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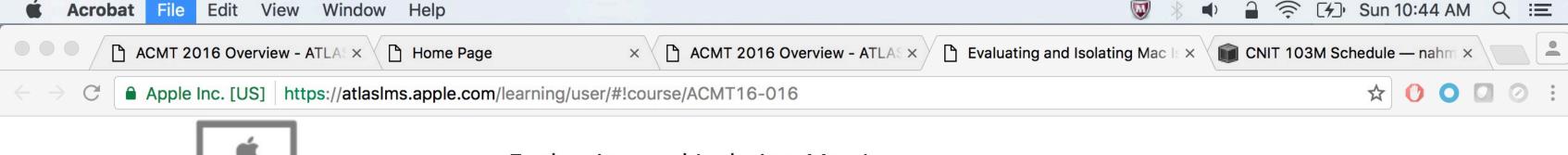🔒 Apple Inc. [US] | https://atlaslms.apple.com/learning/user/#!course/ACMT16-016

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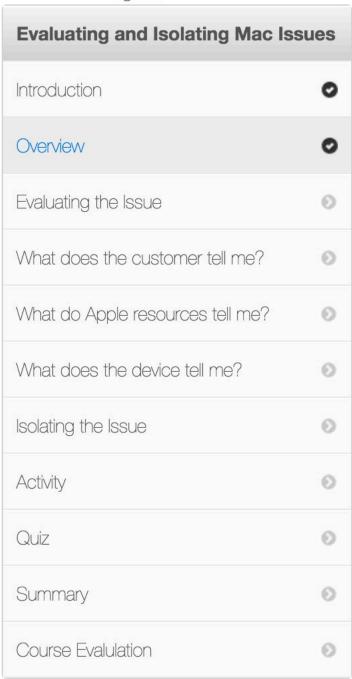
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Evaluating and Isolating Mac Issues

Introduction

Course Description

The Evaluating and Isolating Mac Issues course describes how to use systematic troubleshooting methodology to correctly evaluate and isolate Mac issues.

This course is part of the ACMT 2016 curriculum and is used to prepare for the Mac Service Certification Exam (MAC-16A).
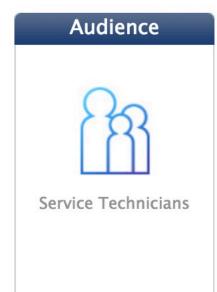
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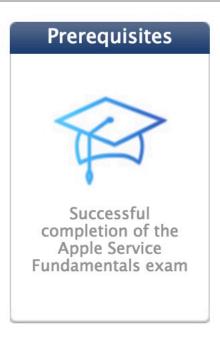
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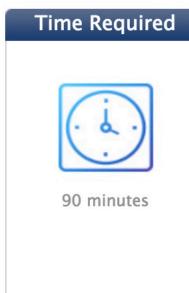
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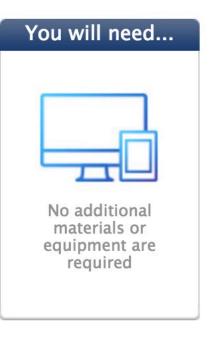Course Evaluation ⊙

Lesson Objectives

At the end of this course, you should be able to:

- Apply systematic troubleshooting methodology to correctly evaluate and isolate a given issue with a Mac to determine the correct resolution to the issue.
- Identify the three primary sources of information that are used to evaluate a given Mac issue.
- Use quick check steps to further isolate a given Mac issue.
- Given an isolated issue, categorize the issue as either hardware (including accidental damage), software, environmental, or educational opportunity.
- Given a customer scenario, correctly answer a set of knowledge-based questions about evaluating and isolating issues.

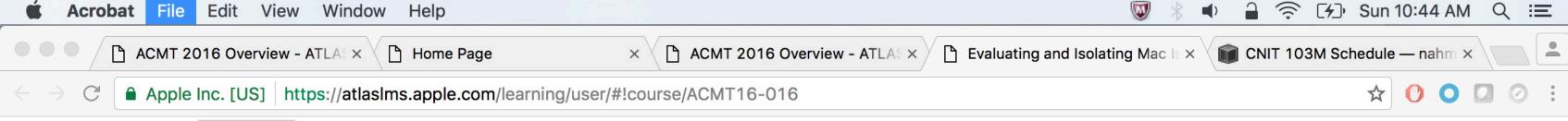| Audience	Prerequisites	Time Required	You will need...
Service Technicians	Successful completion of the Apple Service Fundamentals exam	90 minutes	No additional materials or equipment are required

