



Test of Variables of Attention®

T.O.V.A. 9.0 RESEARCH USER'S MANUAL

**The TOVA Company
June 14, 2017**

T.O.V.A.[®] 9.0 Research User's Manual

Test Of Variables of Attention Continuous Performance Test

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Important Information

1 Indications

The Test of Variables of Attention (T.O.V.A.) provides healthcare professionals with objective measurements of attention and inhibitory control, which aid in the assessment of attention deficits, including attention-deficit/hyperactivity disorder (ADHD). T.O.V.A. results should only be interpreted by qualified healthcare professionals.

CAUTION: Federal law restricts this device to sale by or on the order of a qualified healthcare professional.

2 Contraindications

The T.O.V.A. microswitch and USB device should not be used in conjunction with an MRI.

3 Warnings and Precautions

WARNING: Repetitive flashing of display may cause eye strain, headaches or seizures. Please seek medical help if you experience any eye strain or headache.

The T.O.V.A. microswitch is a Type B Applied Part, i.e., a part of the system meant to be handled by the subject. The T.O.V.A. USB device and associated cables are not applied parts, and are not meant to be handled by the subject.

The T.O.V.A. can only be connected via the USB connector: Only connect the USB input to equipment that is certified to UL 60950-1 and IEC 60950-1.

The T.O.V.A. microswitch should be cleaned in between subjects. See section 7 on page 4 for directions.

The T.O.V.A. is designed to be stored, operated and transported in a standard indoor environment: a temperature of 10 to 40 °C (50 to 104 °F), 0 to 100% relative humidity, and an atmospheric pressure of 64.4 to 106.6 kPa.

T.O.V.A. results should be interpreted only by qualified professionals.

Do not interrupt the T.O.V.A. test while its being administered. Selecting '**Esc**' will result in the test being interrupted.

Do not open the T.O.V.A. hardware enclosures; there are no user serviceable parts inside the T.O.V.A. hardware.

Do not unplug the T.O.V.A. hardware when in use (during a test). This will result in lost session data.

Always make sure that your PC is plugged into a power outlet during test mode. A low battery during a test session may cause the test data to be lost.

Caution: If a new display or new PC is used, the display must be recalibrated prior to administration of the T.O.V.A. test.

The T.O.V.A. 9.0 does not support network share databases. **Storing data on a server or network share will most likely result in lost data.** Please only use the T.O.V.A. with a local database.

We always recommend that you back up your T.O.V.A. database before installing or uninstalling the T.O.V.A. Automatic local database backups are built into the T.O.V.A. application and enabled by default, but we recommend that you also regularly back up your database (and the rest of your PC) to a secure location.

Warning: The surface of the T.O.V.A. microswitch may become hot (41 °C / 106 °F) during use. Discontinue use if holding the switch becomes uncomfortable.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for medical devices to the IEC 60601-1-2. These limits are designed to provide reasonable protection against harmful interference in a typical medical installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to other devices in the vicinity. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to other devices, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving device.
- Increase the separation between the equipment.
- Connect the equipment into an outlet on a circuit different from that to which the other device(s) are connected.
- Consult the manufacturer or field service technician for help.

4 Information Security for T.O.V.A. Computers

The T.O.V.A. database may contain private or personal Protected Health Information (PHI). While the T.O.V.A. accomodates the need to protect PHI, the database itself is not secured or encrypted by the T.O.V.A. application. Instead, you can secure access to the T.O.V.A. database and backup folders within your OS (Windows or Mac OS)—just be sure that all *authorized* users of the T.O.V.A. have full permissions on the system to the database folder and its subfolders.

We also expect users will follow information security best practices on the host PC, among which are these:

- Use separate user and admin accounts.
- Use strong passwords.
- Lock the computer after a few minutes of inactivity.
- Control physical access to your T.O.V.A. PC.
- Keep T.O.V.A. software up-to-date.
- Back up your PC regularly and store your backups securely.

- If your T.O.V.A. system is online, keep your OS up-to-date. Use Internet security software to prevent malware infections.

The T.O.V.A. uses SSL to secure any communication with our servers that might contain personal information, and no PHI is collected without your consent. Any information on our servers is securely maintained.

5 Symbols











	Serial Number
	Production Date
	Consult instructions for use
	Caution, consult accompanying documents
	Keep dry
	Do not used if damaged
	Not for general waste
	European Union (EU) CE Mark
	FCC compliance
	Type B Applied Part

Figure 1: International Symbols applicable to the T.O.V.A.

6 T.O.V.A. Description

The Test of Variables of Attention (T.O.V.A.) is an accurate and objective continuous performance test (CPT) that measures the key components of attention and inhibitory control. The T.O.V.A. is used by qualified healthcare professionals in the assessment of attention deficits, including attention-deficit/hyperactivity disorder (ADHD), in children and adults.

The T.O.V.A. is a culture- and language-free, sufficiently long computerized test that requires no left/right discrimination or sequencing. Responses to visual or auditory stimuli are recorded with a specially designed, highly accurate (± 1 ms) microswitch. The T.O.V.A. calculates response time variability (consistency), response time (speed), commissions (impulsivity), and omissions (focus and vigilance). These calculations are then compared to a large age- and gender-matched normative sample (over 1,700 individuals for the visual test, and over 2,600 individuals for the auditory test), as well as to a sample population of individuals independently diagnosed with ADHD. These comparison results are used to create an immediately available, easy-to-read report.

The T.O.V.A. system includes:

- USB flash drive with software installer for Mac and Windows PCs.
- T.O.V.A. USB device
- T.O.V.A. microswitch
- Installation Guide
- User's Manual
- Clinical Manual
- Accessory cables (USB, VGA, and audio cables)

7 Cleaning instructions

7.1 The T.O.V.A. Microswitch

Because the T.O.V.A. microswitch comes in direct contact with a patient, it should be cleaned after every use.

- **Do**
 - Clean the microswitch casing after every use.
 - Use a low-level disinfectant on a soft, lint-free cloth. Examples of low-level disinfectants include 70% or greater isopropyl alcohol, 10% bleach solution, or various commercial disinfectant wipes.
- **Do NOT**
 - Do not immerse in or spray the microswitch with a liquid.
 - Do not use abrasive cleaners.

7.2 The T.O.V.A. USB device

The T.O.V.A. USB device and all associated cabling do not require cleaning. If you wish to clean it, please follow these instructions.

- **Do**
 - Use a mild cleaning solution on a soft, lint-free cloth
- **Do NOT**
 - Do not immerse in or spray the T.O.V.A. USB device with a liquid.
 - Do not use abrasive cleaners.

Getting Started

Welcome to the T.O.V.A. 9.0 Research User's Manual. Feel free to jump right in and install the T.O.V.A. by skipping to “**Installing the T.O.V.A.**” (section 9.12 on page 11), but we've included this section in case you're not familiar with the T.O.V.A. We'll tell you a bit about the T.O.V.A. and answer some common questions about it.

8 About This Manual

This manual is the T.O.V.A. version 9.0 Research User's Manual. It is meant to help you with all things technological about the T.O.V.A.

- Getting started with the T.O.V.A. 9.0
- Installing and uninstalling the T.O.V.A.
- A guide to using the T.O.V.A. on your operating system (OS)
- A reference manual about the T.O.V.A. software and hardware

There are other manuals that may help you.

- The **Clinical Manual** explains how to use the T.O.V.A. in a clinical context.
- The **Installation Guide** can help you set up the T.O.V.A. software and hardware.
- The (non-research) User's manual is very similar to this manual, but excludes most sections on research-only features.
- The Sync Interface Manual explains how to use the T.O.V.A. Synchronization Interface (sold separately).
- There is also a **Professional Manual**, which describes the internal guts of the T.O.V.A. from a test construction and statistical point of view.

9 About the T.O.V.A.

9.1 What is the T.O.V.A.?

See the T.O.V.A. device description (section 6 on page 3).

9.2 Who uses the T.O.V.A.?

The T.O.V.A. 9.0 is used by qualified healthcare professionals, such as psychologists, physicians (including psychiatrists, neurologists, pediatricians and family practitioners), physician assistants, researchers, pharmaceutical companies, licensed clinical counselors, nurse practitioners, and clinical nurse specialists.

9.3 What makes the T.O.V.A. unique?

- The T.O.V.A. has a standardized computer-game-like format and is easily administered.
- Any personnel can be trained to administer the test.
- Its reports are immediately available and easy-to-read.
- It measures both visual and auditory information processing, yet in separate tests to clearly identify processing deficits.
- It is extensively normed for both children and adults (ages 4 to 80+)
- It precisely measures response times (± 1 ms)
- It is language and culture free.

For more information, please see our website at <http://www.tovatest.com/>.

9.4 How does the T.O.V.A. test work?

It's quite simple: the T.O.V.A. flashes stimuli on the screen (or beeps stimuli on speakers) and the subject taking the T.O.V.A. test responds as quickly and as accurately as they can with a small handheld microswitch. This kind of 'stimulus and response' test is called a continuous performance test (CPT), and the T.O.V.A. is one of many on the market—the best, we believe!

Both the auditory and visual T.O.V.A. tests are 21.6 minutes long. (A shorter 10.8-minute test is administered to subjects ages 4 to 5.5.) The visual test has two simple images that alternately flash on the screen, and the subject presses the button after the correct square. The auditory test has two tones, and the subject presses the button after the higher tone. Both tests are horribly, terribly, inhumanly boring. But this is a *good* thing because you just can't fake it with the T.O.V.A.

The T.O.V.A. takes the subject's responses and compares them to a study with thousands of 'normal' people—that is, people who were screened for attention (and other disorders) and were deemed normal. This is called the T.O.V.A. norming study, and it allows us to figure out where the subject's responses fall on the 'bell curve' of normal. It is critical that the number of people in a norming study is large, and the T.O.V.A. still has the largest norming study of any CPT. The T.O.V.A. also compares the subject's responses to a study of people diagnosed with ADHD.

These comparisons are not diagnoses! Only a clinician can make a diagnosis. The T.O.V.A. simply *aids* the clinician with their assessment of attention deficits.

9.5 What does the T.O.V.A. measure?

The T.O.V.A. measures attentional variables—that is, it measures how people respond to a long, boring test. There are over 250 peer-reviewed papers on the T.O.V.A. that show how these variables correspond to attention deficits, and how the T.O.V.A. can be used. See the T.O.V.A. website (<http://www.tovatest.com/>) for a list of papers published about or using the T.O.V.A.

In particular, the T.O.V.A. measures these variables (listed in order of importance):

Response Time Variability: How consistently (or not) a subject responded to the T.O.V.A. stimuli. People without attention deficits respond to the stimuli very consistently, and those who do have an attention deficit tend to not be as consistent.

Response Time: People with attention deficits tend to respond to stimuli slower than normals.

Commissions: People with attention deficits tend to make more errors of impulsivity, pressing the button when they shouldn't.

Omissions: Most people don't actually miss any stimuli, although omissions do tend to be higher for those with attention deficits.

9.6 What's all this about precision timing?

Because response times, and even more importantly, the variability of response times, are the core of any CPT, the T.O.V.A. was designed with very high timing accuracy. Although people respond to stimuli in hundreds of milliseconds, the consistency of response times can be only *tens* of milliseconds. And because that's the most sensitive variable in a CPT, it's crucial that the response timing on a CPT be precise—and reliable.

We like to say that the T.O.V.A. has 'research-grade' timing accuracy, because our timing is just that good. But what's *just as important* is that the timing is *reliable*. And so we go out of our way to make sure the T.O.V.A. is a reliable test.

Unfortunately, modern operating systems like Windows, OS X, and most flavors of Linux don't guarantee reliability when it comes to timing. In fact, they do the opposite: they guarantee that eventually they will introduce latencies and variable delays in timing. Modern operating systems have been designed from the ground up to be reasonably fast for users' demands, but not to be *reliably and consistently* fast. Have you ever seen your computer hesitate just a split second before it does what you asked it to do? Happens all the time, right? That hesitation will make any CPT running on these operating systems unreliable.

