

riverbed

Think fast.™

Riverbed Certified Solutions Professional – WAN Optimization (RCSP-W) Blueprint

Exam 199-01

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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 Professional – WAN Optimization (RCSP-W) program is designed to validate the skills required of technical professionals who work in the implementation of Riverbed products and services, WAN optimization, and application acceleration.

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 Professional – WAN optimization certificate is granted to individuals who demonstrate advanced knowledge and experience with the RiOS® product suite. The typical RCSP-W will have taken a Riverbed approved training class such as the *Steelhead Appliance Deployment & Management* course in addition to having hands-on experience in performing deployment, troubleshooting, and maintenance of RiOS® products in small, medium, and large 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 six 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 RCSP-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 RCSP-W certification logo on your business card.

Exam Information

Exam Specifications

- **Exam Number:** 199-01
- **Exam Name:** Riverbed Certified Solutions Professional – WAN Optimization
- **Version of RiOS:** Up to RiOS version 6.1 for the Steelhead appliances and the Central Management Console, Virtual Steelhead™ 1.0 (RiOS® 6.1.1), Interceptor 2.0 and Steelhead Mobile 3.1
- **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 and Japanese only. Riverbed allows a 30-minute time extension for English 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. There will be no time extension for candidates taking the exam in Japanese.
- **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:** Everyone (partners, customers, and employees)
- **Passing Score:** 700 out of 1000 (70%)
- **Certification Expires:** Every two years (must recertify every two years, with six month grace period)
- **Recertification Criteria:** Retake the 199-01 – RCSP-W current exam. If you are a RCSA-W certified, retaking the 199-01 – RCSP-W exam will also re-certify your RCSA-W.
- **Wait Between Failed Attempts:** 72 hours
- **Wait Between Passed Exams:** One year. This will be effective starting March 12, 2011.
- **Cost:** \$150.00 (USD)
- **Number of Attempts Allowed:** Unlimited (though statistics are kept)

Certification Checklist

As the RCSP-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 RCSP-W Blueprint and Study Reference 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 six months of experience* in a production environment would be beneficial.

3. Taking the Exam

The final step in becoming an RCSP-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>.

Recommended Resources for Study

Riverbed Training Courses

- Steelhead Appliance Deployment & Management (SADM)
- Steelhead Appliance Operations & L1/L2 Troubleshooting (SAO)
- Steelhead Mobile Installation & Configuration (SMC)
- Central Management Console Configuration & Operations (CMC)
- Interceptor Appliance Installation & Configuration (INTC)
- Steelhead Appliance Advanced Deployment & Troubleshooting (SADT)

Additional information on Riverbed Training can be found at:

http://www.riverbed.com/us/products/professional_services/training.php

RIVERBED CERTIFIED SOLUTIONS PROFESSIONAL – WAN OPTIMIZATION (RCSP-W) BLUEPRINT AND STUDY REFERENCES

The Riverbed Certified Solutions Professional exam, and therefore this blueprint, covers the Riverbed products and technologies through RiOS® version 6.1 (Steelhead® and Riverbed® CMC) only (Virtual Steelhead™ 1.0 (RiOS® 6.1.1), Interceptor® 2.0 and Steelhead® Mobile 3.1 as well).

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 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/flowsan/arch.xml
WCCP	http://tools.ietf.org/id/draft-wilson-wrec-wccp-v2-01.txt <ul style="list-style-type: none"> • Riverbed® Deployment Guide v6.1 – Chapter 7: WCCP Deployments
Layer 4 and PBR	<ul style="list-style-type: none"> • Riverbed® Deployment Guide v6.1 – Chapter 8: PBR Deployments
QoS	<ul style="list-style-type: none"> • Riverbed® Deployment Guide v6.1 – Chapter 3: QoS Configuration and Integration
Data Streamlining, Transport Streamlining, Application Streamlining, Management Streamlining	<ul style="list-style-type: none"> • Riverbed® Deployment Guide v6.1 – Section 1: Design Fundamentals

