Oracle ZFS Storage ZS3 Storage Essentials
Exam Study Guide
Getting Started

The Oracle ZFS Storage ZS3 Certified Implementation Specialist Exam Study Guide is designed to help you prepare for the Oracle ZFS Storage ZS3 Essentials Exam (1Z1-414).

Earning this certification helps OPN members differentiate in the marketplace through proven in-depth expertise, and helps their partner company qualify for the Oracle ZFS Storage ZS3 Specialization.

Target Audience

Oracle ZFS Storage ZS3 Essentials exam audience defines the type of participants who are likely to pass the exam and targets individuals with a specific level of education and expertise:

Job Role:

- Technical Consultants
- Strong foundation and expertise in implementing Oracle NAS Storage on Oracle servers
- Participated in Oracle storage implementations
- Up-to-date training and field experience are recommended

Level of Competency:

- Candidates should be able to install and implement configuration design.
- Strongly recommended for the individuals to be specialized in Oracle NAS Storage with at least 2 years implementation experience.
- Participants should possess a deep knowledge of Oracle storage implementations.
- Deep experience in at least one other Oracle product family is highly recommended.
Exam Topics

Oracle ZFS Storage ZS3 Essentials Exam covers eleven topics:

- Sun ZFS Storage Appliance Overview
- Hardware Installation
- Initial Configuration
- Configuration
- Clustering
- Shares/Pools
- Active Directory/LDAP Integration
- Data Protection
- Analytics
- Performance Sizing
- Typical Use Cases
Levels of Knowledge

Each exam topic contains objectives and each objective is categorized by learner or practitioner level of knowledge.

**Learner** items test foundational grasp and require product comprehension (not recognition or memorization).

Example:

“When setting up price list modifiers in Advanced Pricing, which three steps must be completed in order to successfully activate surcharge and price break features?”

**Practitioner** items present on-the-job scenarios and require the ability to: integrate and apply knowledge in new contexts, analyze and troubleshoot complex issues, and solve problems.

Example:

1) “You are creating price list modifiers in Advanced Pricing. Your customer has three requirements: X, Y, Z. Identify the two steps that must be completed in order to meet those requirements.

2) “You are running a two-instance database with six redo logs defined. You decide to add a third thread to support a third database instance, on the third node of the cluster.

Using command line administration, which two commands will you execute to achieve this?”

Training Options

Throughout the study guide each exam topic recommends one or several training formats:

- **OPN Boot Camps**
- **Online Training**
- **Oracle University Training**

While the Oracle PartnerNetwork facilitates free access to online training, in class trainings often require a fee.
Exam Details per Topic

This section covers details associated to all exam topics such as: exam topics overview, objectives, levels of knowledge, recommended trainings and sample questions. Specialization exams include all application functionalities not only the most frequently used ones.

Topic 1: Sun ZFS Storage Appliance Overview

Objective

- Explain systems features
- Describe the systems architecture
- Describe supported data services and client protocols
- Explain the differences between storage profiles
- Explain clustering concepts and architecture

Recommended Training

Boot Camp

ZFS Appliance Implementation Specialist Bootcamp

Online Training

- [Architectural Overview of the Oracle ZFS Storage Appliance](#)
- [Product Essentials for Sales - Oracle ZS3 Storage Appliances](#)
- [OPN Competency Sun ZFS Appliance Pre-Sales Guided Learning Path](#)
- [OPN: ZFS Storage Appliance ZS3 Systems Technical Training](#)

Sample Questions

Which three data services are available?

a. RAID 4
b. *Unlimited Snapshots*
c. *Data deduplication*
d. *Remote replication*
Topic 2: Hardware Installation

Objective

- Describe considerations for site planning.
- Determine system hardware requirements
- Describe system cabling
- Explain power requirements

Exam Details per Topic

Exam Registration Details

Additional Resources

Level

Learner

Recommended Training

Boot Camp

ZFS Appliance Implementation Specialist Bootcamp

Online Training

- Oracle ZFS Storage Appliance Simulator
- Oracle ZFS Storage Appliance Documentation

Instructor Led Training

- PTR/INT Sun ZFS Storage 7000 Appliance Install and Admin

Sample Questions

Identify the following information required to complete the initial setup of a ZS3-series ZFS storage system.