ℹ Your course is organized by chapters and pages. Chapters are sections you see on the side navigation. Pages are now found within a chapter. You can navigate pages by clicking the grey radio buttons at the bottom of a window.
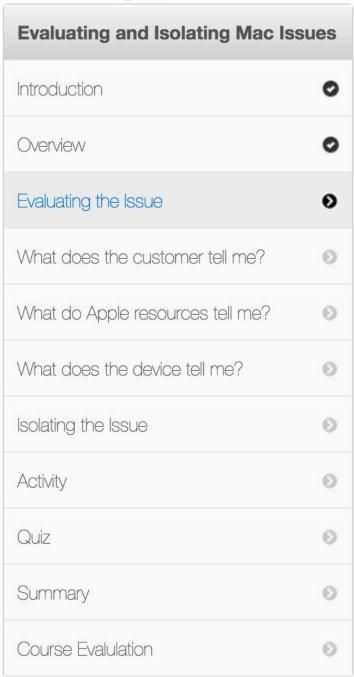
Evaluating and Isolating Mac Issues
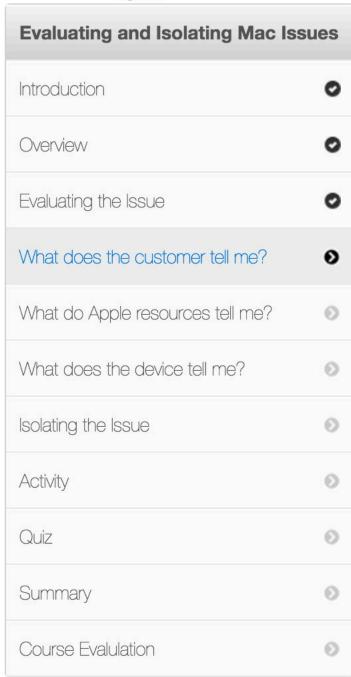
Evaluating the Issue

Have you been in a situation where knowing one piece of information does not give you a clear indication of what is going on? Or have you seen one piece of a puzzle, but still been unclear as what the big puzzle image is supposed to be?

Evaluation is the first step of the EIR (Evaluate, Isolate, and Resolve) model of systematic troubleshooting. It is important because it is the step where you gather the most information about the issue. As you gather more information, you can systematically identify problem spaces where the issue is not likely to be found until you identify the space where it is.

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Evaluating and Isolating Mac Issues

What does the customer tell me?

Using open and closed questions can help you to gather accurate information from the customer. As you ask questions, do not interrupt the customer when he or she is answering. Use reflective or active listening to verify that you understand the customer's responses.

Product Safety Recognition

Listen to the customer to identify potential safety issues. Words such as shock, fire, smoke, spark, liquid, or swelling indicate a safety issue.

Cheryl states her MacBook Pro (Retina, 15-inch, Mid 2015) is not fully charging. The battery charge indicator in the menu bar never reaches 100%.

What would be some good examples of probing questions?

▼ Click to reveal answers.

"Show me how you are connecting the power adapter to the MacBook Pro."
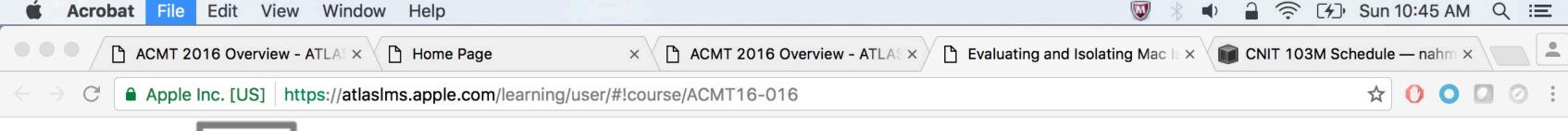
"Describe what you see on the Mac when you plug in the power adapter."