Security	<ul style="list-style-type: none"> • Riverbed® Deployment Guide v6.1 – Chapter 9: VPN Routing and Forwarding • Riverbed® Deployment Guide v6.1 – Chapter 12: SSL Deployments • Riverbed Deployment Guide v6.1 – Chapter 13: Data Protection Deployments • Riverbed® Deployment Guide v6.1 – Chapter 14: Proxy File Services Deployment • Riverbed® Deployment Guide v6.1 – Chapter 17: Authentication, Security, Operations, and Monitoring
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Steelhead

Subject	Reference
Steelhead® Appliance (Installation and Configuration)	<ul style="list-style-type: none"> • Steelhead® Appliance Installation and Configuration Guide • Riverbed® Deployment Guide v6.1 – Chapter 1: Design Fundamentals • Riverbed® Deployment Guide v6.1 – Chapter 2: WAN Visibility Modes • Riverbed® Deployment Guide v6.1 – Chapter 4: Physical In-Path Deployments • Riverbed® Deployment Guide v6.1 – Chapter 5: Virtual In-Path Deployments • Riverbed® Deployment Guide v6.1 – Chapter 10: Out-of-Path Deployments • Riverbed® Deployment Guide v6.1 – Chapter 11: Protocol Optimization in the Steelhead Appliance • Riverbed® Training Course: Steelhead Appliance Deployment & Management
Virtual Steelhead™ Appliance (Installation and Configuration)	<ul style="list-style-type: none"> • Virtual Steelhead™ Installation Guide
Steelhead Mobile Appliance (Installation and Configuration)	<ul style="list-style-type: none"> • Riverbed® Deployment Guide v6.1 – Chapter 16: Steelhead Mobile Deployments • Steelhead® Mobile Controller User's Guide v3.1 • Steelhead® Mobile Controller Installation Guide v3.1 • Riverbed® Training Course: Steelhead Mobile Installation & Configuration

Interceptor

Subject	Reference
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<p>Interceptor® Appliance (Installation and Configuration)</p>	<ul style="list-style-type: none"> • Riverbed® Deployment Guide v6.1 – Chapter 6: Interceptor Appliance Deployments • Interceptor® Appliance User's Guide v2.0 • Interceptor® Appliance Installation Guide v2.0 • Riverbed® Training Course: Interceptor Appliance Installation & Configuration
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Central Management Console (CMC)

Subject	Reference
<p>CMC Appliance (Installation and Configuration)</p>	<ul style="list-style-type: none"> • Riverbed® Deployment Guide v6.1 – Chapter 15: Steelhead Console Management Console Deployments • Central Management Console User's Guide v6.1 • Central Management Console Installation Guide v6.1 • Riverbed Training Course: Central Management Console Configuration & Operations
<p>CMC – VE Appliance (Installation and Configuration)</p>	<ul style="list-style-type: none"> • Central Management Console Virtual Edition Installation Guide v6.1 • Riverbed® Training Course: Central Management Console Configuration & Operations

Riverbed Services Platform (RSP)

Subject	Reference
<p>RSP (Installation, Configuration, Creating and Packaging a Virtual Machine)</p>	<ul style="list-style-type: none"> • RSP User's Guide v6.1 • Riverbed® Training Course: Steelhead Appliance Deployment & Management

Troubleshooting

Subject	Reference
<p>Troubleshooting</p>	<ul style="list-style-type: none"> • Riverbed® Deployment Guide v6.1 – Chapter 18: Troubleshooting Deployments Problems • Riverbed® Training Course: Steelhead Appliance Advanced Deployment & Troubleshooting

