



Think fast™

Riverbed Certified Solutions Associate – WAN Optimization (RCSA-W) Exam Prep/Blueprint

Exam 101-01

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NetApp Manageability Software Development Kit (NM SDK), including any third-party software available for review with such SDK which can be found at <http://communities.netapp.com/docs/DOC-1152>, and are included in a NOTICES file included within the downloaded files.

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Preface

This Riverbed® certification blueprint is intended for anyone who wants to become certified in the Riverbed WAN optimization products and solutions, and Riverbed Optimization System (RiOS®). The Riverbed Certified Solutions Associate – WAN Optimization (RCSA-W) program is designed to validate the skills required of pre-sales engineers and technical professionals who work in the initial implementation of Riverbed products.

This blueprint provides a combination of theory and practical experience needed for a general understanding of the subject matter. It also provides sample questions that will help in the evaluation of personal progress and provide familiarity with the types of questions that will be encountered in the exam.

This publication does not replace practical experience, nor is it designed to be a stand-alone guide for any subject. Instead, it is an effective tool that, when combined with education activities and experience, can be a very useful preparation guide for the exam.

Certification Overview

The Riverbed Certified Solutions Associate – WAN optimization certificate is granted to individuals who demonstrate entry-level knowledge and experience with the RiOS® product suite. The typical RCSA-W will have taken a Riverbed approved training class such as the *WAN200 Optimization Essentials* course in addition to having hands-on experience in performing deployment, troubleshooting, and maintenance of RiOS® products in small and medium organizations. While there are no set requirements prior to taking the exam, candidates who have taken a Riverbed authorized training class and have at least three months of hands-on experience with RiOS® products have a significantly higher chance of receiving the certification. We would like to emphasize that **solely** taking the class will not adequately prepare you for the exam.

To obtain the RCSA-W certification, you are required to pass a computerized exam available at any Pearson VUE testing center worldwide.

Benefits of Certification

1. Establishes your credibility as a knowledgeable and capable individual in regard to Riverbed products and services, WAN optimization, and application acceleration.
2. May help improve your career advancement potential.
3. Entitles you to use the RCSA-W certification logo on your business card.

Exam Information

Exam Specifications

- **Exam Number:** 101-01
- **Exam Name:** Riverbed Certified Solutions Associate – WAN Optimization
- **Version of RiOS:** Up to RiOS version 3.6.0 for the SteelHead EX appliances and VSP; version 9.0.0 for the SteelHead and SteelHead™ (virtual edition); version 9.0.0 for the SteelCentral™ Controller for SteelHead, version 4.0.1 for SteelHead Interceptor, and version 4.5.1 for the SteelCentral™ Controller for SteelHead Mobile.
- **Number of Questions:** 65
- **Total Time:** 75 minutes for exam, 15 minutes for Survey and Tutorial (90 minutes total)
- **Exam Provider:** Pearson VUE
- **Exam Language:** English only. Riverbed allows a 30-minute time extension for exams taken in non-English speaking countries for students that request it. English speaking countries are Australia, Bermuda, Canada, Ireland, New Zealand, United Kingdom, South Africa, and the United States. A form will need to be completed by the candidate and submitted to Pearson VUE.
- **Special Accommodations:** Yes (must submit written request to Pearson VUE for ESL or ADA accommodations; includes time extensions and/or a reader)
- **Offered Locations:** Worldwide (over 4000 test centers in 165 countries)
- **Prerequisites:** None, although taking a Riverbed training class is highly recommended
- **Available to:** Partners, customers, and employees
- **Passing Score:** 70%
- **Certification Expires:** Every two years (must recertify every two years, with six month grace period)
- **Recertification Criteria:** Retake the 101-01 – RCSA-W current exam. If you are a RCSA-W certified, taking the 199-01 – RCSP-W exam will re-certify both your RCSA-W and the RCSP-W.
- **Wait Between Failed Attempts:** 72 hours
- **Wait Between Passed Exams:** One year
- **Cost:** \$150.00 (USD)
- **Number of Attempts Allowed:** Unlimited