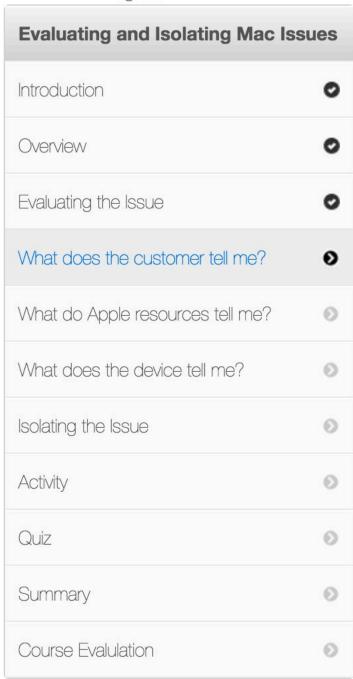"What kind of work are you typically doing on your MacBook Pro?"

"How often do you attempt to fully charge your portable?"

"Has your portable charged completely before?"

"How long does a battery charge last?"

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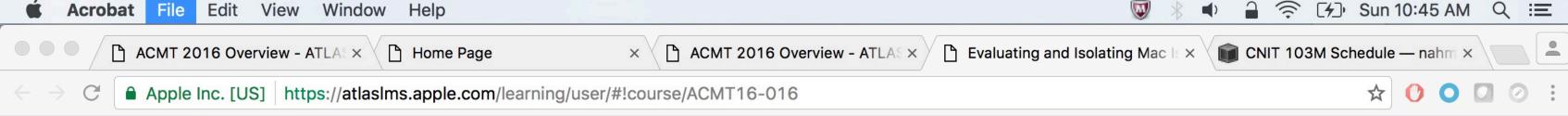What does the customer tell me?

Reproducing the Issue

Ask the customer to demonstrate the issue. It is important to have the customer reproduce the issue so that you can not only observe the issue, but also what leads up to the issue.
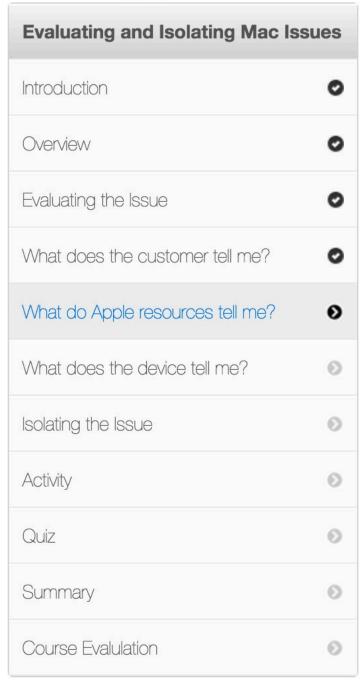
What's Next?

Listen to the customer and watch what they do when interacting with the device. This will lead to:

- New questions
- Asking permission to partner with the customer to further evaluate the issue
- Quick checks to try on the device
- Research using Apple resources
- Running diagnostics

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Evaluating and Isolating Mac Issues

What do Apple resources tell me?

Apple provides a number of resources to help evaluate an issue. These include, but are not limited to:

- Articles and guides found on support.apple.com
- Technical articles, service guides, visual and mechanical inspection guides, and troubleshooting workflows found on Global Service Exchange (GSX)
- Diagnostic tools found either in OS X or delivered by Apple systems

For public resources, such as the Apple Support site, involve your customers in your research. This will help them feel more confident in using it themselves.
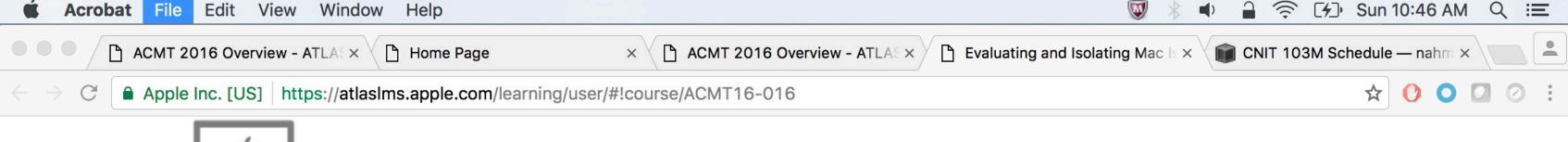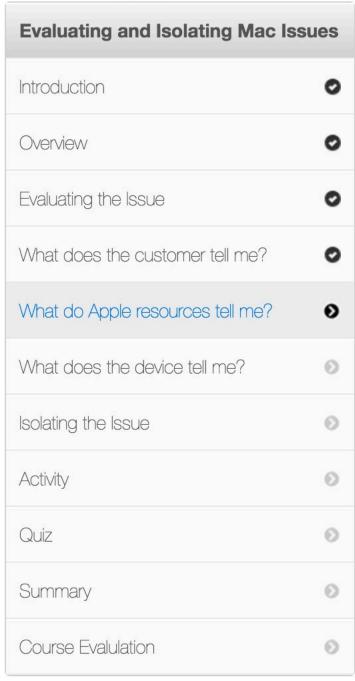
Identify Diagnostics to Run

Apple Diagnostics check the Mac computer's hardware and helps identify potential sources of a hardware issue. It also provides first steps to try and resolve it. Apple Diagnostics is found on all Mac computers introduced since June 2013. For more information on Apple Diagnostics, see Apple Support article, HT202731: Using Apple Diagnostics.