We realize other people say you can still test in Windows or other modern operating systems, but they've never (to our knowledge) objectively measured their timing performance with an external timing validation system. We have. We've measured timing reliability under Windows (and Macintosh OS X), and it stinks.

So how do we get around this timing issue?

The T.O.V.A. 9.0 has two ways of resolving this:

External Audio/Video (EAV) session - The T.O.V.A. 9.0 allows you to run a T.O.V.A. test *in your OS*, because the timing is managed with precision by the new T.O.V.A. hardware. Attach the T.O.V.A. USB device to an external monitor and speakers, and you'll never have to reboot to run a test!

Precision Test Environment (PTE) session - The T.O.V.A. reboots to the Precision Test Environment, where you administer the T.O.V.A. test, and then reboots you back to your OS. For many users (for instance, using a laptop without an external monitor), rebooting to the PTE will still be the best solution. See section 31 on page 110 for more information.

9.7 Why do you charge per test?

We charge per test because we care that you have the very latest in tools to help you improve people's lives. This may sound like advertising, but we truly do believe it. Your clinical tools should be constantly improving as new research and new ideas comes down the pipeline, and the T.O.V.A. will do this.

So instead of charging you an arm and a leg for the T.O.V.A. and leaving you in the dust as it improves, we instead charge you per test and then give you new versions of the T.O.V.A. for free. Yes, for free. More norms? Free. Improved user interface? Free. New statistics? Free.

Note: There is a charge for the T.O.V.A. 9.0 hardware—please contact T.O.V.A. customer service for details (section 27 on page 80).

And we support you like no other testing company can: **technical support is free**. Whenever you have a question or problem with the T.O.V.A., contact us and we'll help you. We're crazy about supporting our users, so really don't hesitate to call us if you can't figure out something about the T.O.V.A.

And, even more importantly, **interpretation support is free**. This means we have staff whose job it is to help you interpret T.O.V.A. results. Wondering how to identify malingering? Do you need help understanding how comorbid disorders affect T.O.V.A. performance? Are you baffled by the results of your last subject? Call us! We'll help you understand it.

So in summary, our per-test charge allows us to provide you with an excellent, constantly evolving test of attention with full customer service. We think that's a pretty good deal.

9.8 What is the history of the T.O.V.A.?

The T.O.V.A. has its roots in a 1966 National Institute of Health-funded research project. The equipment that gave that CPT literally took up an entire wall. With the onset of the personal computer, it was ported to the Apple IIe (and called the VIRTEST), then the Macintosh, and finally to the PC. The T.O.V.A. has over 40 years of ongoing research behind it.

9.9 T.O.V.A. 9.0 system requirements

- x86 or x86-64 processor running at 1 GHz or better
- 2 GB of memory available
- Minimum of 1 GB hard drive space
- USB port (on the PC, not via an external hub)
- Screen size must be 10 inches or more.
- **PTE testing** requires a VESA video mode of 1024 x 768 x 16-bit.
- **External A/V testing** requires an external display (with a standard VGA connection) and external speakers.

9.9.1 Windows installation requirements

- Windows 7
- Systems upgraded from Windows 7 to Windows 10
- New Windows 8 or 10 systems with the EAV hardware setup (section 32 on page 124).
- **Note:** The **Skylake** line of Intel processors does not support the BIOS video extensions that we use for precise timing. As a result, the vertical sync fails, and *the current PTE will not boot on systems that have it, including Windows 7 systems*.

This includes, but is perhaps not limited to, the following models:

- HD Graphics 510

- HD Graphics 515
- HD Graphics 520
- HD Graphics 530
- Iris Graphics 540
- Iris Graphics 550
- Iris Pro Graphics 580

- **Note:** Windows 8 and 10 systems may require Internet access to install the .NET Framework.

9.9.2 Macintosh installation requirements

- Any Intel-based Macintosh
- Mac OS X 10.7.3 and higher
- PTE supported using the T.O.V.A. flash drive on 2014 model Macs and earlier
- iMac users must use a USB keyboard or mouse (not a wireless keyboard) for the PTE setup.

9.10 What's in the T.O.V.A. 9.0 Kit?



Figure 2: The T.O.V.A. 9.0 kit

The following items should be included in the kit:

Software: The bootable T.O.V.A. 9.0 CD and flash drive with T.O.V.A. 9.0 install and manuals.

Hardware: The T.O.V.A. USB device, microswitch, and the USB, audio, and video cables.

Manuals the T.O.V.A. Installation Guide and the User's Manual.

9.11 How do I use the T.O.V.A. 9.0?

We have a whole section about devoted to **Using the T.O.V.A.** (section [17](#) on page [31](#)).

Here's where you can find answers to some other general questions:

How do I install the T.O.V.A. 9.0? (section [9.12](#) on page [11](#))

How do I administer a T.O.V.A. test? (section [18](#) on page [32](#))

How do I import my old T.O.V.A. data? (section [22](#) on page [56](#))

How do I view a report? (section [19](#) on page [44](#))

How do I order T.O.V.A. Test Credits? (section [20.1](#) on page [51](#))

How do I contact The TOVA Company? (section [27](#) on page [80](#))

9.12 Other questions?

See our **Frequently Asked Questions** section, section [37](#) on page [158](#).

Installing the T.O.V.A.

In this part of this manual, we'll help you install the T.O.V.A. hardware and software.

Note: You will need to log in as an administrator to install the T.O.V.A. 9.0. If you own your computer, then you most likely have administrative access to your computer. If your computer is part of a large organization and you have an IT staff that installs programs for you, you will probably want to contact them to install the T.O.V.A. 9.0. You can run the T.O.V.A. as a normal or limited user, but it can only be installed by an administrator.

Note: To use the T.O.V.A. 9.0 software, you will need T.O.V.A. 9 hardware. You cannot administer the T.O.V.A. test with T.O.V.A. 7 or T.O.V.A. 8 hardware. Please contact T.O.V.A. Customer Service (section 27 on page 80) to purchase a T.O.V.A. 9.0 kit before installing the T.O.V.A. 9.0 software.

Steps to Install the T.O.V.A. 9.0

1. **Please start by installing the software.** The instructions you follow will depend on the kind of computer you have:
 - **Installing the T.O.V.A. on Windows?** See section 10 on page 12.
 - **Installing the T.O.V.A. on Mac?** See section 11 on page 16.
2. Next, you should **configure the T.O.V.A.:** See section 12 on page 19.
3. After you've installed the software, **install the hardware:** See section 13 on page 21.
4. Finally, you can **test your hardware setup:** See section 14 on page 23.
5. In the event you ever have to remove the T.O.V.A. from your computer, we also provide 'uninstall' instructions here:
 - **Uninstalling the T.O.V.A. on Windows?** See section 15 on page 27.
 - **Uninstalling the T.O.V.A. on Mac?** See section 16 on page 29.

10 Installing the T.O.V.A. 9.0 on Windows

Note: Windows 8 and 10 systems may require Internet access to install the .NET Framework.

10.1 Starting the T.O.V.A. 9.0 installer

1. Please close any other applications that are running before installing the T.O.V.A., to make sure they do not conflict with the install of the T.O.V.A.
2. Plug the T.O.V.A. 9.0 flash drive into your USB port. On Windows 8, click the 'Tap to choose what happens...' message.
3. Before the installer begins installing, you may be prompted; choose '**Run T.O.V.A. Setup for Windows.exe**'.
4. If nothing happens when you plug in the flash drive:
 - (a) Go to '**My Computer**'
 - (b) Right-click on '**TOVA9**'
 - (c) Choose '**Autoplay**' or '**Install or run program**'



Figure 3: If you get a warning during install, please choose '**Allow**'.

Note: During or after install, your system's firewall or antivirus software may alert you to changes we are making to your system. If we don't make these changes, the T.O.V.A. may not function correctly. When asked, please choose '**Allow**', '**Unblock**', or whatever allows the installer to proceed.

10.2 Welcome screen

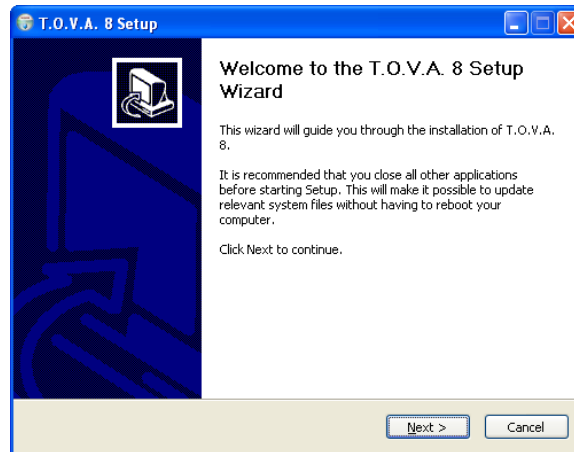


Figure 4: The T.O.V.A. 9.0 installer welcome screen

Once you see the Welcome screen (Figure 4), the installation has begun. Click 'Next'.

10.3 License agreement

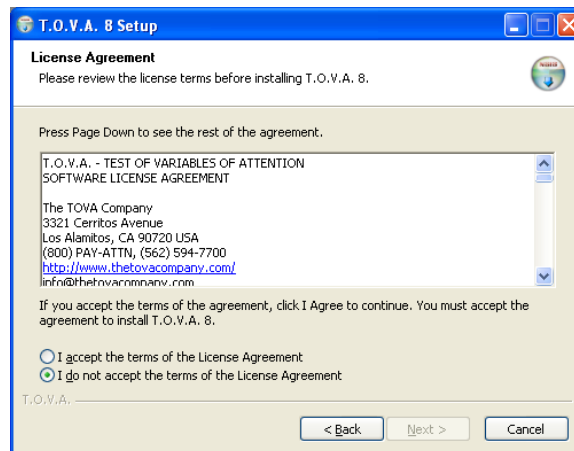


Figure 5: The T.O.V.A. software license

If you accept our License Agreement (Figure 5), choose 'I Agree' and click 'Next'. If you don't accept it, then you can't install the T.O.V.A. 9.0, so click 'Cancel'. And then please give us a call, because we'd love to know why you don't agree with it.

From this point on, we strongly recommend that you accept all defaults (just click 'Next').

10.4 Choosing the install folder

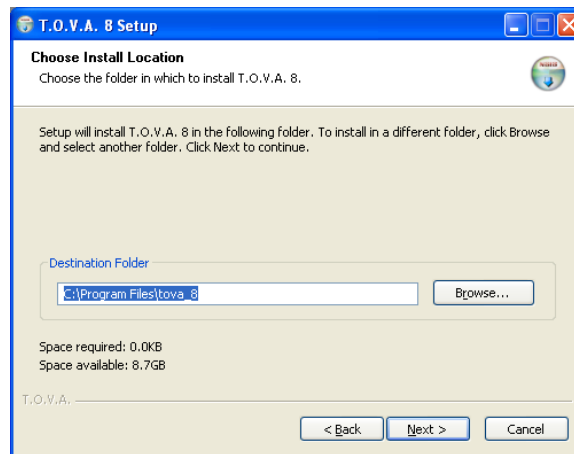


Figure 6: Choosing a destination path

Figure 6 shows the Destination Location page. You will probably want to accept the default.