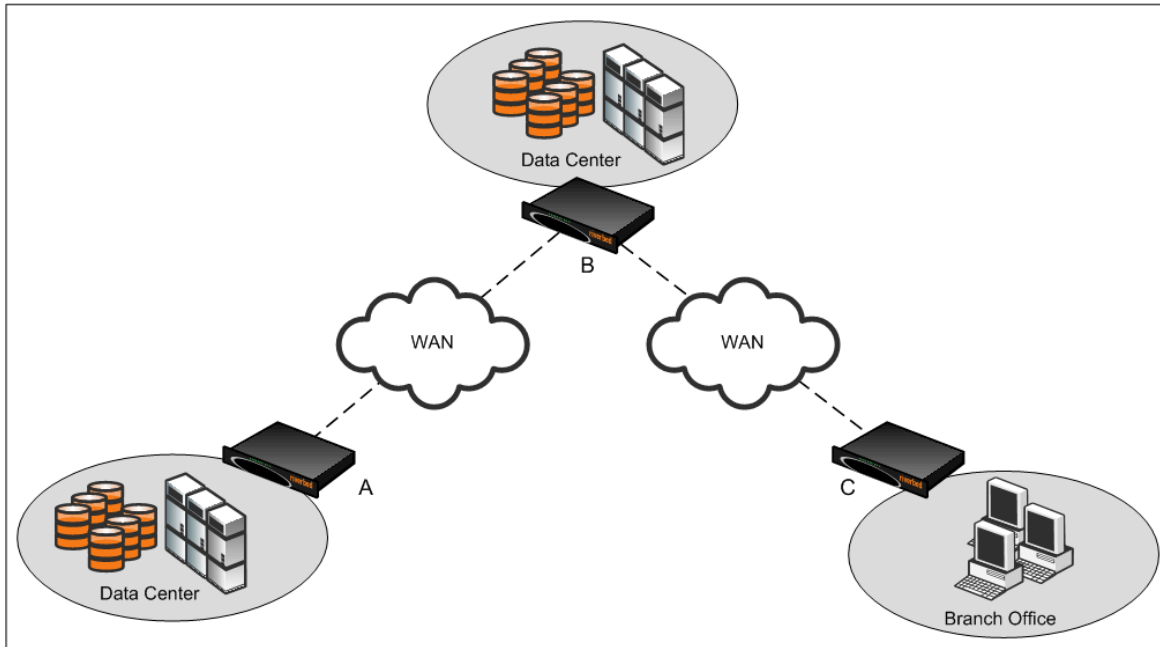
Exam Questions

Types of Questions

The RSCP-W exam includes a variety of question types, including single-answer multiple choice, multiple-answer multiple choice, and fill in the blank. The question distribution is heavily targeted toward the multiple choice variety, however, fill in the blank questions are used in situations where the command is believed to be important part of everyday Steelhead appliance operation. Regardless of the type of question, selecting the best answer(s) in response to the questions will yield the best score.

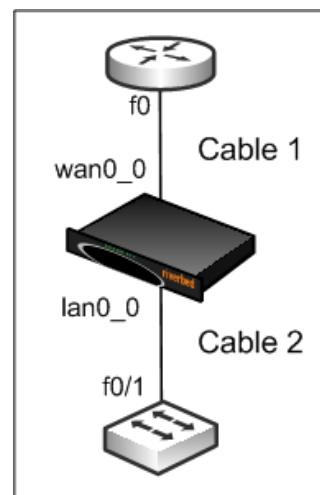
Sample Questions

1. How do you view the full configuration in the CLI?
 - a. > show con
 - b. > show configuration
 - c. > show config all
 - d. # show config full
 - e. (config) # show con
2. Under what circumstances will the NetFlow cache entries flush (be sent to the collector)? (Select 3)
 - a. When inactive flows have remained for 15 seconds
 - b. When inactive flows have remained for 30 minutes
 - c. When active flows have remained for 30 minutes
 - d. When the TCP URG bit is set
 - e. When the TCP FIN bit is set
3. The auto-discovery probe uses which TCP option number?
 - a. 0x4e (76 decimal)
 - b. 0x4c (76 decimal)
 - c. 0x42 (66 decimal)
 - d. Auto-discovery does not use TCP options
4. In order to achieve optimization using auto-discovery for traffic coming from site C and destined to site A in the exhibit, which configuration below would be required?
 - a. In-path fixed-target rule on site B Steelhead pointing to Site A Steelhead
 - b. Peering rule on site B Steelhead passing through probes from site C
 - c. Peering rule on site B Steelhead passing through probe responses from site A
 - d. Both A and C
 - e. Both B and C