Certification Checklist

As the RCSA-W exam is geared towards individuals who have both the theoretical knowledge and hands on experience with the RiOS product suite, ensuring proficiency in both areas is crucial towards passing the exam. For individuals starting out with the process, we recommend the following steps to guide you along the way:

1. Building Theoretical Knowledge

The easiest way to become knowledgeable in deploying, maintaining, and troubleshooting the RiOS® product suite is to take a Riverbed authorized training class. To ensure the greatest possibility of passing the exam, it is recommended that you review the RCSA-W Blueprint – Recommended Resources for Study and ensure your familiarity with all topics listed, prior to any examination attempts.

2. Gaining Hands-on Experience

While the theoretical knowledge will get you partway there, it is the hands-on knowledge that can get you over the top and enable you to pass the exam. Since all deployments are different, providing an exact amount of experience required is difficult. Generally, we recommend that resellers and partners perform at least five deployments in a variety of technologies prior to attempting the exam. For customers, and alternatively for resellers and partners, starting from the design and deployment phase and having *at least three months of experience* in a production environment would be beneficial.

3. Taking the Exam

The final step in becoming an RCSA-W is to take the exam at a Pearson VUE authorized testing center. To register for any Riverbed Certification exam, please visit

<http://www.pearsonvue.com/riverbed>

RIVERBED CERTIFIED SOLUTIONS ASSOCIATE – WAN OPTIMIZATION (RCSA-W) BLUEPRINT AND STUDY REFERENCES

The Riverbed Certified Solutions Associate exam, and therefore this blueprint, covers the Riverbed products and technologies up to RiOS version 3.6.0 for the SteelHead EX appliances and VSP; version 9.0.0 for the SteelHead and SteelHead™ (virtual edition); version 9.0.0 for the SteelCentral™ Controller for SteelHead, version 4.0.1 for Interceptor, and version 4.5.1 for the SteelCentral™ Controller for SteelHead Mobile

This publication does not replace practical experience, nor is it designed to be a stand-alone guide for any subject. Instead, it is an effective tool that, when combined with education activities and experience, can be a very useful preparation guide for the exam.

Riverbed Recommended Training Courses

- WAN200 Optimization Essentials

Additional Information on Riverbed Training can be found at: <http://www.riverbed.com/services-training/training/>. You can also write to training@riverbed.com.

Riverbed authorized training courses and Riverbed Certification are mutually exclusive programs. This means that certification is not directly mapped to specific training courses and vice versa. We recommend certain courses but in no way does that automatically qualify or prepare you for the exam.

To access Riverbed technical documentation and publications please visit Riverbed Support webpage at <https://support.riverbed.com/index.htm>.

General Knowledge

Subject	Reference
TCP	http://www.ietf.org/rfc.html <ul style="list-style-type: none"> • RFC 793 (Original TCP RFC) • RFC 1323 TCP extensions for high performance • RFC 3649 (HighSpeed TCP for Large Congestion Windows) • RFC 3742 (Limited Slow-Start for TCP with Large Congestion Windows) • RFC 2474 (Differentiated Services Code Point) TCP/IP Illustrated, Volume I, The Protocols by W. R. Stevens (Addison-Wesley, 1994)
NetFlow	http://www.caida.org/tools/utilities/flowscan/arch.xml
Embedded NetShark	https://supportkb.riverbed.com/support/index?page=content&id=S16021
Deployment Options	http://tools.ietf.org/id/draft-wilson-wrec-wccp-v2-01.txt <ul style="list-style-type: none"> • Riverbed® Deployment Guide v9.0 – Chapter 11: WCCP Virtual In-Path Deployments • Riverbed® Deployment Guide v9.0– Chapter 12: Policy-Based Routing In-Path Deployments
QoS	<ul style="list-style-type: none"> • Riverbed® Deployment Guide v9.0 – Chapter 6: QoS Configuration and Integration and Chapter 7: QoS Configuration Examples
Data Streamlining, Transport Streamlining, Application Streamlining, Management Streamlining	<ul style="list-style-type: none"> • Riverbed® Deployment Guide v9.0 – Section 1: Optimization Techniques and Design Fundamentals
Security	<ul style="list-style-type: none"> • Riverbed® Deployment Guide v9.0 – Chapter 16: VPN Routing and Forwarding • Riverbed® Deployment Guide v9.0 – Chapter 18: Data Protection Deployments • Riverbed® Deployment Guide v9.0 – Chapter 20: Proxy File Services Deployment • Riverbed® Deployment Guide v9.0 – Chapter 22: Authentication, Security, Operations, and Monitoring • SteelHead® Appliance Deployment Guide v9.0 – Protocols – Chapter 11: SSL Deployments