10.5 Installing files

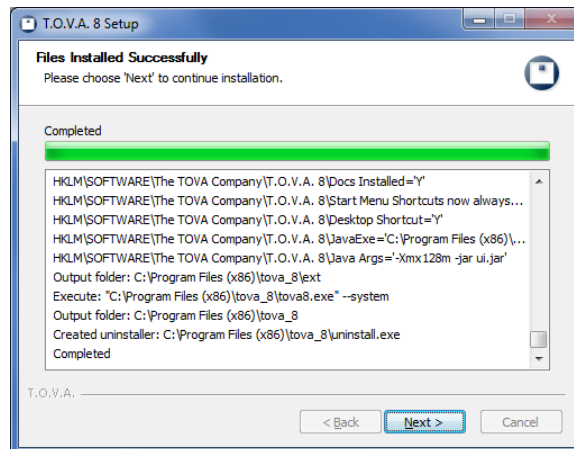


Figure 7: Installing files

While the T.O.V.A. 9.0 files are installing, you'll see Figure 7. It could take a few minutes.

Note: If prompted during install, follow the steps to install .NET Framework 3.5.

10.6 Installation finished



Figure 8: T.O.V.A. 9.0 installer is finished!

You've finished installing the T.O.V.A. files. You'll notice in Figure 8 that '**Configure T.O.V.A. 9.0 system preferences**' is checked by default. The T.O.V.A. 9.0 installation has finished, and your next step should be to configure the T.O.V.A. 9.0 for this system. Proceed to section 12 on page 19.

11 Installing the T.O.V.A. 9.0 on Macintosh

11.1 Starting the T.O.V.A. 9.0 installer

1. Please close any other applications that are running before installing the T.O.V.A., to make sure they do not conflict with the install of the T.O.V.A.
2. Plug the T.O.V.A. 9.0 flash drive into your USB port.
3. Double-click on **'T.O.V.A. Installer for Mac'**.

11.2 System check

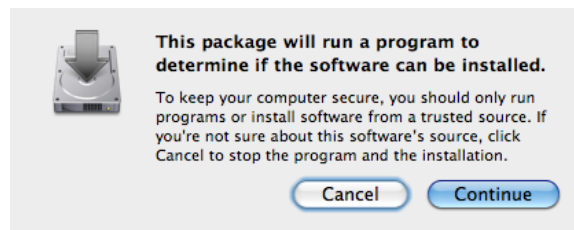


Figure 9: The T.O.V.A. 9.0 system check dialog

First, the installer will check whether your system meets the minimum system requirements for running the T.O.V.A. 9.0. Click **'Continue'**.

11.3 Introduction screen

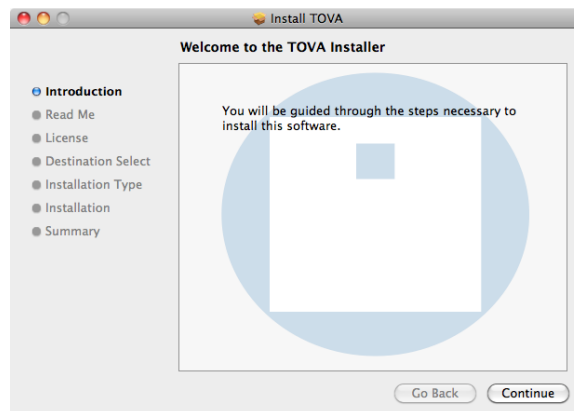


Figure 10: The T.O.V.A. 9.0 installer Introduction screen

Once you see the Introduction screen (Figure 10), the installation has begun. Click **'Continue'**.

11.4 Read me

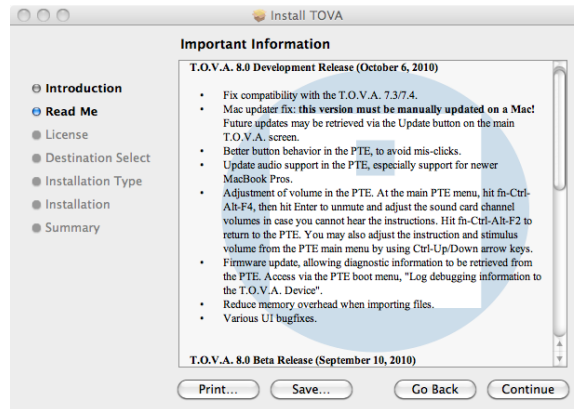


Figure 11: The T.O.V.A. 9.0 installer Read Me screen

The release notes for the current version are displayed. Click **‘Continue’**.

11.5 License

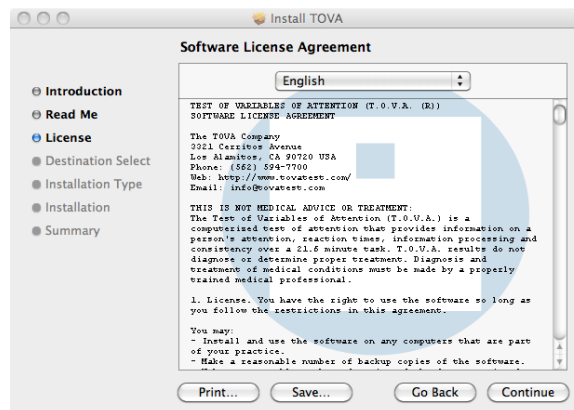


Figure 12: The T.O.V.A. 9.0 installer License screen

The software license agreement for the T.O.V.A. 9.0 is displayed. Click **‘Continue’** after reading, then click **‘Agree’** to proceed with installation.

11.6 Installation type

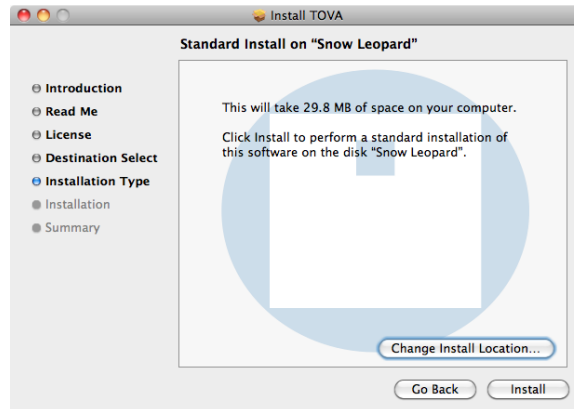


Figure 13: The T.O.V.A. 9.0 installer Install Type screen

This screen shows how much space will be taken by the installation and is the final confirmation before installation takes place. The install location is the /TOVA folder in the Applications directory of your main volume. Documentation is placed in the Docs folder therein. Do not change the install location or else automatic web updating will not work correctly. Click **'Install'** to begin installation.

You will then be asked for your password in order to briefly grant the administrator privileges required to complete installation. Enter your password and click **'OK'**.

11.7 Summary

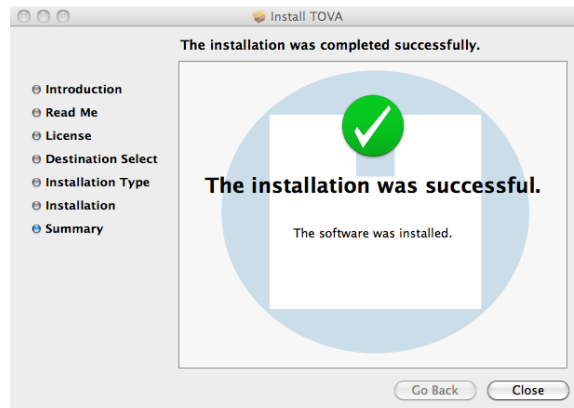


Figure 14: Installation complete

Installation should complete in a few seconds. Press **'Close'** to quit.

You've finished installing the T.O.V.A. files. The T.O.V.A. 9.0 installation has finished, and your next step is to configure the T.O.V.A. 9.0 for this system. Proceed to section [12](#) on page [19](#).

12 Configuring the T.O.V.A.

The T.O.V.A. Configuration wizard will walk you through the most important settings your Administrator should review:

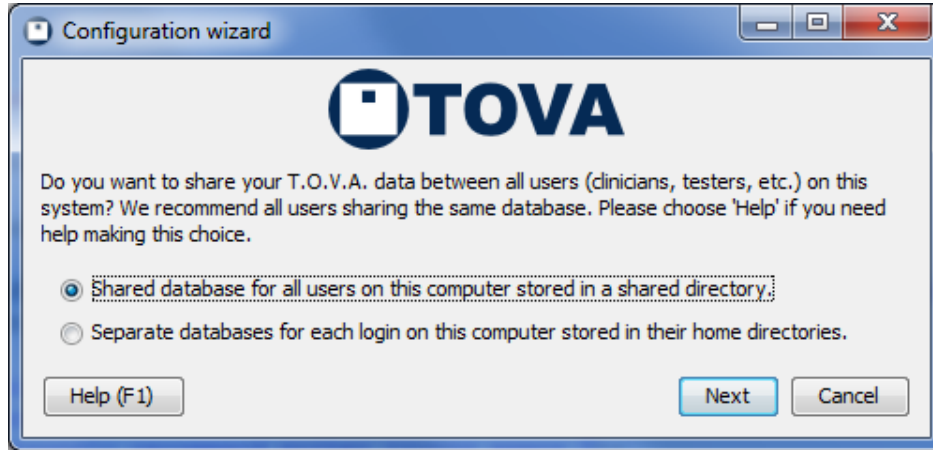


Figure 15: Configuration wizard

Database type and location - If you are the only one using your T.O.V.A. system, you can accept the default. If not, do you want to have a separate database for each user or one shared database for all users? For more information, see **Database**, section 25.4 on page 65. Click **'Next'**.

Hardware setup type - Do you think you'll be running mostly PTE or EAV test sessions? The tester can always decide before launching each session, but here the Administrator can select the default. For more information, see section 30 on page 110. Click **'Next'**.

More settings - There are a few other settings you may want to alter as an Administrator. Click **'More settings'** to review all of the T.O.V.A. preferences, such as:

- **Password** - Set a password to block the T.O.V.A. from unauthorized users.
- **Protected Health Information** - Hide personal subject information from view.
- **Session launch** - Set other session defaults here, such as using a boot CD.
- **Updates** - The T.O.V.A. 9.0 can be easily updated when features are improved or bugs are fixed. Depending on your environment, you may or may not want updates downloaded automatically.

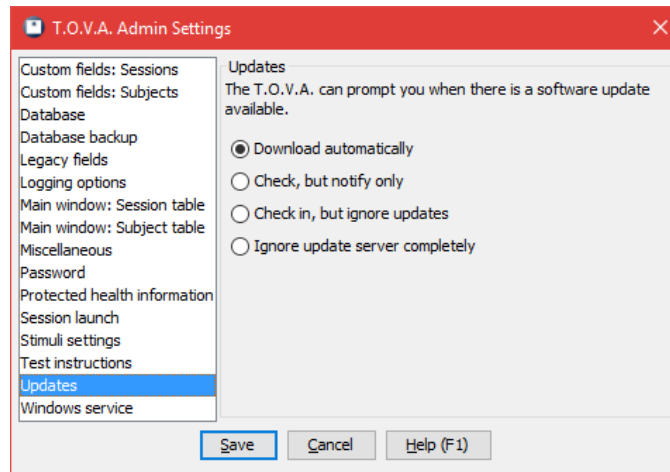


Figure 16: More settings

You can always go back and change these options later under **‘Preferences’**. Changing Admin preferences may require running **‘T.O.V.A. Admin Settings’** (see section 25.1 on page 63). See section 25 on page 63 for more information on T.O.V.A. **Preferences**.

Once you have saved your configuration selections, you should install the T.O.V.A. 9.0 hardware. Proceed to section 13 on page 21.

13 Installing the T.O.V.A. Hardware

The T.O.V.A. is software *and* hardware. The hardware includes:

T.O.V.A. USB device: The main T.O.V.A. box includes jacks for your VGA monitor (necessary for External A/V testing), speakers, the T.O.V.A. microswitch, and, of course, your PC. For more information, see section 29.1 on page 89.

T.O.V.A. microswitch: The T.O.V.A. microswitch is the input device to the T.O.V.A. test. For more information about the **T.O.V.A. microswitch**, see section 29.2 on page 96.

Cables: These are USB, video, and audio cables for hooking the T.O.V.A. hardware up to your computer. (No AC adapter is included as no additional AC power should be necessary.)



