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Basic Troubleshooting

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Basic Troubleshooting

Introduction

Course Description

The Basic Troubleshooting course explains the Evaluate, Isolate, and Resolve troubleshooting model and tells you how to begin the process using deductive reasoning, smart questioning techniques, and first-level evaluation tools and resources.

This course is part of the Apple Service Fundamentals curriculum and is used to prepare for the Apple Service Fundamentals Exam (SVC-16A).

Basic Troubleshooting

Overview

Lesson Objectives

At the conclusion of this course you should be able to do the following:

- Describe the importance of accurate troubleshooting to the business and the customer.
- Demonstrate basic troubleshooting and deductive reasoning skills.
- Use smart questioning techniques and first-level evaluation and isolation skills to identify issues as being generally hardware based, software based, educational, or environmental in nature.
- List the tools and resources available to aid in the troubleshooting process.

Audience	Prerequisites	Time Required	You will need...
Service Technicians	None	45 minutes	No additional materials or equipment

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Basic Troubleshooting

An Overview of Systematic Troubleshooting

Imagine going to the doctor with a headache and being told immediately that you had a brain tumor. "Is that an accurate diagnosis? Surely there must be tests. Should I have a brain scan?" you might ask in a panic. "Oh no," says the doctor, "I've seen this kind of thing before, headaches are a primary symptom of tumors."

Clearly the brain tumor diagnosis is faulty. Rather than "template matching" or jumping to conclusions based on familiarity, past experience, or too little information, systematic troubleshooting uses deductive reasoning to correctly isolate an issue before coming to a conclusion. It examines what is possible and what is *not* possible. Like a good doctor's diagnosis, troubleshooting Apple devices may require tests, a thorough examination, a history, and a skilled practitioner.

Apple's systematic troubleshooting supposes that all possible issues are based on one of four root causes: **Hardware**, **Software**, the device's **Environment** or customer inexperience, classified as an **Educational Opportunity.**

The troubleshooting process involves three principle stages:

- Evaluate
- Isolate
- Resolve

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Basic Troubleshooting

Components of Troubleshooting: Evaluate, Isolate, Resolve

Evaluate. In this stage you rely on <u>what the customer, the device, and Apple resources tell you</u> and your own communication and reasoning skills. You can do the following things:

- Ask the customer smart probing questions to gather accurate information.
- Confirm what you hear, so there is no misunderstanding.
- Verify the issue.
- Review your resources such as the Apple Support site and GSX.
- Use Quick Checks and diagnostics to gather more device-related information.
- Carefully inspect the device.
- Use deductive reasoning skills to narrow down the information and move closer to a likely problem space.

Isolate. In this stage you determine the problem space the issue occupies: Hardware, Software, Environment or Educational opportunity.

- Use a systematic way of isolating an issue using a circle to represent **all** the possible issues.
- Determine if the issue is **with** the device or **not** with the device.
- Divide troubleshooting into likely problem spaces.

Resolve. In this stage you detemine from the problem space, the best path to resolution. Resolutions could include the following:

- Repair without using parts.
- Repair using parts.
- Reinstall or update software.
- Educate the customer.
- Direct customer to third-party resource.

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Basic Troubleshooting
The Importance of Accurate Troubleshooting

✅ Accurate troubleshooting relates directly to Apple's service business success and to meeting its performance metrics of timeliness, accuracy, and a high level of customer satisfaction.

Example

The first scenario shows good troubleshooting skills while scenarios 2 and 3 show poor troubleshooting skills.

Scenario 1: The customer's issue is identified correctly, a solution is found quickly, and the device is repaired accurately by a professional technician.

▸ Result

Scenario 2: A customer's issue is misdiagnosed because of poor troubleshooting and consequently, the wrong issue is identified.

▸ Result

Scenario 3: The customer is really annoyed—her iPhone isn't working and she has a business to run. The technician skips troubleshooting and goes straight to a Whole Unit Replacement, swapping the "faulty" phone for a new phone. He sends the customer's iPhone back to Apple where it is identified as NTF (No Trouble Found).

▸ Result

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Basic Troubleshooting

Deductive Reasoning

Deductive reasoning is at the core of troubleshooting, which is essentially the art of investigation. In fact, the most famous deductive reasoner might be ace investigator Sherlock Holmes.

Deductive reasoning is the logical thinking process, which goes from general to specific. It is based on premises, and if the premises are true, then the reasoning will be valid. The reasoning statement starts with the premise and often uses an if/then format. For example:

- **If** all squares are rectangles and all rectangles have four sides, **then** squares must have four sides.
- **If** snakes are reptiles and reptiles are cold-blooded, **then** snakes are cold-blooded.
- **If** $5 + a = 9$ **then** a must be 4.

It's also possible to eliminate facts that are irrelevant to the deduction:

- **If** both long and short snakes are reptiles, and all reptiles are cold-blooded, **then** snakes are cold-blooded.

All snakes are cold-blooded, their size is irrelevant to the logical conclusion.

Another example: A customer brings in an iPhone and says, "My iPhone won't power on. I often skip breakfast. I haven't charged it in days. I use Siri all the time."

Of the information provided, the fact that the customer skips breakfast seems irrelevant to the power issue.

The ability to narrow down the information set and draw logical conclusions is the DNA of the troubleshooting and diagnostic process. To diagnose an issue you need to understand the issue's circumstances and history so you can work with relevant facts, and then discard the distractors or irrelevancies. From the relevant facts you can deduce likely causes.

As Sherlock Holmes said, "Eliminate all other factors, and the one which remains must be the truth."

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Basic Troubleshooting

What Does the Customer Tell Me?