- IP address, netmask, share name, production username, and password
- IP address, netmask, DNS address, Share name, snapshot schedule
- DHCP server name, Active Domain name, Share name, CIFS server name, username, and
- password
- * DNS server, gateway or router IP, IP address, netmask, root password
- AD name, DNS name, Timeserver (NTP) name/address, Share name, root password
**Topic 3: Initial Configuration**

**Objective**

- Describe system access
- Describe the Browser User Interface (BUI)
- Access and navigate the (BUI)
- Explain user access and roles
- Describe the default usernames and passwords
- Configure new users and roles
- Customize status summary
- Perform system installation
- Perform system setup
- Perform software updates

<table>
<thead>
<tr>
<th>Objective</th>
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<tr>
<td>Describe system access</td>
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<tr>
<td>Explain user access and roles</td>
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<td>Describe the default usernames and passwords</td>
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<td>Configure new users and roles</td>
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**Recommended Training**

Boot Camp

- **ZFS Appliance Implementation Specialist Bootcamp**

Online Training

- [OPN: ZFS Storage Appliance ZS3 Systems Technical Training](#)
- [Oracle ZFS Storage Appliance Simulator](#)
- [Oracle ZFS Storage Appliance Documentation](#)

**Sample Questions**

In which section of the Browser User Interface (BUI) can you create snapshots?

- a. *Shares*
- b. Configuration
- c. Maintenance
- d. Services
Topic 4: Configuration

Objective

- Configure data services
- Configure storage
- Configure network connectivity
- Configure SAN
- Configure Users/Preferences/Alerts

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Recommended Training

Boot Camp

ZFS Appliance Implementation Specialist Bootcamp

Online Training

- Oracle ZFS Storage Appliance Documentation
- Protecting Oracle Exadata with the Sun ZFS Storage Appliance: Configuration Best Practices
- Configuring a Single Oracle ZFS Storage Appliance into an InfiniBand Fabric with Multiple Oracle Exadata Machines
- Backup and Recovery Performance and Best Practices using the Sun ZFS Storage Appliance with the Oracle Exadata Database Machine

Sample Questions

The storage administrator would like to configure the "Cache Profile". Which is a valid configuration type?

- a. Mirrored
- b. Double parity Raid
- c. Triple Mirrored
- d. Single parity Raid, narrow stripes
- e. * Striped
Topic 5: Clustering

Objective

- Setup a cluster
- Perform a rolling software upgrade
- Size a system for clustering (Failover/Failback)

Level

Practitioner

Recommended Training

Boot Camp

ZFS Appliance Implementation Specialist Bootcamp

Online Training

- OPN: ZFS Storage Appliance ZS3 Systems Technical Training
- Oracle ZFS Storage Appliance Simulator
- Oracle ZFS Storage Appliance Documentation

Sample Questions

What is the maximum number of storage controllers that can form a single cluster?

- a. 1
- b. * 2
- c. 4
- d. 255
- e. unlimited
Topic 6: Shares/Pools

Objective

- Configure storage pool
- Create and manage pools/shares
- Configure share properties
- Explain the advantages/disadvantages of SSDs

Level

Practitioner
Practitioner
Practitioner
Learner

Recommended Training

Boot Camp

ZFS Appliance Implementation Specialist Bootcamp

Online Training

- OPN: ZFS Storage Appliance ZS3 Systems Technical Training
- Oracle ZFS Storage Appliance Simulator
- Oracle ZFS Storage Appliance Documentation
- Implementing Fibre Channel SAN Boot with Oracle's Sun ZFS Storage Appliance

Sample Questions

What is the best data profile to configure a pool that needs high performance and high availability?

- a. Striped
- b. * Mirrored
- c. Double Parity RAID
- d. Triple Parity RAID
- e. Single Parity RAID
Topic 7: Active Directory/LDAP Integration

Objective
- Explain the prerequisites for Active Directory (AD)/LDAP implementation
- Configure AD domain/LDAP/NIS settings
- Set permissions with local and AD/LDAP users
- Setup DFS targets
- Publish shares in AD

Level
Learner
Practitioner
Practitioner
Practitioner
Practitioner

Recommended Training
Boot Camp

ZFS Appliance Implementation Specialist Bootcamp

Online Training
- Oracle ZFS Storage Appliance Simulator
- Oracle ZFS Storage Appliance Documentation
- ZFS Storage Rule-Based Identity Mapping Implementation Guide

Sample Questions

Which of the following is required in order to bind a ZS3-series ZFS Storage system to an LDAP server?

a. A self-signed Certificate
b. * A Base Search DN (Distinguished Name)
c. LDAP Proxy Server
d. A password for the LDAP Proxy Server
Topic 8: Data Protection

Objective

- Administer snapshots/cloning
- Configure and manage data replication
- Evaluate compression ratios and performance for data optimization
- Evaluate performance impact of deduplication for data optimization
- Configure and manage thin-provisioning