Figure 17: The T.O.V.A. Hardware

13.1 Basic (PTE) hardware setup

No qualification is necessary to install the T.O.V.A. software and hardware. T.O.V.A. hardware components are not user-serviceable and instead should be returned to The TOVA Company for repair. Technical Support is available if you have questions (section 27 on page 80).

1. Unpack all of the T.O.V.A. hardware from the T.O.V.A. kit.
2. Plug the T.O.V.A. microswitch into the T.O.V.A. USB device where it's labeled '**T.O.V.A. microswitch**'. Line up the arrows on the top of the connector with the top of the T.O.V.A. device and push it gently into the port. You do not need to twist or turn or squeeze in any way.
3. Find a USB port on your computer. If your computer is less than ten years old, you should have many on the front, back, or even sides of your computer. They are labeled with this symbol:



Figure 18: USB

4. Plug the flat end of the USB cable into the computer's USB port.

Note: Do not plug the USB cable into a USB hub. USB hubs will cause intermittent communication problems between the T.O.V.A. software and the T.O.V.A. USB device. **USB hubs are not supported.**

5. Plug the squarish end of the same USB cable into the T.O.V.A. USB device where it's labeled 'usb'.
6. See the section below for additional hardware setup.

13.2 External Audio/Video setup

After you've connected the T.O.V.A. USB device to the computer as suggested above, there are additional connections to make for External A/V (or **EAV**) testing (tests that don't require rebooting your computer.)

Note: If you have a laptop and you want to run an EAV test, you **must** have an external monitor (and external speakers for the auditory test).

1. Unplug your monitor's video cable from your computer's VGA port and replace it with the included T.O.V.A. video cable.
2. Plug your monitor's video cable into the T.O.V.A. USB device where it's labeled '**video out**'.
3. Plug the included video cable into your T.O.V.A. USB device where it's labeled '**video in**'.
4. Unplug your speakers' audio cord from the audio jack on your PC and replace it with the included T.O.V.A. audio cord.
5. Plug your speakers' audio cord into the T.O.V.A. USB device where it's labeled '**audio out**'.
6. Plug the included audio cable into your T.O.V.A. USB device where it's labeled '**audio in**'.

Note: If you have any problems, you can find instructional videos at <http://videos.tovatest.com>.

Now you should be set up to administer EAV sessions.

Note: If you are using two displays—either an external monitor plugged into a laptop or simply two different external displays—make sure that the subject cannot see the non-testing display during testing, as it could be distracting.

13.3 You're done installing the T.O.V.A. hardware! Now what?

If you're installing the T.O.V.A. for the first time, you should see the first page of the T.O.V.A. Hardware Setup wizard that immediately follows the Configuration wizard. We recommend that you complete the Hardware Setup wizard to confirm that you've attached your hardware correctly. Please continue on to the section [14](#) on page [23](#).

14 Testing Your Hardware Setup

The Hardware Setup wizard starts automatically after you finish the Configuration wizard (section 12 on page 19), and it helps you to test your T.O.V.A. hardware connections to make sure you're set up correctly. The T.O.V.A. hardware must pass each test to go on to the next page. If you haven't set up your hardware yet, please see section 13 on page 21 first.

Note: Which pages you see will depend on which hardware setup you selected in the Configuration wizard.

14.1 Introduction page

When you see the first page of the Hardware Setup, it's time to attach your T.O.V.A. hardware. Follow the “**Installation Guide**” included with your T.O.V.A. 9.0 kit. When you have finished installing your hardware, click ‘**Next**’ to begin testing your hardware and connections. If you have questions about installing your hardware, see section 13 on page 21.

14.2 Checking for your T.O.V.A. USB device

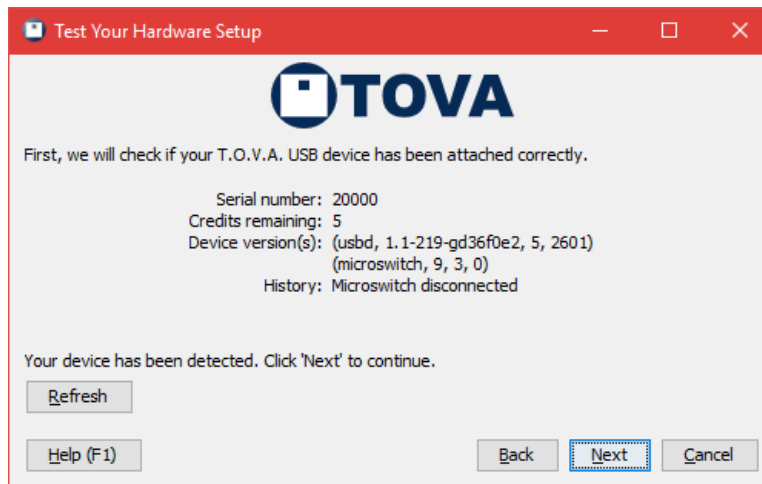


Figure 19: Your T.O.V.A. USB device is correctly attached

The first test of the Hardware setup wizard tries to detect your T.O.V.A. USB device. If it reports “No T.O.V.A. devices found”, you may not have attached the device correctly. See section 29.1.3 on page 91 to help you troubleshoot this problem, and click ‘**Refresh**’ to try detecting the device again.

When your T.O.V.A. USB device has been detected, click ‘**Next**’ to continue.

14.3 Testing your microswitch

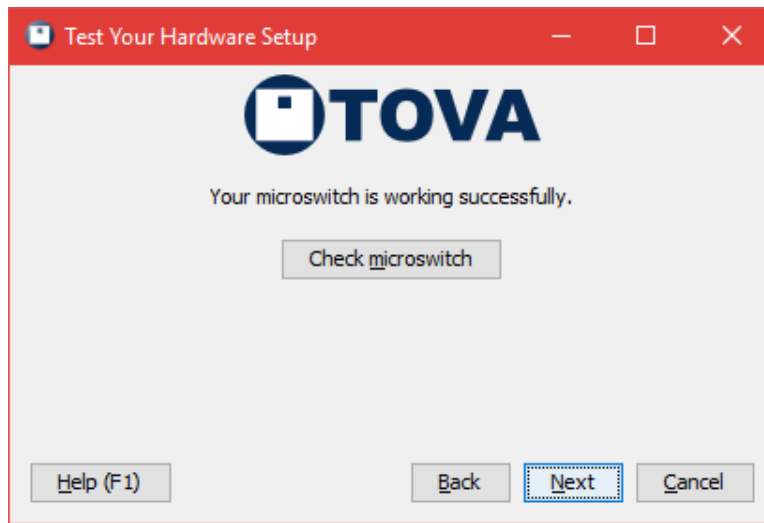


Figure 20: Microswitch test was successful

Once your device has been detected, we next ask you to test that your microswitch is correctly attached and working. Choose '**Check microswitch**' and press the microswitch button ten times. Be sure to press the button *exactly* ten times: If the microswitch test persistently reports more or fewer presses than you give it, you should contact The TOVA Company to replace your microswitch **immediately**.

When your microswitch test passes, click '**Next**' to continue.

14.4 Testing the PTE

Note: If you chose the EAV hardware setup, you should skip to the next section (section [14.5](#) on page [25](#)).

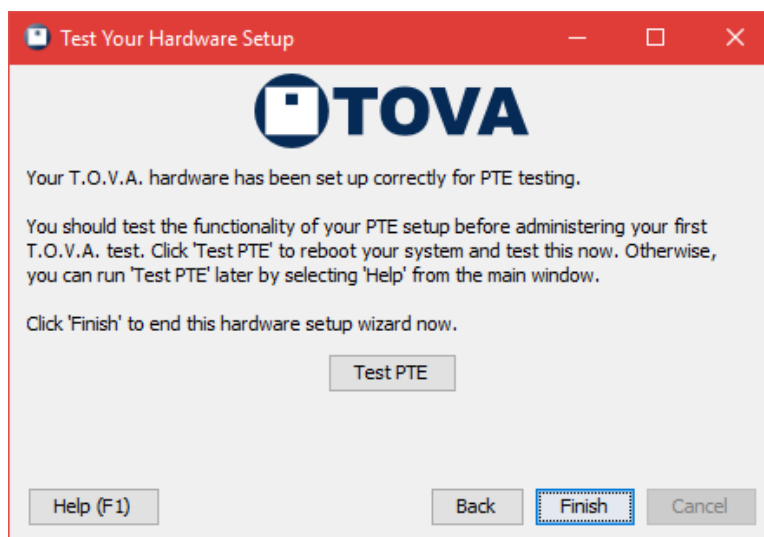


Figure 21: Now that your hardware is tested, test the PTE

This is the last step of the PTE Hardware Setup wizard. By now you have your T.O.V.A. USB device and microswitch attached correctly. Next, you should test the PTE, where you will be administering tests to your subjects. Testing the PTE is important for several reasons:

- You can verify that your system will boot into the PTE successfully.
- You can verify that the PTE will work with your system's audio and video. If there are problems, it's better to resolve them before your subject is sitting next you, waiting.
- You can familiarize yourself with the PTE interface.
- You can calibrate the T.O.V.A. to your display, which is required before you can administer the Visual T.O.V.A. test.
- You can adjust the PTE volume to the proper level for the instructions and the Auditory T.O.V.A. test.

For more information on testing the PTE, see section 31.1 on page 110.

Once you've tested the PTE, you have finished verifying your PTE Hardware Setup. Congratulations! You've finished installing the T.O.V.A.! We *strongly* recommend that you go ahead and read the quick and helpful 'Using the T.O.V.A.' guide: See section 17 on page 31.

14.5 Testing your video connections

Note: If you chose the PTE Hardware setup, you will not see this page of the wizard nor those following.

There are a few more attachments to verify for the EAV Hardware setup. Click '**Check EAV Video**' and—if your video attachments to your computer, T.O.V.A. USB device, and monitor are correct—the device will send a T.O.V.A. image to your screen for a few seconds.

If you do not see the images (the T.O.V.A. logo, visual test stimuli), make sure that 'video out' is connected to your display and 'video in' is connected to your computer's VGA port: It's easy to reverse them.

When your video test passes, click '**Next**' to continue.

14.6 Testing your audio connections

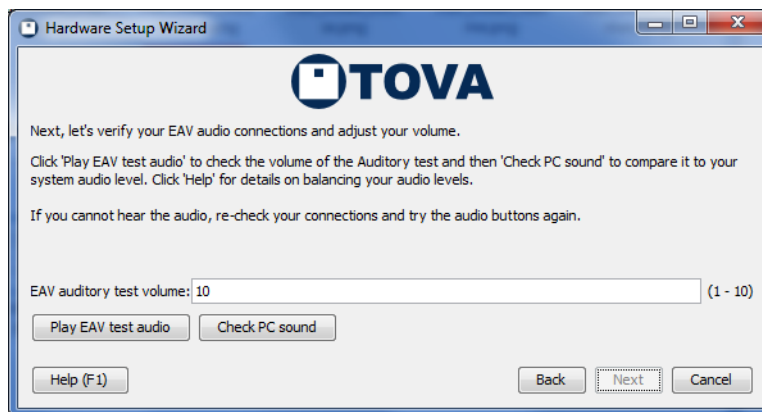


Figure 22: Now that your hardware is tested, test the PTE

Next, we want to verify that your audio cables are attached correctly to your computer, your T.O.V.A. USB device, and your speakers, and that the volume is appropriate to your system.

Choose **'Play EAV test audio'** to play a series of sounds to verify the connection between your T.O.V.A. USB device and speakers. Choose **'Check PC sound'** to test your system volume and the entire audio connection. For more information on adjusting and troubleshooting audio problems, see section 29.8 on page 108.

When you have verified that your audio is working and the volume is properly adjusted, click **'Next'** to continue.