SteelHead, SteelHead EX

Subject	Reference
SteelHead® Appliance (Installation and Configuration)	<ul style="list-style-type: none"> • SteelHead® Appliance Installation and Configuration Guide • Riverbed® Deployment Guide v9.0 – Chapter 1: Optimization techniques and Design Fundamentals • Riverbed Deployment Guide v9.0– Chapter 3: WAN Visibility Modes • Riverbed® Deployment Guide v9.0 – Chapter 9: Physical In-Path Deployments • Riverbed® Deployment Guide v9.0 – Chapter 10: Virtual In-Path Deployments • Riverbed® Deployment Guide v9.04 – Chapter 17: Out-of-Path Deployments • Riverbed® Deployment Guide v9.0 – Chapter 18: Data Protection Deployments • Riverbed® Deployment Guide v9.0 – - Protocols Chapter 9: Video Optimization • SteelHead® Appliance Deployment Guide v9.0 – Protocols • Riverbed Getting Started Guide v8.6 • SteelHead Series EX560 and EX760 Systems Owner’s Manual v3.5.0 • Riverbed® Training Course: WAN200 Optimization Essentials
SteelHead™ (virtual edition) (Installation and Configuration)	<ul style="list-style-type: none"> • Virtual Steelhead™ Installation Guide v9.0
SteelHead® Mobile Appliance (Installation and Configuration)	<ul style="list-style-type: none"> • Riverbed® Deployment Guide v9.0 – Chapter 24: Steelhead Mobile Deployments • Steelhead® Mobile Controller User’s Guide v4.5.1 • Steelhead® Mobile Controller Installation Guide v4.5.1 • Riverbed® Training Course: WAN200 Optimization Essentials

Interceptor

Subject	Reference
SteelHead™ Interceptor (Installation and Configuration)	<ul style="list-style-type: none"> • Riverbed® Deployment Guide v9.0 – Chapter 18: Data Protection Deployments • Interceptor Appliance Deployment Guide v4.0.1

- SteelHead™ Interceptor Installation Guide v4.0.1
- SteelHead™ Interceptor User's Guide v4.0.1
- Riverbed® Training Course: WAN200 Optimization Essentials

SteelCentral™ Controller for SteelHead (SCS)

Subject	Reference
Controller Appliance (Installation and Configuration)	<ul style="list-style-type: none"> • Riverbed® SteelCentral Controller for SteelHead Deployment Guide v9.0 • SteelCentral Controller for SteelHead User's Guide v9.0 • SteelCentral Controller for SteelHead Management Console Installation Guide v9.0 • Riverbed® Training Course: WAN200 Optimization Essentials
Controller-v Appliance (Installation and Configuration)	<ul style="list-style-type: none"> • SteelCentral Controller for SteelHead Virtual Edition Installation Guide v9.0

Troubleshooting

Subject	Reference
Troubleshooting	<ul style="list-style-type: none"> • Riverbed® Deployment Guide v9.0 – Chapter 23: Troubleshooting Steelhead Appliance Deployments Problems

