



Red Hat Training and Certification

Student Workbook

Red Hat Enterprise Linux 9.0 RH199

RHCSA Rapid Track

Edition 1

Document Conventions	xi
Introduction	xiii
RHCSA Rapid Track	xiii
Orientation to the Classroom Environment	xiv
Performing Lab Exercises	xviii
1. Access Systems and Obtaining Support	1
Edit Text Files from the Shell Prompt	2
Guided Exercise: Edit Text Files from the Shell Prompt	6
Configure SSH Key-based Authentication	8
Guided Exercise: Configure SSH Key-based Authentication	14
Get Help From Red Hat Customer Portal	20
Guided Exercise: Get Help From Red Hat Customer Portal	25
Detect and Resolve Issues with Red Hat Insights	27
Quiz: Detect and Resolve Issues with Red Hat Insights	34
Summary	36
2. Manage Files from the Command Line	37
Describe Linux File System Hierarchy Concepts	38
Quiz: Describe Linux File System Hierarchy Concepts	40
Make Links Between Files	44
Guided Exercise: Make Links Between Files	48
Match File Names with Shell Expansions	50
Quiz: Match File Names with Shell Expansions	55
Lab: Manage Files from the Command Line	59
Summary	69
3. Manage Local Users and Groups	71
Describe User and Group Concepts	72
Quiz: Describe User and Group Concepts	75
Gain Superuser Access	79
Guided Exercise: Gain Superuser Access	84
Manage Local User Accounts	89
Guided Exercise: Manage Local User Accounts	92
Manage Local Group Accounts	95
Guided Exercise: Manage Local Group Accounts	98
Manage User Passwords	101
Guided Exercise: Manage User Passwords	105
Lab: Manage Local Users and Groups	109
Summary	115
4. Control Access to Files	117
Manage File System Permissions from the Command Line	118
Guided Exercise: Manage File System Permissions from the Command Line	122
Manage Default Permissions and File Access	125
Guided Exercise: Manage Default Permissions and File Access	130
Lab: Control Access to Files	134
Summary	140
5. Manage SELinux Security	141
Change the SELinux Enforcement Mode	142
Guided Exercise: Change the SELinux Enforcement Mode	147
Control SELinux File Contexts	150
Guided Exercise: Control SELinux File Contexts	155
Adjust SELinux Policy with Booleans	158
Guided Exercise: Adjust SELinux Policy with Booleans	160
Investigate and Resolve SELinux Issues	163

Guided Exercise: Investigate and Resolve SELinux Issues	167
Lab: Manage SELinux Security	171
Summary	177
6. Tune System Performance	179
Kill Processes	180
Guided Exercise: Kill Processes	186
Monitor Process Activity	190
Guided Exercise: Monitor Process Activity	194
Adjust Tuning Profiles	199
Guided Exercise: Adjust Tuning Profiles	206
Influence Process Scheduling	211
Guided Exercise: Influence Process Scheduling	216
Lab: Tune System Performance	220
Summary	226
7. Schedule Future Tasks	227
Schedule Recurring User Jobs	228
Guided Exercise: Schedule Recurring User Jobs	231
Schedule Recurring System Jobs	234
Guided Exercise: Schedule Recurring System Jobs	237
Manage Temporary Files	240
Guided Exercise: Manage Temporary Files	243
Quiz: Schedule Future Tasks	246
Summary	250
8. Install and Update Software Packages	251
Register Systems for Red Hat Support	252
Quiz: Register Systems for Red Hat Support	255
Install and Update Software Packages with DNF	257
Guided Exercise: Install and Update Software Packages with DNF	266
Enable DNF Software Repositories	271
Guided Exercise: Enable DNF Software Repositories	274
Lab: Install and Update Software Packages	278
Summary	284
9. Manage Basic Storage	285
Mount and Unmount File Systems	286
Guided Exercise: Mount and Unmount File Systems	289
Add Partitions, File Systems, and Persistent Mounts	292
Guided Exercise: Add Partitions, File Systems, and Persistent Mounts	301
Manage Swap Space	305
Guided Exercise: Manage Swap Space	309
Lab: Manage Basic Storage	313
Summary	321
10. Manage Storage Stack	323
Create and Extend Logical Volumes	324
Guided Exercise: Create and Extend Logical Volumes	335
Manage Layered Storage	341
Guided Exercise: Manage Layered Storage	347
Lab: Manage Storage Stack	352
Summary	358
11. Control Services and Boot Process	359
Identify Automatically Started System Processes	360
Guided Exercise: Identify Automatically Started System Processes	365
Control System Services	369

Guided Exercise: Control System Services	373
Select the Boot Target	377
Guided Exercise: Select the Boot Target	383
Reset the Root Password	386
Guided Exercise: Reset the Root Password	390
Repair File System Issues at Boot	392
Guided Exercise: Repair File System Issues at Boot	395
Lab: Control the Boot Process	398
Summary	404
12. Analyze and Store Logs	405
Describe System Log Architecture	406
Quiz: Describe System Log Architecture	408
Review Syslog Files	412
Guided Exercise: Review Syslog Files	417
Review System Journal Entries	419
Guided Exercise: Review System Journal Entries	424
Preserve the System Journal	427
Guided Exercise: Preserve the System Journal	430
Maintain Accurate Time	433
Guided Exercise: Maintain Accurate Time	437
Lab: Analyze and Store Logs	441
Summary	446
13. Manage Networking	447
Validate Network Configuration	448
Guided Exercise: Validate Network Configuration	454
Configure Networking from the Command Line	457
Guided Exercise: Configure Networking from the Command Line	464
Edit Network Configuration Files	470
Guided Exercise: Edit Network Configuration Files	474
Configure Hostnames and Name Resolution	478
Guided Exercise: Configure Hostnames and Name Resolution	481
Lab: Manage Networking	485
Summary	490
14. Access Network-Attached Storage	491
Manage Network-Attached Storage with NFS	492
Guided Exercise: Manage Network-Attached Storage with NFS	495
Automount Network-Attached Storage	498
Guided Exercise: Automount Network-Attached Storage	502
Lab: Access Network-Attached Storage	508
Summary	515
15. Manage Network Security	517
Manage Server Firewalls	518
Guided Exercise: Manage Server Firewalls	526
Lab: Manage Network Security	529
Summary	537
16. Run Containers	539
Container Concepts	540
Quiz: Container Concepts	547
Deploy Containers	549
Guided Exercise: Deploy Containers	559
Manage Container Storage and Network Resources	565
Guided Exercise: Manage Container Storage and Network Resources	575

Manage Containers as System Services	581
Guided Exercise: Manage Containers as System Services	587
Lab: Run Containers	593
Summary	600
17. Comprehensive Review	601
Comprehensive Review	602
Lab: Fix Boot Issues and Maintain Servers	606
Lab: Configure and Manage File Systems and Storage	612
Lab: Configure and Manage Server Security	618
Lab: Run Containers	628