14.7 Your EAV Hardware Setup is complete!



Figure 23: Now that your hardware is tested, test the PTE

Once you've reached this page, you have verified that your hardware is installed correctly for EAV testing. Before you finish, though, click 'Calibrate display'. Successful display calibration is required before you can administer a Visual T.O.V.A. test. See section 18.5.1 on page 39 for more information.

Congratulations! You've finished installing the T.O.V.A.! We *strongly* recommend that you go ahead and read the quick and helpful 'Using the T.O.V.A.' guide: See section 17 on page 31.

15 Uninstalling the T.O.V.A. 9.0 in Windows

There may be times when you'll want to uninstall the T.O.V.A. 9.0. We've done our best to make that process simple and straight-forward.

WARNING! We always recommend that you back up your database before installing or uninstalling the T.O.V.A. You can never be too careful!

1. Go to your Control Panel and choose **'Add/Remove Programs', 'Programs and Features',** or **'Uninstall a Program'** (It depends on your version of Windows.) You will see a list of your installed programs, including **'T.O.V.A. 9'**.
2. Highlight **'T.O.V.A. 9'** and click on **'Uninstall'** or **'Remove'**.

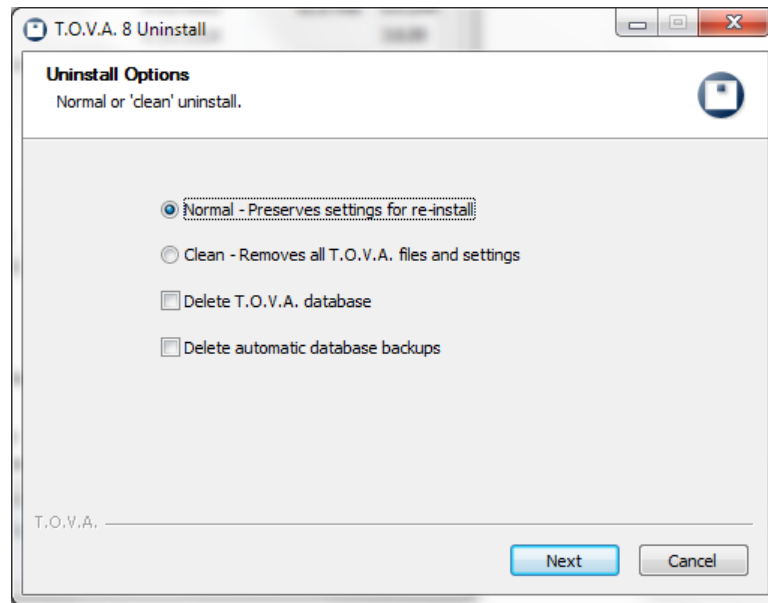


Figure 24: Choose your uninstall options

3. There are a few uninstall options:
 - **Normal uninstall** - Most of the time, you will want a **'Normal'** uninstall. This will leave some things behind:
 - Your T.O.V.A. 9.0 database (section 25.4 on page 65 for location).
 - Any automatic database backups (section 25.5 on page 66 for location).
 - Some settings at the install folder, usually `C:\Program Files (x86)\tova_9` (On 32-bit systems, `C:\Program Files\tova_9`).
 - A few registry entries in `HKEY_LOCAL_MACHINE\SOFTWARE\The TOVA Company\T.O.V.A. 9`.
 - A few other logs, settings, and temporary files that might have useful information for support.
 - **Clean uninstall** - If you choose **'Clean'**, the uninstaller will do its best to remove all files and registry settings, except for your actual T.O.V.A. data. Choose this if directed by T.O.V.A. technical support, if there is concern that your current settings could be causing a problem.
 - **Delete T.O.V.A. database** - This will remove your T.O.V.A. database, with all of your subject and session information and test data. *Please only choose this option if you are confident you've already securely and reliably backed up this data*, such as when you are clearing space on an old PC. If you are worried about destroying personal and private health information, please take steps to securely wipe or destroy the hard drive.

- **Delete automatic database backups** - This should remove any partial or complete T.O.V.A. automatic database backups. Again, *only choose this option if you are confident you've already securely and reliably backed up this data elsewhere*. This may not remove any manual backups you've saved to a different name or folder. If you are worried about destroying personal and private health information, please take steps to securely wipe or destroy the hard drive.

Note: Even a clean uninstall will not remove the .NET Framework or the Java Runtime Environment (if installed with a previous T.O.V.A. version). You can select and uninstall those separately, but we do not always recommend it. They may be required for other software you have installed.

Click **'Next'** when you have selected your options.

4. Uninstall details - The next page shows the progress of the uninstall. When the uninstall is complete, click **'Close'** to exit the uninstaller.

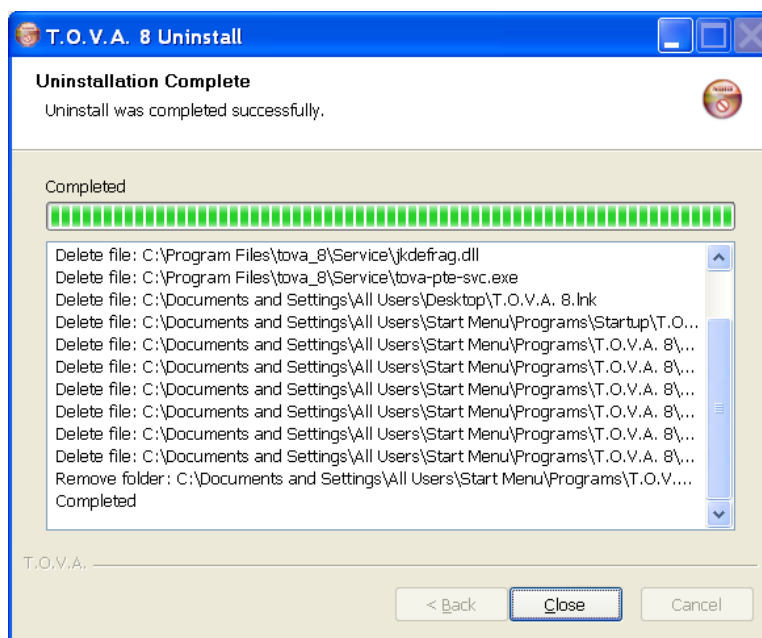


Figure 25: Details of the uninstall

16 Uninstalling the T.O.V.A. 9.0 on a Mac

There may be times when you'll want to uninstall the T.O.V.A. 9.0. We've done our best to make that process simple and straight-forward.

WARNING! We always recommend that you backup your database before installing or uninstalling the T.O.V.A. You can never be too careful!

You can remove the T.O.V.A. application and manuals by dragging the folder `/Applications/TOVA` to the Trash. You may need to type your password or administrator password to delete this folder. This will leave behind:

- Your T.O.V.A. 9.0 database, in either `/Users/Shared/TOVA` for the shared location, or `Library/Application Support/TOVA` in your home folder for the separate location.
- The T.O.V.A. application log at `/Users/Shared/TOVA/system_jui.log`.
- The T.O.V.A. user preferences in your home folder's `Library/Preferences/com.tovatest.data.plist`.
- The T.O.V.A. system preferences at `/Users/Shared/TOVA/system.properties`.
- The T.O.V.A. admin preferences in `/Library/Preferences/com.tovatest.data.plist`.

We have also included a command script on the T.O.V.A. flash drive to remove all traces of the T.O.V.A. from your system. You will find it in `TOVA9/utilities/mac_uninstall.command`. Double-click on this script in the Finder to run it. Type "uninstall" to confirm, and your password to authenticate when indicated. If you want even the T.O.V.A. database removed, type "delete" when asked, but **please note that this will remove all your T.O.V.A. test data.**

17 Uninstalling the T.O.V.A. Hardware

To uninstall the T.O.V.A. hardware, simply do the opposite of the instructions above in **Installing the T.O.V.A. Hardware** (section 13 on page 21).

If you have the EAV (External A/V) hardware setup, you may disconnect those connections first:

1. Unplug the T.O.V.A. video cable from your computer's VGA port.
2. Unplug your monitor's video cable from the T.O.V.A. USB device and plug it into your computer's VGA port.
3. Unplug the T.O.V.A. audio cable from the audio jack on your PC.
4. Unplug your speakers' audio cord from the T.O.V.A. USB device and plug it into the audio jack on your PC.

Once any EAV connections are removed, disconnect the rest of the hardware:

1. Unplug the T.O.V.A. USB cable from your PC's USB port.

2. Place your fingers on the dimpled sides of the T.O.V.A. microswitch connector and gently pull it apart from the T.O.V.A. USB device.

This will terminate operation of the T.O.V.A. USB device.

Using the T.O.V.A. 9.0

In this part of this manual, we'll show you the parts of the T.O.V.A. you'll use on a regular basis.

- **Administering the T.O.V.A. Test**, see section [18](#) on page [32](#)
- **The T.O.V.A. Report**, see section [19](#) on page [44](#)
- **Backing up the T.O.V.A. Database**, see section [21](#) on page [54](#)
- **Ordering Test Credits**, see section [20.1](#) on page [51](#)
- **Importing T.O.V.A. files**, see section [22](#) on page [56](#)
- **Exporting**, see section [23](#) on page [60](#)
- **Protecting Personal Health Information**, see section [24](#) on page [62](#)
- **Settings and Preferences**, see section [25](#) on page [63](#)
- **How Do I Ask a Question?**, see section [27](#) on page [80](#)

18 Administering the T.O.V.A. Test

In this section of the manual, we'll give you practical, basic instruction in how to administer the T.O.V.A. test using the T.O.V.A. 9.0.

18.1 Overview

There's a simple series of steps you'll need to do in order to administer the T.O.V.A. test:

1. Make sure the subject is prepared for testing.
2. Create a new session for an existing subject or a new subject and session.
3. Launch a T.O.V.A. session. You can either:
 - Launch an External A/V session
 - Launch a PTE session and reboot your system to the Precision Test Environment.
4. Run the multimedia test instructions
5. Administer a practice test
6. Administer the T.O.V.A. test
 - If this is a PTE session, exit the PTE after the T.O.V.A. test to return to your OS.
7. Use a credit to save the session into the T.O.V.A. database.
8. View/print/export the T.O.V.A. report

18.2 Pre-test Preparation

Preparing the subject is *crucial*, because it assures that the test is administered properly and replicates the same conditions as the T.O.V.A. norms. This includes when, where, and how the test should be administered.

You may also want to enter the subject and session information before the subject arrives. Next, we'll tell you how to do that.

18.3 Selecting a subject

Administering a T.O.V.A. test starts at the main window. Here you may select a subject or create a new subject.

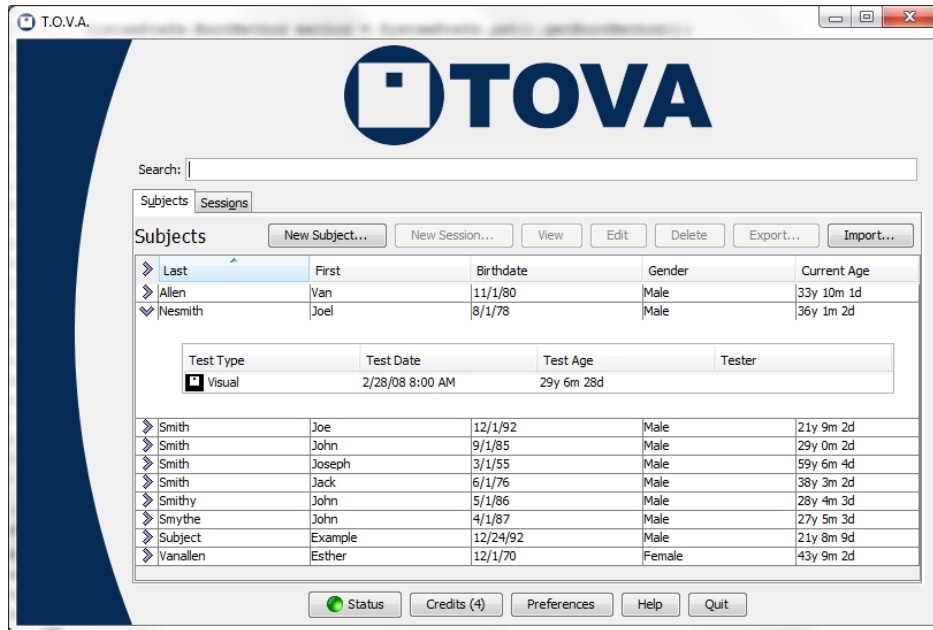


Figure 26: Main T.O.V.A. window

18.3.1 Creating a new subject

Creating a new subject is easy.