Exam Question Distribution

Subject Area	Approximate Number of Questions from this area
SteelHead Deployment & SteelHead Control for SteelHead	17
SteelHead Application Features	11
SteelHead Mobile Client	9
SteelHead Interceptor	2
SteelHead Networking Features	5
SteelHead SaaS	6
WAN Optimization Technology	15

Exam Questions

Types of Questions

The RCSA-W exam includes a variety of question types, including single-answer multiple choice, multiple-answer multiple choice, drag and drop, and scenario based. The question distribution is heavily targeted toward the multiple-choice variety. Regardless of the type of question, selecting the best answer(s) in response to the questions will yield the best score.

NOTE: these are sample questions only, may refer to older product names or versions, and do not appear as actual exam questions.

Sample Questions

1. A user uploads a Microsoft Word document to a server across the network using the file transfer protocol (FTP). The file has been seen before by SteelHead that are optimizing the link and so the user experiences warm performance. A second user at the same location downloads the file from the same server using the CIFS protocol. This file transfer can be considered:
 - a. Cold, the data now travels in another direction so that SteelHead needs to relearn the data.
 - b. Cold, the application protocol is now different so that SteelHead needs to relearn the data.
 - c. Warm, the data has been seen by SteelHead before making the application protocol irrelevant.
 - d. Warm, only because the transfer uses CIFS protocol.
 - e. Partially warm, SteelHead only needs to learn the new data.

2. What does the transport streamlining module in RiOS do? (Choose 2)
 - a. Reduces transport protocol inefficiencies.
 - b. Prioritizes application traffic.
 - c. Virtually expands TCP windows.
 - d. Reduces WAN round trips at the application layer.

3. What are basic components of SteelHead™ Interceptor? (Choose 3)
 - a. Load balancing
 - b. Redirection
 - c. Peer affinity
 - d. Optimization
 - e. Store SDR data

4. The SteelCentral™ Controller for SteelHead (SCC) provides the following:
 - a. Rapid deployment of distributed SteelHead
 - b. Simplifies ongoing configuration and management of distributed SteelHead
 - c. Health monitoring of distributed SteelHead
 - d. Performance reports of distributed SteelHead
 - e. All of the above

5. You have a large WAN circuit that is not being fully utilized and you are experiencing high latency, which of the following RiOS features may help? (Choose 3)
 - a. Enable forced burst TCP (FB-TCP).
 - b. Enable high-speed TCP (HSTCP).
 - c. Disable Admission Control.
 - d. Enable bandwidth estimation TCP.
 - e. Enable maximum TCP (MX-TCP).
 - f. Enable Disk Encryption.

6. What is automatically generated when a SteelHead detects a software crash?
 - a. A process dump
 - b. A tcp dump
 - c. A reboot log entry
 - d. A new log file

7. Overcoming bandwidth limitations is a function of:
 - a. Transport streamlining
 - b. Application streamlining
 - c. Data streamlining
 - d. Storage streamlining

8. RiOS v7.0 and later versions can use HTTP stream splitting to optimize two different live video technologies, such as: (Choose 2)
- a. Microsoft Silverlight.
 - b. Flumotion Streaming Server.
 - c. Adobe HTTP Dynamic Streaming.
 - d. 420 Tunnel Streaming.
 - e. Helix Universal Server
 - f. Cisco Streaming Engine.
9. WCCP Version 1 can redirect:
- a. Any connection to SteelHeads
 - b. Only HTTP connections are redirected to SteelHeads
 - c. All connections are redirected except SSL connections
 - d. WCCP redirection is not supported on SteelHeads
 - e. WCCP version 1 redirection is not supported on SteelHeads

Answers

1: c; 2: a and c; 3: a, b and c; 4: e; 5: b, d and e; 6: a; 7: c; 8: a and c; 9: e