Apple Service Toolkit 2 (AST 2) is a cloud-based diagnostic system to help technicians triage and verify repairs for Mac computers and iOS devices. AST 2 is accessed through GSX. To learn more about Apple Service Toolkit 2, search for AST 2 in ATLAS.

Apple Service Toolkit 1 and Apple Hardware Test can be used on older systems to diagnose hardware issues.

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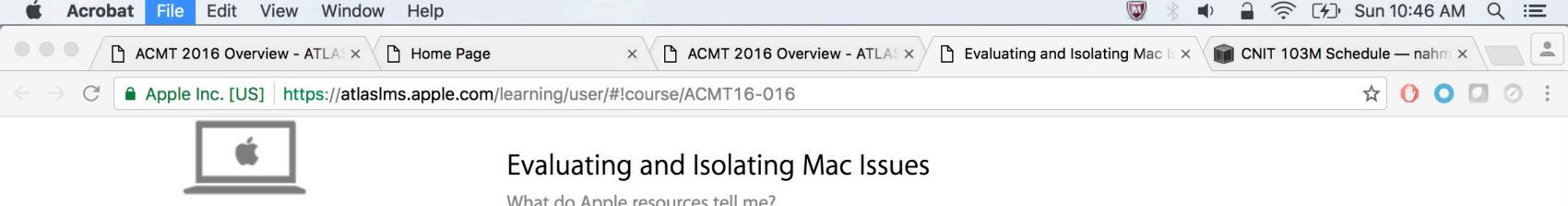**Evaluating and Isolating Mac Issues**

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What do Apple resources tell me?

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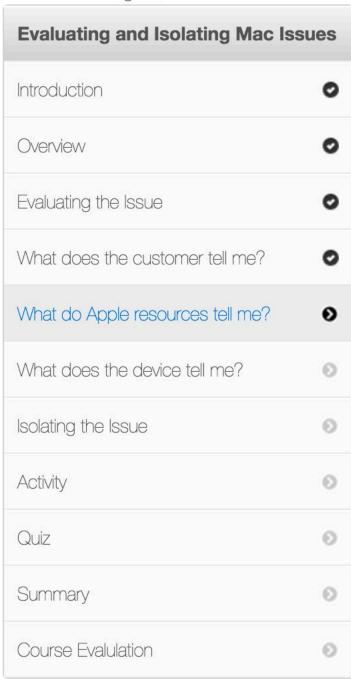
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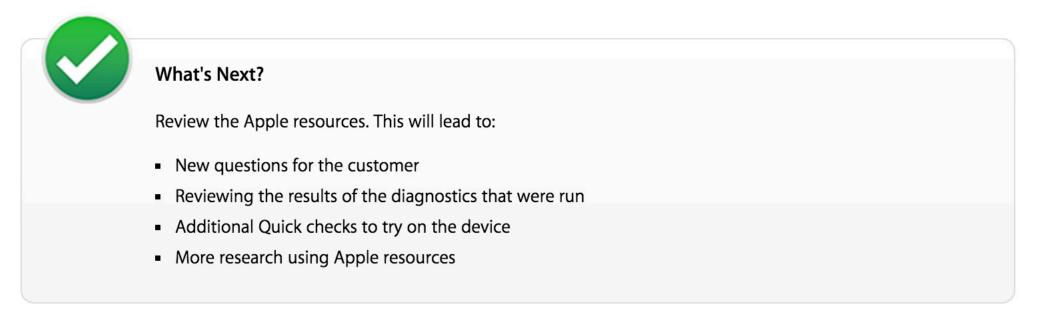Course Evaluation ⊙