Level

- Practitioner

Recommended Training

Boot Camp

ZFS Appliance Implementation Specialist Bootcamp

Online Training

- Oracle ZFS Storage Appliance Simulator
- Oracle ZFS Storage Appliance Documentation
- How We Improved SAN and NAS Performance with Hybrid Columnar Compression
- Architecture Principles and Implementation Practices for Remote Replication Using the Oracle ZFS Storage Appliance

Sample Questions

Which three statements are true regarding deduplication on the 7000-series systems?

a. * Checksum hashes are stored within the DDT (Deduplication Table).

b. The DDT is only stored within memory (ARC).

c. * Shares defined with smaller block sizes or database record sizes have a better chance of being deduplicated, but conversely may result in the DDT filling up faster.

d. There is no impact on performance for shares if the DDT fills up as deduplication is disabled in that event.

e. * If the DDT fills up and spills into L2ARC or disk, performance can be severely degraded.
Topic 9: Analytics

Objective

- Monitor overall appliance status
- Create custom worksheets
- Archive statistics
- Perform drill-down analysis
- Explain Oracle's Enterprise Manager integration
- Identify and diagnose performance issues

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Recommended Training

Boot Camp

ZFS Appliance Implementation Specialist Bootcamp

Online Training

- [Oracle ZFS Storage Appliance Simulator](#)
- [Oracle ZFS Storage Appliance Documentation](#)
- [Oracle ZFS Storage Appliance Analytics Guide](#)
- [Oracle ZFS Storage Appliance Customer Service Manual](#)

Sample Questions

Which two actions allow a statistic to become an archived data set?

- a. using "Add statistic..." in Analytics > Open Worksheet
- b. * clicking the archive (tape) icon in Analytics > Open Worksheet
- c. * saving the statistic in a worksheet
- d. monitoring the statistic in Analytics > Open Worksheet for more than one hour
- e. zooming out to more than one hour, and then pausing the statistic
Topic 10: Performance Sizing

**Objective**

- Describe the impact of workloads on performance and throughput  
  
- Size the system to meet performance and throughput goals (capacity planning)

**Level**

- Learner
- Practitioner

**Recommended Training**

Boot Camp

ZFS Appliance Implementation Specialist Bootcamp

**Online Training**

- Oracle ZFS Storage Appliance Simulator
- Oracle ZFS Storage Appliance Documentation
- Oracle ZFS Storage Appliance Analytics Guide

**Sample Questions**

You have issues with the performance characteristics of a specific version of NFS and would like to disable this version. What is a good resolution?

a. disabling the NFSv4 delegation

b. * setting the NFS minimum and maximum versions to the same value as another NFS version number

c. reducing the maximum number of concurrent NFS requests allowed

d. enabling iSNS discovery
Topic 11: Typical Use Cases

Objective

- Describe usecase for Engineered system backup
- Describe usecase for Oracle databases
- Describe usecase for file sharing
- Describe usecase for virtualization
- Describe usecase for Microsoft infrastructures
- Describe usecase for consolidation/bulk storage

Level

- Learner
- Learner
- Learner
- Learner
- Learner
- Learner

Recommended Training

Boot Camp

ZFS Appliance Implementation Specialist Bootcamp

Online Training

- Oracle ZFS Storage Appliance Simulator
- Oracle ZFS Storage Appliance Documentation
- ZFS Evil Tuning Guide
- ZFS Best Practices Guide
- Oracle Technology Network - NAS Storage Documentation

Sample Questions

Secondary cache should be turned on when using which two of the following?

- a. online redo log files
- b. * data files with < 5 ms response time requirements
- c. * random read workloads
- d. flashback recovery log
Exam Registration Details

Full exam preparation details are available on the exam page Oracle ZFS Storage ZS3 Essentials Exam (1Z1-414). Including learning objectives, number of questions, time allowance, pricing and languages available.

The OPN Certified Specialist Exams appointments are available worldwide at Pearson VUE Testing Centers. Reservations can be made via phone or online.

Candidates must have an Oracle Web Account to access CertView and check their exam results. In order to have their certifications reflected on OPN Competency Center, both CertView and Pearson Vue accounts must be updated with the current OPN Company ID. Your Company ID can be obtained by contacting your local Oracle Partner Business Center or by signing in to your OPN account.

Additional Resources

- Main Oracle ZFS Storage Appliance website
- Oracle Technology Network Oracle ZFS Storage Appliance page
- ZFS Storage Appliances Business Value White Paper
- ZFS Storage Appliances Analyst White Paper on Oracle Integration
- Oracle Sun Storage Administration Training by Oracle University
- Oracle Technology Network (OTN) Community Storage General Discussion
- OPN Guided Learning Paths & Assessments
- OPN Certified Specialist Exam Study Guides