Notice first the red labels on **Birthdate** and **Gender** (Figure 27). These are the only required fields for creating a new subject. While entering a subject name is usually helpful, some users may prefer to leave out the subjects' names altogether to better protect personal health information.

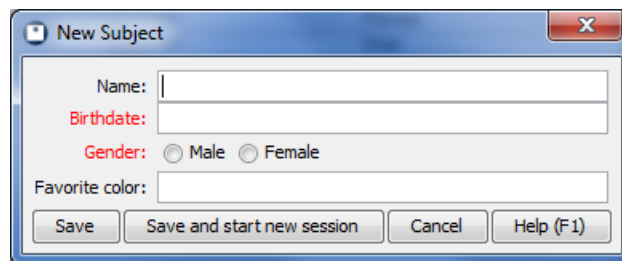


Figure 27: New Subject window

1. Click on the Subjects tab.
2. Click on the 'New Subject' button.
3. Enter the subject information.

Note: Entering dates in the T.O.V.A. is easy, but the format depends on the preferences that are set in your operating system (e.g., Windows). For instance, if you're in the United States, dates are most likely in the format 'mm/dd/yyyy', but in Europe they're probably 'dd/mm/yyyy'. When entering the birth date, **please check the age** to make sure you've entered it right. A shorter 10.8-minute test is administered to subjects under six, so an incorrect date of birth can result in the wrong test format.

Notice also our custom field, **'Favorite color'**. You will not see this field, of course, but you may see other custom fields that your organization has created. For more information on Custom Subject and Session fields, see section 25.3 on page 64.

4. Click **'Save'** to save the new subject, or, if you're ready to test now, click **'Save and start new session'** and proceed to section 18.4 on page 35.

That's it! You've created a new subject in the T.O.V.A.

18.3.2 Selecting an existing subject

If you've already created the subject, the next step is to find and select the subject you want to test. Near the top of the main window (Figure 26) is a search bar. Here you can search for the subject you want to test by name, subject number, birthdate, test date, or any custom fields you've created. This will be an important tool once you've administered a few dozen tests.

1. Click on the **'Subjects'** tab.
2. Type in the search criteria and press **'Enter'**.
3. Now you see only the subjects that match that criteria.
4. **Note:** If you click the **'Sessions'** tab now, you'll see only the sessions that match the same criteria.

For more search techniques, see section 35.2 on page 142. Another way to find your subject quickly is by clicking on the column headers. Click once to sort the table on that field and again to reverse the sort order.

Once you've found the subject you want to test, highlight the subject and click **'New Session'**.

18.4 Entering test session information

New Test Session

Subject information
Name: Example Subject
Gender: Male
Birthdate: December 24, 1992 (23y 10m 23d)

Session type
 Visual T.O.V.A. Test Auditory T.O.V.A. Test
Advanced
Instructions language: Danish

Session information
Test Date: November 16, 2016 7:45 PM
Tester:
Treatments:
Add Treatment Remove
Comments:
Branch:

Session launch
Press 'Launch' to start an EAV session (using external audio/video).
Launch Options Cancel

Figure 28: Choose session options

Now that we've selected a subject and started a new session, we can enter a little information about this test session and launch the session. You should choose now between administering a Visual or Auditory test and make sure that the age and test date is correct.

Note: It is critical that the subject's gender and age is correct. Any mistake here will invalidate the accuracy of the T.O.V.A. report, since comparison to the T.O.V.A. norming study must be done for the proper gender and age group.

Adding treatments, including medications and dosages, will aid in interpreting the test. In addition, you can enter the name of the tester, fill in any custom fields, or add comments, but none of these are required before administering a T.O.V.A. test session. And you can always add or modify session information after the session has been administered.

At the bottom of this window, under '**Session Launch**', you will see a brief description of how the session will be launched. The settings here will always default to what the administrator has specified in the Preferences (section 25.12 on page 71), but if you want to change these settings for this session, click on the '**Options**' button.

18.4.1 Advanced test formats

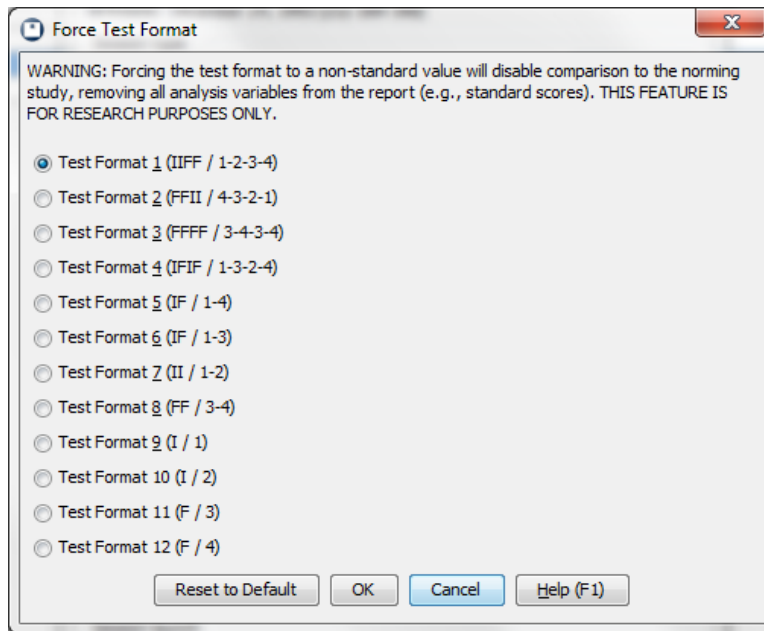


Figure 29: Alternative test formats are available for researchers

The T.O.V.A. 8.1 added alternative Test Formats. From the New Test Session window, choose ‘**Advanced**’ to select a different test format.

Note: These should only be used by researchers, as alternative test formats are not normed.

18.4.2 Instructions language

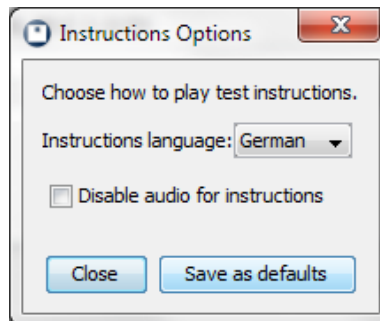


Figure 30: Choose a different language or mute the audio

From the New Test Session window (section 18.4 on page 35), click ‘**Instructions language**’ to change the test instruction settings for the session you’re about to give. This is also where you can mute the instruction audio, if you prefer to read and advance the instructions at your own pace. See section 33 on page 126 for more information on the T.O.V.A. test instructions.

When you’ve chosen your settings, click ‘**Close**’, or choose ‘**Save as defaults**’ if you’d like to make your changes permanent.

18.4.3 Launch options

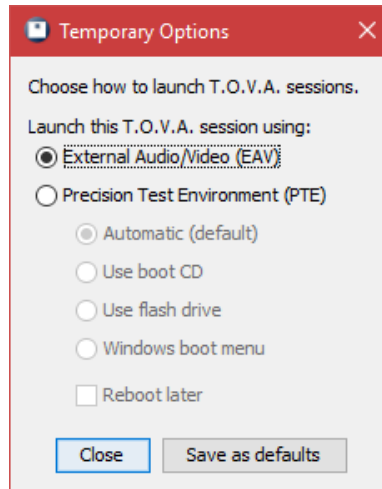


Figure 31: Change launch options for this session

Let's say you decide you want to prepare your system to launch the PTE session, but you want to **'Reboot later'** after you finish writing an email. Any change you want to make from the way the T.O.V.A. usually launches a session, you can make here.

Once you've configured the session launch options how you want them for this session, click **'Close'**. If you'd like to save these as your new default launch options, choose **'Save as defaults'** instead. For more information on your launch options, see section [25.12](#) on page [71](#)

Now let's look briefly at the two testing environments.

18.4.4 External Audio/Video session

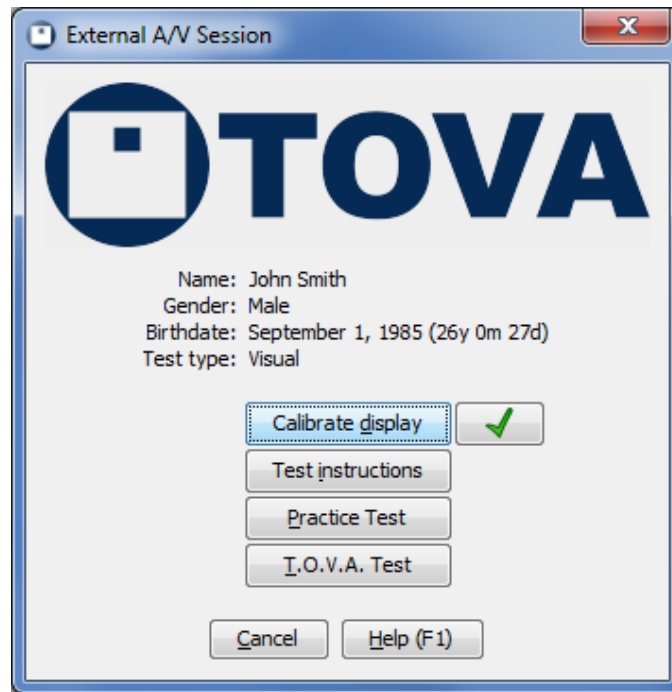


Figure 32: External A/V session

The T.O.V.A. 8 added a new kind of T.O.V.A. test session, the **External Audio/Video session**, that does **NOT** require rebooting your system. That's because instead of relying on your system clock, video, etc., the new T.O.V.A. hardware handles the timing itself.

What an External A/V session **DOES** require is a desktop system *or* a laptop with an external monitor (and speakers for the Auditory test). See section 32 on page 124 for more information.

Note: Please make sure to disable, at least temporarily, any Sleep/Standby/Hibernate power settings for your system. Because External A/V testing does not use the keyboard or mouse, some systems will shutdown due to inactivity. See section 34.8 on page 140 for more information.

18.4.5 PTE session

The T.O.V.A. 9.0 also continues to offer the **Precision Test Environment (PTE)**. Using the PTE requires rebooting your system, so be sure to save your work in other applications before launching the PTE.

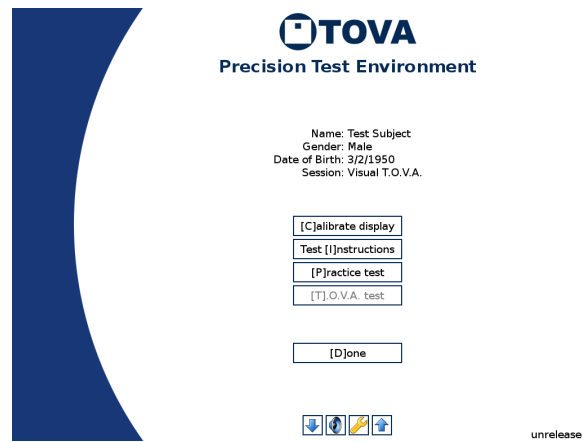


Figure 33: The Precision Test Environment

For more information on the Precision Test Environment, see section 31 on page 110. For information on PTE launch options, see section 25.12 on page 71.