Gather Information with Quick Checks

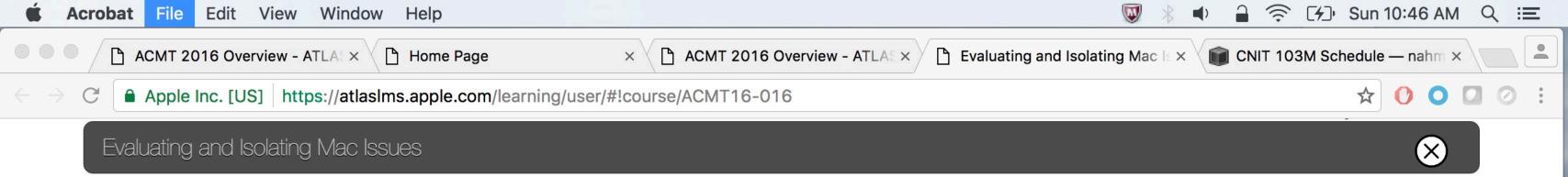The following Quick Checks will help you gather more information about the issue:

- System setting in Preferences (see help system)
- Force quit any application (see Log out, sleep, restart, and shut down in Help)
- Sleep/Wake (see Log out, sleep, restart, and shut down in Help)
- Safe Boot/Safe Mode (see Apple Support article, HT201262: Try safe mode if your Mac doesn't finish starting up)
- Startup Manager (see Apple Support article, HT204417: How to choose a startup disk on your Mac)
- Restart (see Log out, sleep, restart, and shut down in Help)
- Shut down (see Log out, sleep, restart, and shut down in Help)
- Reset SMC (see Apple Support article, HT201295: Resetting the System Management Controller (SMC) on your Mac)
- Reset NVRAM/PRAM (see Apple Support article, HT204063: How to Reset NVRAM on your Mac)
- Use known-good startup volume from Recovery system (see Apple Support article, HT201314: OS X: About OS X Recovery)
- Isolating issues in OS X (see Apple Support article, HT203161: Isolating issues in Mac OS X)

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What do Apple resources tell me?

✅

What's Next?

Review the Apple resources. This will lead to:

- New questions for the customer
- Reviewing the results of the diagnostics that were run
- Additional Quick checks to try on the device
- More research using Apple resources

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Evaluating and Isolating Mac Issues

What does the device tell me?

After running diagnostics, review the results. If the results indicate a hardware issue, that will likely eliminate issues that are environmental or educational opportunities. If the diagnostics do not identify any issues, you can eliminate hardware issues as a likely problem space.

Evaluate how the device responds to each Quick Check. Each Quick Check provides information that either points to a particular problem space or eliminates it as a possibility.

