Hewlett Packard Enterprise

Linux Troubleshooting (GL314)

U8531S

Course ID	U8531S
Duration	5 days
Format	ILT, VILT
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This course is designed to give Linux administrators experience with both common and uncommon system problems. The course is based on the idea that the best way to learn troubleshooting is to perform troubleshooting. Approximately 25% of class time is spent on lecture, leaving 75% for intensive lab content. Class starts with a discussion of effective troubleshooting techniques. Tools and topics are gradually introduced over the course of the week, which students apply in self-paced labs. Students can choose from over 120 scenarios organized by topic and difficulty. Because each scenario is independent of the others, students can choose scenarios according to their interests and experience. Each scenario is designed to help students develop deeper understanding while exploring the problem. All scenarios include optional hints designed to reflect a realistic troubleshooting process, while only gradually revealing the solution. Students find the flexibility and challenge of this course very rewarding.

Audience

This course is designed for intermediate to advanced Linux users.

Supported distributions

- Red Hat Enterprise Linux 8
- SUSE Linux Enterprise 12

Prerequisites

Before attending this course, you should have:

- Linux Fundamentals (U8583S)
- Enterprise Linux Systems Administration (H7091S)
- Enterprise Linux Networking Services (H7092S), or have equivalent knowledge.

A short refresher for each topic will be presented, but will not be discussed in depth.

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Detailed course outline

Module 1: Troubleshooting MethodologyTopic	• The Troubleshooting Mindset • Evaluating Possible Solutions • Identifying and Implementing Change • Define and Follow Policies	• Working with Others • Finding Documentation • Finding Help Online
Module 2: Troubleshooting Tools	• Common Troubleshooting Tools • RPM Queries • RPM Verification • SRPM and spec Files • Hardware Discovery Tools • Configuring New Hardware with hwinfo • strace and ltrace • lsof and fuser • ipcs and ipcrm • iostat, mpstat, and vmstat • Using hdparm to Measure • Troubleshooting with the ip command • Name Resolution • ss/netstat and rpcinfo • nmap • Netcat • tcpdump and wireshark	• **Lab Tasks** – Determining the System's Configuration – Troubleshooting with rpm – Process Related Tools – Network Tools
Module 3: Rescue Environments	• Diagnostic/Recovery • Rescue Procedures • Recovery: mount & chroot • Recovery Examples • Recovery: Network Utilities	• **Lab Tasks** – Recovery Runlevels – Recovering Damaged MBR – Recover from Deleted Critical Files
Module 4: Topic Group 1	• Linux Boot Process • System Boot Method Overview • systemd System and Service Manager • Modifying system Services • Using systemd • Booting Linux on PCs • Troubleshooting With GRUB 2 • The Boot Loader Specification • Boot Process Troubleshooting • Troubleshooting: Linux and Init • Process Management • Process Management Tools • Troubleshooting Processes: top • Filesystem Concepts • Filesystem Troubleshooting • Backup Concepts • Backup Troubleshooting • Backup Troubleshooting	• **Lab Tasks** – Troubleshooting Problems: Topic Group 1

Module 5: Topic Group 2

- Networking Tools
- Linux Network Interfaces
- Networking Commands Review
- NetworkManager
- Networking Troubleshooting
- Networking Troubleshooting
- Virtual Interfaces/IP Aliases
- Network Teaming
- Xinetd Concepts
- Xinetd Troubleshooting
- TCP Wrappers Concepts
- TCP Wrappers Concepts
- TCP Wrappers Troubleshooting
- Netfilter/iptables Concepts
- Netfilter/iptables Troubleshooting

- **Lab Tasks**
  – Troubleshooting Problems: Topic Group 2

Module 6: Topic Group 3

- X11 Concepts
- X11 Server Operation
- X11 Troubleshooting
- Rsyslog Concepts
- System Logging
- systemd Journal
- systemd Journal's journactl
- Secure Logging with Journal's Log Sealing
- Syslog Troubleshooting
- RPM Concepts
- RPM Troubleshooting
- Common Unix Printing System (CUPS)
- CUPS Troubleshooting
- at & cron
- at & cron Usage
- at & cron Troubleshooting
- systemd Timers
- system Timer troubleshooting

- **Lab Tasks**
  – Troubleshooting Problems: Topic Group 3

Module 7: Topic Group 4	• Users and Groups • Users and Groups Troubleshooting • PAM Concepts • PAM Troubleshooting • Filesystem Quotas • Quotas Troubleshooting • File Access Control Lists • FACL Troubleshooting • SELinux Concepts • SELinux Troubleshooting • SELinux Troubleshooting Continued	• **Lab Tasks** – Troubleshooting Problems: Topic Group 4
Module 8: Topic Group 5	• Kernel Modules • Kernel Modules Troubleshooting • Logical Volume Management • Creating Logical Volumes • LVM Deployment Issues • VG Migration, PV Resizing & Troubeshooting • Software RAID Overview • RAID Troubleshooting • Multipathing Overview • SAN Multipathing • Multipath Configuration • Multipathing Best Practices • LDAP and OpenLDAP • Troubleshooting OpenLDAP • LDAP and 389 Directory Server • Troubleshooting 389 Directory Server • NIS and NIS+ (YP) • NIS Troubleshooting Aids	• **Lab Tasks** – Troubleshooting Problems: Topic Group 5
Module 9: Topic Group 6	• DNS Concepts • DNS Troubleshooting • DNS Troubleshooting • Apache Concepts • Apache Troubleshooting • Apache Troubleshooting • FTP Concepts • FTP Troubleshooting • Squid Concepts • Squid Troubleshooting	• **Lab Tasks** – Troubleshooting Problems: Topic Group 6

Module 10: Topic Group 7

- Samba Concepts
- Samba Troubleshooting
- Postfix Concepts
- Postfix Troubleshooting
- Postfix Troubleshooting
- IMAP & POP Concepts
- IMAP/POP Troubleshooting
- MariaDB
- MariaDB Troubleshooting

- **Lab Tasks**
  – Troubleshooting Problems: Topic Group 7 Topic

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