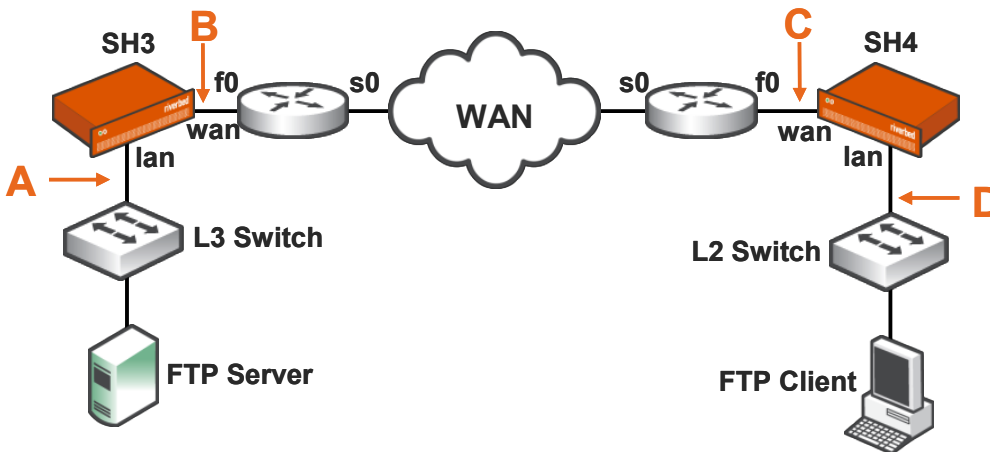


5. You are configuring HighSpeed TCP in an environment with an OC-12 (622Mbit/s) and 60 milliseconds of round-trip latency. The WAN router queue length is set to BDP for the link. Assuming 1500 byte packets, the queue length for this link would be closest to:
 - a. 3,110 packets
 - b. 6,220 packets
 - c. 775 packets
 - d. 150 packets
 - e. 10,000 packets

6. Which of the following correctly describe the combination of cable types used in a fail-to-wire scenario for the interconnected devices shown in the accompanying figure? Assume Auto-MDIX is not enabled on any device.
 - a. Cable 1: Crossover, Cable 2: Crossover
 - b. Cable 1: Straight-through, Cable 2: Straight-through
 - c. Cable 1: Crossover, Cable 2: Straight-through
 - d. Cable 1: Straight-through, Cable 2: Crossover



7. In the accompanying figure, on which interfaces would you capture the NetFlow export data for active FTP data packets when a client performs a GET operation? (Assume you are not interested in client response packets such as acknowledgements.) (Select the best answer)
- A and B
 - B and D
 - C and D
 - B and C
 - A and C



8. Which of the following control messages are NOT used by WCCP?
- HERE_I_AM
 - I_SEE_YOU
 - REDIRECT_ASSIGN
 - REMOVAL_QUERY
 - KEEPALIVE
9. When configuring QoS Hierarchical Mode and you want to share the same parent class, what class type will you configure?
- Leaf classes
 - Tree classes
 - Inner classes
 - Sibling classes
 - None of the Above
10. Type in the command used to show information regarding the current health (status) of a Steelhead, the current version, the uptime, and the model number. (fill in the blank)
- _____

11. A customer wants to mark the DSCP value for active FTP data connection as AF22. Which of the following are true? (Select the best answer)
- a. Specify qos dscp rule at client-side Steelhead with a dest-port of 21 and with a DSCP value of 22
 - b. Specify qos dscp rule at server-side Steelhead with a src-port of 20 and with a DSCP value of 20
 - c. Specify qos dscp rule at server-side Steelhead with a dest-port of 21 and with a DSCP value of 22
 - d. Specify qos dscp rule at client-side Steelhead with a dest-port of 20 and with a DSCP value of 22
 - e. Specify qos dscp rule at server-side Steelhead with a dest-port of 20 and with a DSCP value of 20

Answers

1: d; 2: a,c, and e; 3: b; 4: b; 5: a; 6: c; 7: e; 8: e; 9: d; 10: show info; 11: b