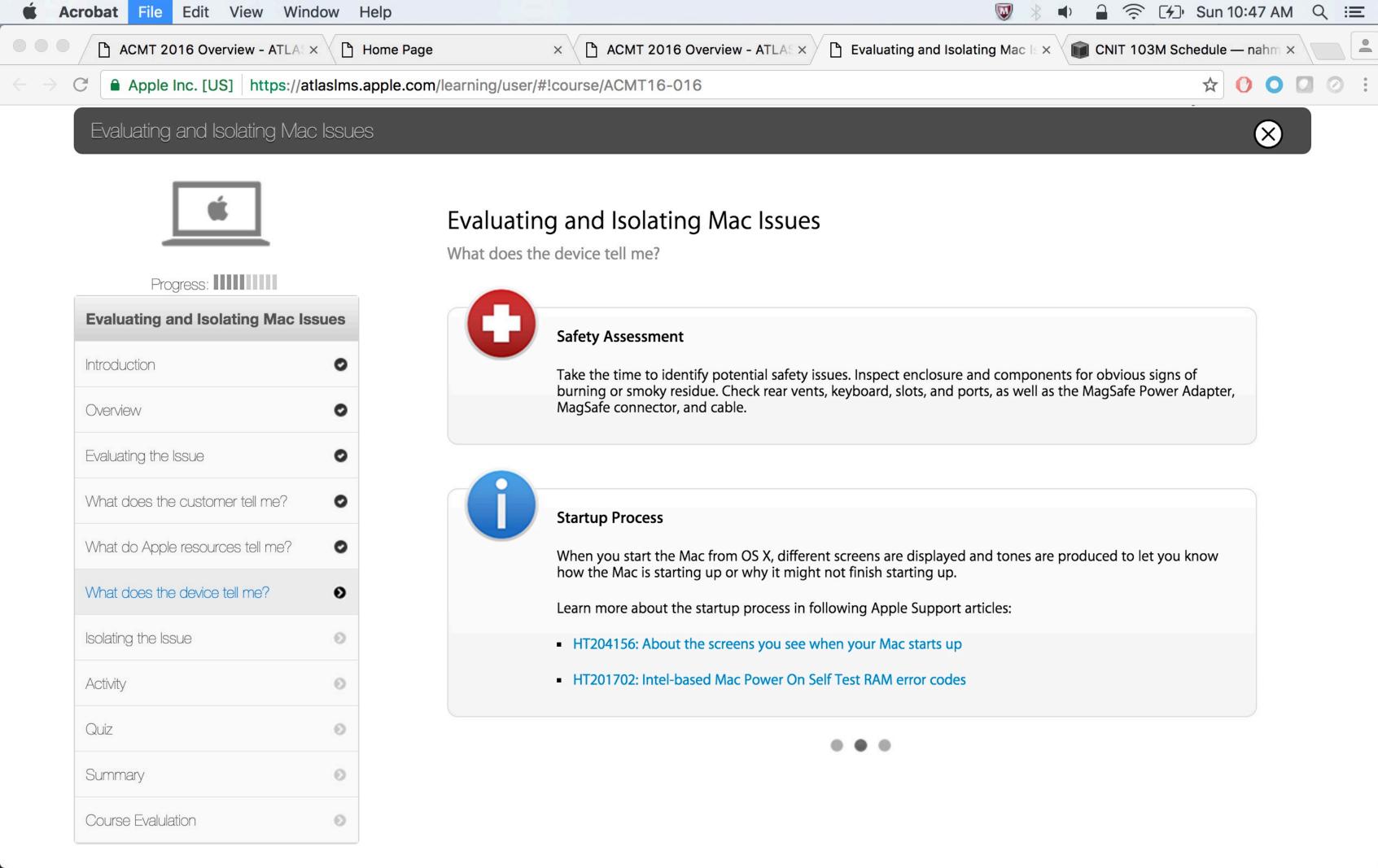✅ **Look, Listen, Smell, and Touch**

The Mac itself can provide information to help you further evaluate the issue. Use your senses to determine the state of the Mac
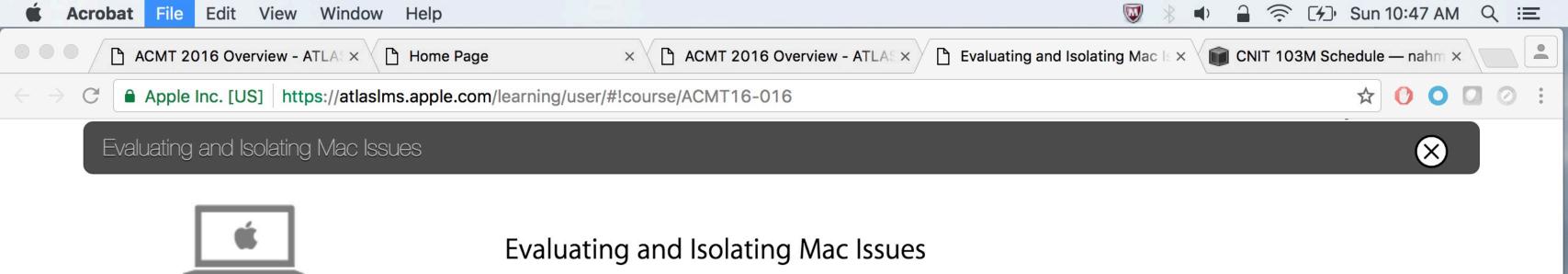
- **Look** for error messages, startup screens, signs of damage, and information about the operating system.
- **Listen** for error tones or fans noise.
- Note the **smell** of any odors coming from the Mac.
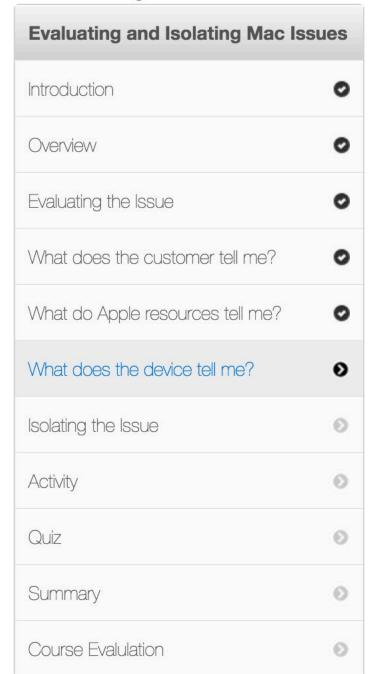- **Touch** the Mac to see if it is unusually warm.