Successful Evaluation depends on getting as much necessary information as possible from the customer, the device itself, and from Apple:

- So you can fully understand the customers' needs and use deductive reasoning to correctly diagnose problems
- So you can empathize with the customers' situation and can educate customers if they're mistaken or unaware

Smart or directed questions target the **kind** of information you need.

Ask open questions to gather more information.

- Open questions ask the customer for more detail: Who, what, when, where, why, and how?
- They ask the customer to think and reflect.
- They often result in opinions.

Ask closed questions to clarify and check for understanding.

- Closed questions usually result in yes/no or single-choice responses.
- They result in facts or confirmation.

Examples of Open Questions/Requests	Examples of Closed Questions/Confirmations
• Why is that important to you?	• What iOS is it running?
• What did you do next?	• When did you last restart?
• Describe the sound it made.	• Safari or Chrome?
• How are you connecting to the Internet?	• So it's never done that before, is that correct?

✅ Before you ask **any** kind of question, you should ask permission to quiz the customer. Seeking permission treats the customer as a partner and avoids an unwelcome interrogation. Asking for permission sounds like one of the following questions:

- Is it OK if I ask you a few questions so I can figure out what the issue is?
- I'll need more information so I'd like to ask some questions, is that OK?
- Do you have time to answer a few clarifying questions?

ATLAS Apple Technical Learning Administration System

**Emily Nahmanson**

Basic Troubleshooting   ⊗

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Basic Troubleshooting

What Do Apple Resources Tell Me?
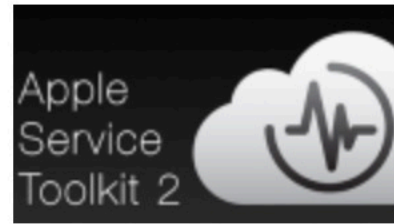
Diagnostic software is used to help technicians triage and verify repairs for Mac computers and iOS devices. The specific diagnostic depends on the model and age of the device. **AST 2** is the the most frequently used Apple diagnostic.

If you or your manager can access GSX, look at the VMI (**Visual Mechanical Inspection**) guides and product **Quick Checks**. Quick Checks are actions you can take that do not take much time, do not cost anything, and are minimally invasive. In addition to the individual product guides, the product repair sections of Apple support pages are a good source of information.

Support pages example: https://www.apple.com/support/iphone/repair/.

Note how the device responds to the Quick Checks. This will lead to the following:

- New questions for the customer
- Additional Quick Checks to try on the device
- More research using Apple resources

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Basic Troubleshooting

What Does the Device Tell Me?

The device itself is a rich source of information about the issue and the diagnostic results from AST2 can provide detailed data.

Thoroughly inspect the device for visual and mechanical compliance and any evidence of damage. Start by knowing how the device is supposed to look and operate when functioning normally. If you have access to GSX you can go to gsx.apple.com and check the the VMI sections. You can also use Apple Support https://www.apple.com/support/ or check Apple's product pages (https://www.apple.com/support/iphone/ for example).

Look for any error messages displayed on the product and for information in OS X or iOS.

Note how the product works during the customer interaction. This will lead you to the following:

- New questions for the customer
- Additional Quick Checks to try on the product
- More research using Apple resources

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Basic Troubleshooting

Basic Troubleshooting

Isolation: Device or Not Device?

Take the first step toward issue Isolation by deciding the following: **Is the issue Device or Non-Device related?**

At the most basic level, the customer's issue is either **with the product** (desktop or portable Mac, iPhone, iPod, iPad, AirPort, Apple Watch or any other Apple hardware) or **not with the product.** Your first steps to isolating device/not device issues are the following:

- Ask smart, probing questions.
- Verify the issue by having the customer attempt to reproduce the issue.
- Note if the issue is a result of customer behavior.
- Is the customer trying to make the device perform an action it is not capable of?
- Determine if the device works in one place but not in another.
- Is the workspace too hot for the system to operate?
- Does the customer experience issues receiving Wi-Fi signals or cellular signals?
- Has the power gone out recently?

What are some examples of Device/Not Device issues? Click below to see.

▼ **Device/Not Device 1**

Example: The customer says, "*My iPad won't power up.*" You ask the customer to reproduce the issue and find that he is using the device correctly but it will not turn on. In this case there **is an issue with the device.**

▼ **Device/Not Device 2**

Example: The customer says, "*My iPad won't power up.*" You ask the customer to reproduce the issue and watch him shake the iPad. You show him where the power button is and the iPad turns on right way. The customer says, "I didn't know there was a power button. I thought I just had to shake it awake." In this case, the issue is **not with the device** but rather an opportunity to educate the customer.

▶ **Device/Not Device 3**

✅ **Educating the Customer**

When customers are mistaken, avoid blaming them or making them wrong.

For example, rather than say, "You're wrong, iPad with Retina display *can* take photos." Say the following instead, "It turns out iPad with Retina display *can* take photos."

Examples of gentle "you're wrong" corrective phrases include the following:

• I can see how you'd think that, in fact...   • The reality is...

• The way it works is...   • What really happens...

• As it turns out...   • Let me show you another way to...

Emily Nahmanson

Basic Troubleshooting

Basic Troubleshooting

Summary

Having completed this course, you should be able to:

- Describe the importance of accurate troubleshooting to the business and the customer.
- Demonstrate basic troubleshooting and deductive reasoning skills.
- Use smart questioning techniques and first-level evaluation and isolation skills to identify issues as being generally hardware based, software based, educational or environmental in nature.
- List the tools and resources available to aid the troubleshooting process.

This concludes the Basic Troubleshooting course.

For other courses in the Apple Service Fundamentals curriculum, see Apple Support article, HT205332: AppleCare Service Certifications, or search for Apple Service Fundamentals in ATLAS.

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