18.5 The T.O.V.A. test session

Once you've entered all the test session information and set up the launch as you want it, click **'Launch'** to start the T.O.V.A. test session. As you can see from the screenshots above, both testing environments have the same basic steps to administer a T.O.V.A. test.

Note: *Always* make sure that your PC is plugged into a power outlet during test mode. A low battery during a test session may cause the test data to be lost.

18.5.1 Calibration

Note: If you're administering an Auditory T.O.V.A., you will skip this step and go right to test instructions, section 33 on page 126.

There are more different kinds of monitors than ever, and because accurate, precise timing is so critical to testing, we've added a new feature to the familiar T.O.V.A. microswitch.



Figure 34: Microswitch light sensor

With this sensor and a brief 10-to-30-second calibration, we can conform the timing of the T.O.V.A. test to idiosyncrasies in your monitor. There will be some monitors that are too unpredictable for the T.O.V.A. to work with. By performing this calibration step, we can recognize and alert you if your monitor's timing will be out of range.



Figure 35: Calibrating the T.O.V.A. to your display.

1. Click **'Calibrate Display'**.
2. Hold the microswitch to the screen, lined up with the image, with the button facing away from the screen.
3. Click the microswitch button.
4. Try to hold the microswitch still until the calibration completes.

Calibration will take 10-30 seconds. Once we've calibrated the T.O.V.A. to your monitor, the T.O.V.A. will store that data, so you only have to calibrate once for EAV testing and once for PTE testing (See section 32 on page 124 for more on the differences). **Note:** If you install a new monitor or video card, it's important that you recalibrate the T.O.V.A. to that new hardware.

Note: See section 29.5 on page 102 for more information if you encounter problems during calibration.

18.5.2 The test instructions

The next step is giving the subject instructions on how to take the T.O.V.A. test. Click the **'Test Instructions'** button to start the multimedia test instructions. See section 33 on page 126 for more information on test instruction languages, controls, and options.

18.5.3 The practice test

After receiving the test instructions, the subject should take a two-minute practice test. When you click **'Practice Test'**, the subject will receive a few final instructions; then the subject will be prompted to click the microswitch to begin the practice test.

When the practice test is complete, the T.O.V.A. automatically displays the results. If there were a lot of Omissions or Commissions (Figure 36), perhaps the subject needs further explanation. The subject can re-take the practice test if necessary.

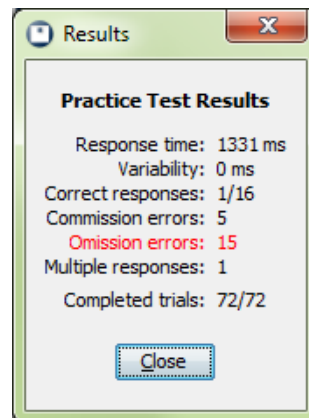


Figure 36: Results of a misunderstood practice test

18.5.4 The T.O.V.A. test

When you click **'T.O.V.A. Test'**, the final instructions before the T.O.V.A. test will be given, and the subject will be prompted to click the microswitch to begin the T.O.V.A. test.

For more information on the boring details of the T.O.V.A. test itself, see the Professional Manual (Available from the Help window, section [35.5](#) on page [146](#)).

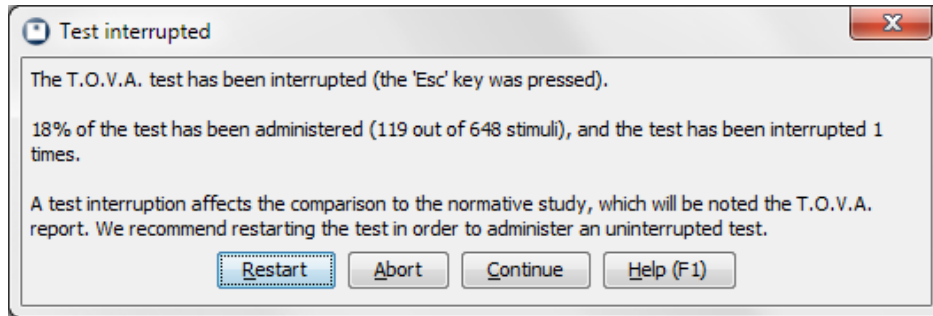


Figure 37: Interrupted External A/V test

If the T.O.V.A. test is interrupted (by pressing **'Esc'** or if there is a hardware failure), a message will appear asking the user to **'Continue'**, **'Restart'**, or **'Abort'** the T.O.V.A. test. For the best results, we recommend that you **'Restart'** any interrupted test. Click **'Abort'** to stop the test before it is finished—you will be prompted to either save the unfinished test's data or erase it. Click **'Continue'** to resume the test where the subject left off. Any interruptions will be noted in the test data and on the report.

18.5.5 Test results

Once the T.O.V.A. test is completed, a summary of the finished test will appear. If you are using the PTE, this will appear after you boot back to your OS. Make sure to examine the summary before saving the data. If there are very few button presses, perhaps the subject did not understand the test instructions. If not all the stimuli were shown, the test may have been aborted before it was complete. In either case, it may not be worth using a test credit to save the T.O.V.A. data, and you may choose to **'Erase data'**.

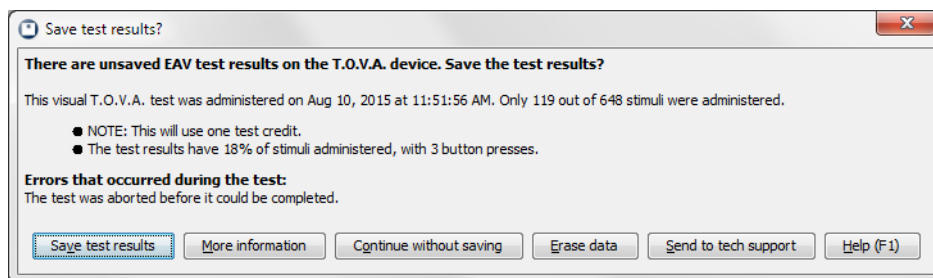


Figure 38: This test was completed with very few button presses.

If the summary information looks fine, choose **'Save test results'** to retrieve the T.O.V.A. test results and store them in the T.O.V.A. database. If you're not sure whose test this is, you can view the subject information by clicking **'More information'**.

Note: You must use a test credit to save the T.O.V.A. test data. If you **'Continue without saving'**, the T.O.V.A. test results will remain on the device, but they will be **lost** the next time a T.O.V.A. test is

administered. For more information about test credits, see section 20 on page 51.

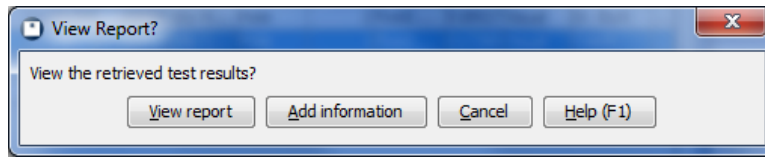


Figure 39: View the report on this T.O.V.A. data?

Next, you have option to view a report on the test data immediately. Choose **‘View report’** to see a report now or **‘Cancel’** if you’d prefer to see the report later. The report can be viewed afterward at any time. You can also choose **‘Add information’** to add/edit session information before you view the report.

For more information on the T.O.V.A. report, see section 19 on page 44.

18.6 So now what?

Congratulations! You’ve just administered a T.O.V.A. test!

The T.O.V.A. test data is now stored in your database along with the subject information. So what do you do now?

- **Add further information or comments to the session or modify notes made earlier?** See section 35.3 on page 145.
- **View the report on this data?** See section 19 on page 44.
- **Start another session for this subject?** See section 18.3.2 on page 34.
- **Start a session for a new subject?** See section 18.3.1 on page 33.
- **Modify launch defaults for future sessions?** See section 25 on page 63.
- **Get interpretation support for this test session?** See section 27 on page 80.
- **Request additional test credits?** See section 20 on page 51.
- **Compare this test to other test data?** See section 19.3 on page 47

18.7 Finished with the T.O.V.A.

When you are finished using the T.O.V.A. for the day, please exit the T.O.V.A. application by clicking **‘Quit’** in the main T.O.V.A. window. There is no operation to “power down” the T.O.V.A. USB device and no need to disconnect the T.O.V.A. hardware when not using it, so we recommend that you keep the T.O.V.A. USB device attached. If it’s convenient, you may uninstall the T.O.V.A. hardware when you are not using the T.O.V.A. application (see section 17 on page 29), but we recommend that you save your test data first.

19 Reporting

Note: T.O.V.A. results should be interpreted only by qualified professionals.

Viewing a report is easy. In the main window, highlight the session you want to report on and choose 'View'.

Note: If you want to view a comparison report, highlight more than one session using Shift-click or Ctrl-click. The 'View' button becomes a 'Compare' button, and when you choose it, you will see a graph comparing the highlighted sessions. For more information on the comparison report, see section 19.3 on page 47.

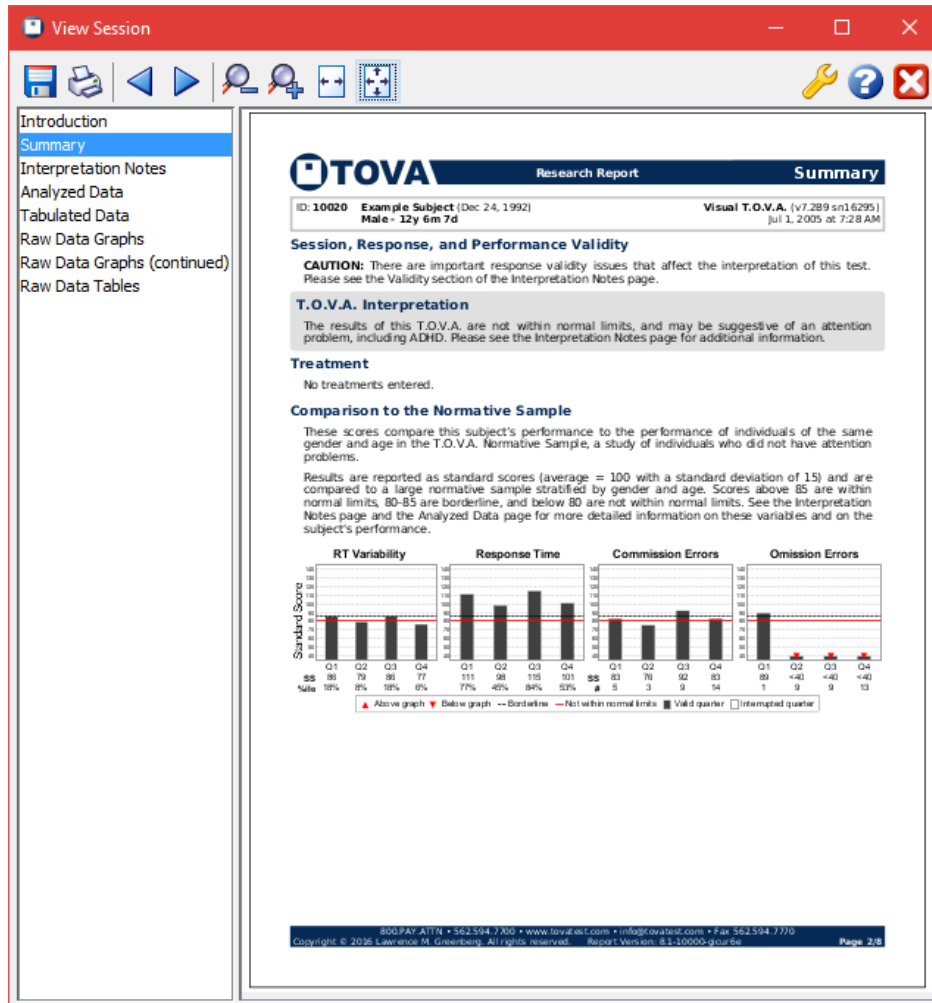


Figure 40: The T.O.V.A. Report

While you're viewing a report, you have other options:

Save - Exports a .pdf file of the report

Print - Send the report to your printer

Copy... - Copy the text of the current report page or the entire report to your clipboard

Back/Next - Proceed through the pages of the report

Smaller/Larger - Zoom out/in on the report pages

Fit to width - Zooms the report page to the width of the window

Fit page - Zooms to view the entire page of the report in the window without scrolling

Customize - Choose which pages of the report to display, among other customizations. See **Customizing the Report**, section 19.1 on page 45 below.