Look for any type of damage inflicted on the Mac. Some examples of accidental damage include, but are not limited to liquid spills, cracked displays, punctures, damaged I/O ports, or signs of forced entry. Let the customer know that computer failures due to accidental damage are not covered, and if applicable, discuss out-of-warranty repair options with them.

Before you can evaluate damage, get familiar with what an undamaged Mac looks like. Use the Apple website (http://www.apple.com/mac/) as reference. Most product pages have design links that provide good illustrations.
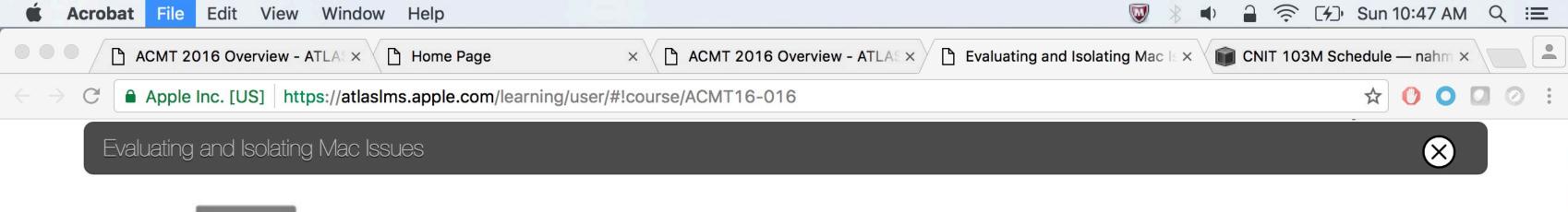
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What does the device tell me?

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Safety Assessment

Take the time to identify potential safety issues. Inspect enclosure and components for obvious signs of burning or smoky residue. Check rear vents, keyboard, slots, and ports, as well as the MagSafe Power Adapter, MagSafe connector, and cable.

Startup Process

When you start the Mac from OS X, different screens are displayed and tones are produced to let you know how the Mac is starting up or why it might not finish starting up.

Learn more about the startup process in following Apple Support articles:

- HT204156: About the screens you see when your Mac starts up

- HT201702: Intel-based Mac Power On Self Test RAM error codes

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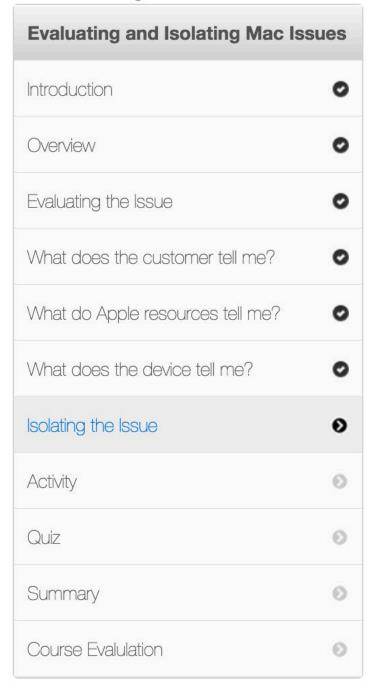
What does the device tell me?

What's Next?

Note how the device responds to the diagnostic and Quick Checks. Physically examine the device. This will lead to:

- New questions for the customer
- Additional Quick Checks to try on the device
- More research using Apple resources
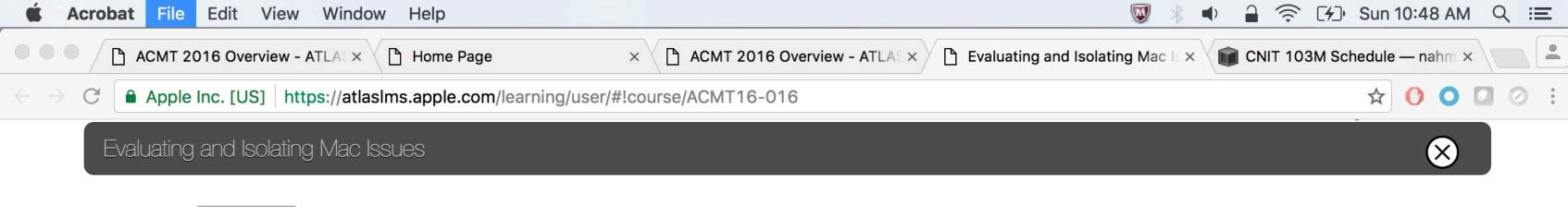- Eliminating problems spaces as likely sources of the issue

