smart Path to the Cloud

The business benefits of moving to the cloud are compelling, and it's inevitable that you'll need to migrate your business-critical UNIX applications and enterprise processes to the cloud at some point. However, if your organization has an aging UNIX infrastructure, moving to the cloud can be a daunting prospect. You need to find a simple way to increase agility, lower your capital expenditure, and reduce your time to production.

Because Oracle uses the same technology on-premises and in the cloud, SPARC servers offer a clear path to the Oracle Cloud. Developing applications on SPARC systems and Oracle Solaris means you can migrate them to the Oracle Public Cloud any time, without modifications or losing out on any SPARC technology enterprise capabilities. No changing your applications, no foregoing database acceleration and encryption, no migration risks or costs. Just greater flexibility and faster deployment of your new services.

Deploy business-critical apps on modern infrastructure

To succeed in today's competitive markets, enterprises need to modernize their legacy IT to enable business agility and growth. A modern infrastructure, which includes both hardware and software, enables businesses to improve security and performance, deliver compelling applications and reduce time to market, simplify management and service delivery, leverage deep insights and real-time analytics, and define a clear path to the cloud.

Inside...

- Increase performance and efficiency
- Improve security through the entire stack
- Modernize and standardize legacy Unix systems
- Explore the latest SPARC Solaris solutions

ORACLE®

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