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Isolating the Issue

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As an Apple Certified Technician, once you have gathered enough evaluative information, you are able to move on to isolation. In the isolation stage, the technician uses deductive reasoning to complete a split-half search. Use this technique to systematically isolate the source of the issue.
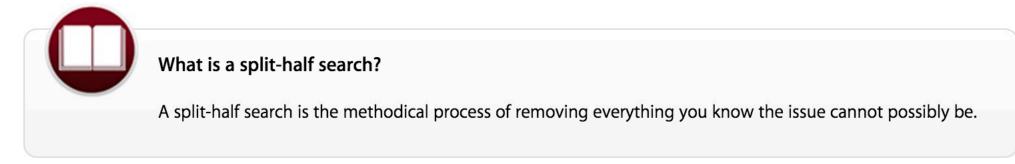
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What is a split-half search?

A split-half search is the methodical process of removing everything you know the issue cannot possibly be.
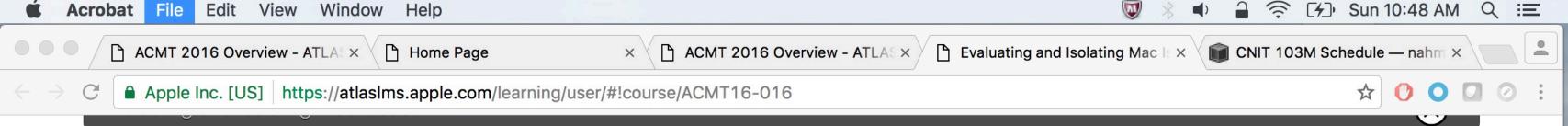
As previously discussed in Basic Troubleshooting in Service Fundamentals, the technician will begin by eliminating roughly half of the items by deciding the following: Is the issue device or non-device related? If the issue is device related, can it be found in the hardware or the software?
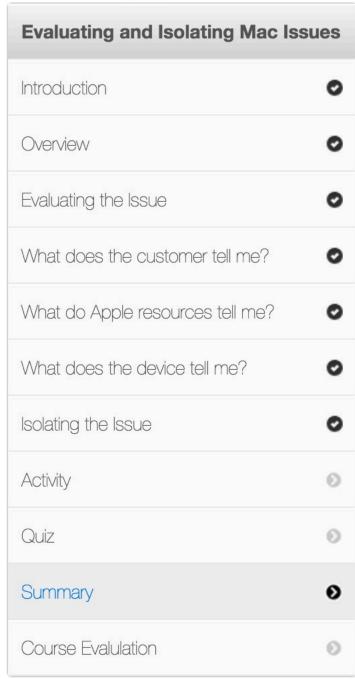
The technician will continue halving, further evaluating her sources of information, until she identifies the problem space where the issue can be found. She may continue to move between evaluation and isolation techniques as she moves through this process.

Isolation will require applying knowledge of the product, common usage and support as reported by Apple resources, and the symptoms, as the technician checks one possible cause after another in a logical order.

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Evaluating and Isolating Mac Issues

Summary

Having completed this course, you should be able to:

- Apply systematic troubleshooting methodology to correctly evaluate and isolate a given issue with a Mac to determine the correct resolution to the issue.
- Identify the three primary sources of information that are used to evaulate a given Mac issue.
- Use quick check steps to further isolate a given Mac issue.
- Given an isolated issue, categorize the issue as either hardware (including accidental damage), software, environmental, or educational opportunity.
- Given a customer scenario, correctly answer a set of knowledge-based questions about evaluating and isolating issues.

The following courses in ATLAS provide more detail on how to further isolate and resolve each of these types of issues:

- Resolving Mac Hardware and Software Issues
- Resolving Mac Educational and Environmental Issues

This concludes the Evaluating and Isolating Mac Issues course. For other courses in the ACMT 2016 curriculum, see Apple Support article, HT205332: AppleCare Service Certifications, or search for ACMT 2016 in ATLAS.

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