Upgrade the report to Clinical - If this is a Screening T.O.V.A. report, this button will appear and you can spend a credit to convert the test to a Clinical test.

Help - Loads this Help section

Close report - Closes the report window.

On the left of the report window is a list of the pages of the report. Highlight a page to view it in the right pane.

19.1 Customizing the Report

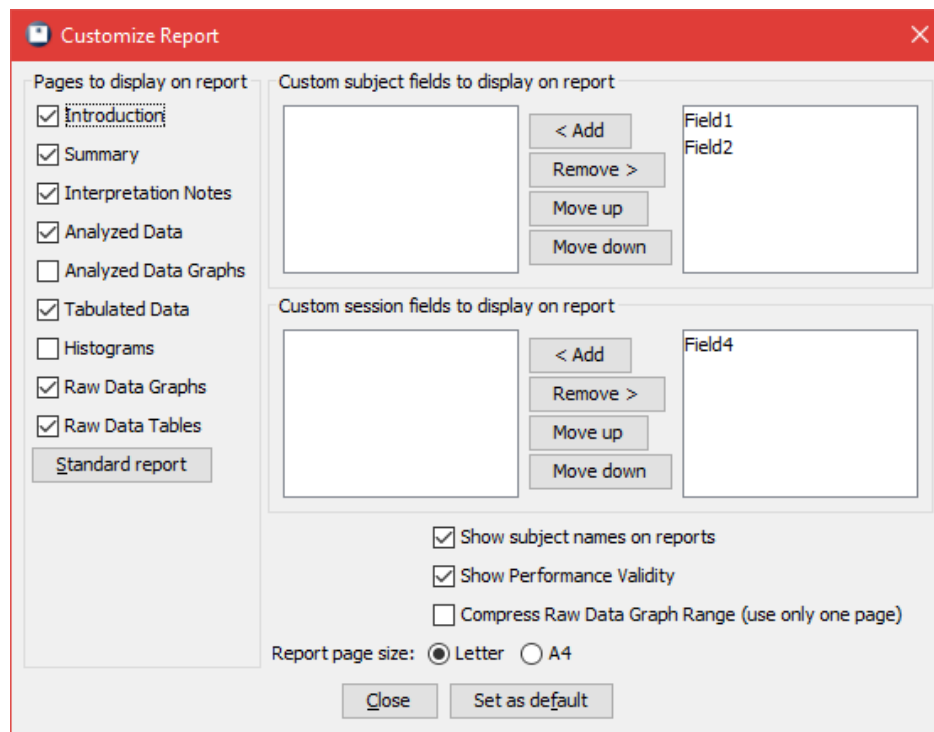


Figure 41: Select pages and fields to include

Choose **'Customize'** from the Report window, and you'll find several ways to customize the T.O.V.A. report:

- **Report pages** - Select pages to include in your report. You can select pages individually, or you can choose a **'Standard report'**, which automatically selects the pages we expect most users will want to include (section 19.2 on page 47).

- **Custom fields** - Choose which custom subject and session fields should appear. When selected, custom fields will appear near the top on most pages of the report.
Note: By default, new custom fields do not appear in the T.O.V.A. report until they are selected, and even then, the field will only appear if it has a value. In other words, if you set no value for Sarah's hair length, that session's report will not display "Hair length: ", it will just not appear.
- **Show subject names on reports** - If unchecked, this simply causes the subject's name to not appear on the report when viewed, printed, or saved to a .pdf.
- **Show Performance Validity** - Uncheck this option to hide Performance Validity.
- **Compress Raw Data Graph Range** - Raw Data Graphs was expanded in T.O.V.A. 8.2 to two pages in order to show the full range. Select this option to compress the graphs to fit on a single page, as in previous T.O.V.A. versions.
- **Report page size** - Choose between '**Letter**' and '**A4**'.

Once you've made your changes, choose '**Apply**', or choose '**Set as default**' to apply your changes to this and all future reports. Close the window to abandon your selections.

19.2 Report Pages

Here's a little about each page of the report, including which pages appear in the **'Standard'** report:

Page Name	Standard	Description
Introduction	X	The report's cover page that briefly explains what the T.O.V.A. is.
Summary	X	The overall conclusions drawn from the test results in text and graphical form.
Interpretation Notes	X	Notes on the subject's performance.
Analyzed Data	X	Analysis of the subject's performance compared to the norms in a table.
Analyzed Data Graphs		Contains larger graphs of each of four variables as found on the Summary page.
Tabulated Data	X	Tabulated raw data for each quarter, half, and total, as well as session and test parameters.
Histograms		Intended for researchers and advanced T.O.V.A. users interested in response-time histograms.
Raw Data Graphs	X	Graphically displays the subject's trial-by-trial responses. Can be two pages or compressed to one page (section 19.1 on page 45).
Raw Data Tables	X	Table of the subject's trial-by-trial responses.

Table 1: Pages of the T.O.V.A. report

19.3 Comparison Graphs

When you select more than one session in the main window, the **'View'** button becomes a **'Compare'** button. Click it to bring up a report with graphs comparing statistics of the selected sessions.

You can highlight multiple sessions using **'Ctrl'**-click (Mac users, **'Command'**-click) to highlight each additional session, or **'Shift'**-click to highlight a range of sessions.

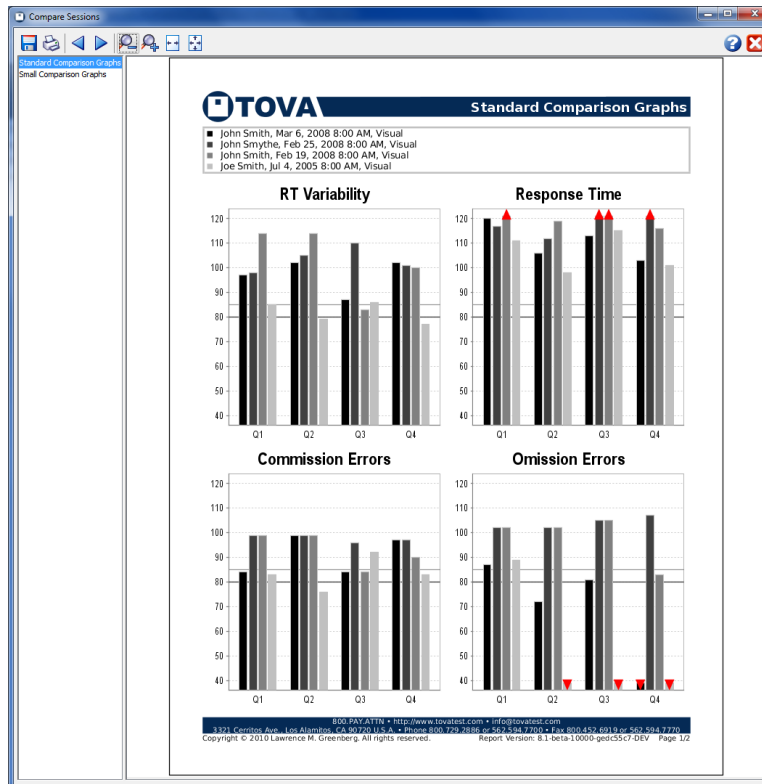


Figure 42: The Comparison Report

There are two pages:

Standard Comparison Graphs - Similar to those in the T.O.V.A. 7, this displays four graphs, each comparing the results for one statistic each session and quarter.

Small Comparison Graphs - This contains many smaller graphs, one for each session and statistic, so that you can compare graphs rather than values.

19.4 Pasting content into Word

When you are viewing the T.O.V.A. report, you can click the **'Copy...'** button to copy the text of the current page or of the entire report to your OS's clipboard. You can also right-click on a specific table (such as the **Analyzed Data** table) in the report and choose **'Copy table'**. Once it's copied to your clipboard, switch to your word processor and paste it there.

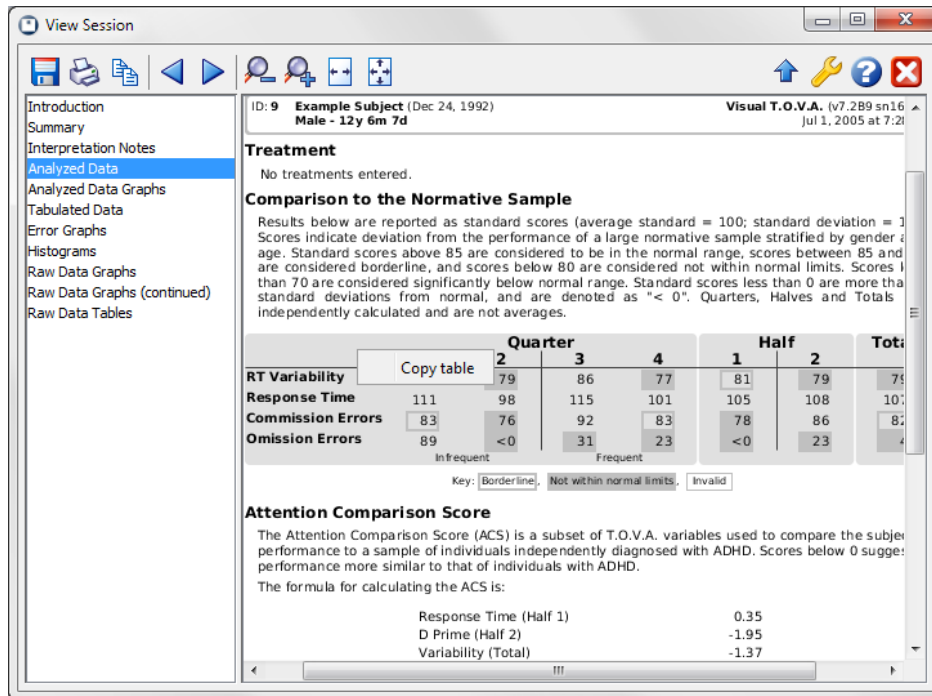


Figure 43: Copy just the table

If you need help taking pasted report text and converting it to tables in Microsoft Word 2007, here's a tip:

1. Highlight the text you want to convert into a table.
2. Click on the **'Insert'** tab.
3. Click on **'Table'**.
4. Choose **'Convert Text to Table'**.
5. Click **'OK'**.

For earlier versions of Word, try this:

1. Highlight the text you want to convert into a table.
2. Click on the **'Table'** menu, choose **'Convert'**, and then **'Text to Table'**.
3. Click **'OK'**.

19.5 Printing problems

We try to support all printers, but if you encounter problems printing the T.O.V.A. report, there is a workaround:

19.5.1 Windows

1. In the Report window, click **'Save'** and save the .pdf file to a known location (such as your desktop).
2. Open that location and right-click the .pdf file.
3. Choose **'Print'**. Alternatively, you may choose to open the file in your system's PDF viewer and customize the printing options there.

19.5.2 Mac

1. In the Report window, click **'Save'** and save the .pdf file to a known location (such as your desktop).
2. Open that location and double-click the .pdf file. That should Preview the saved report.
3. In Preview, print the report.

We hope that this works for you. However, please do send us a Tech Support request (section 27 on page 80) to let us know about the problem, so we can correct this for you and other users.

After that, you can automate this workaround:

1. Run the T.O.V.A. and choose **'Preferences', 'Other'**.
2. Check **'Use PDF reader for printing'** and click **'Save'**.

From then on, printing a report will save a temporary file, open your default PDF viewer, and print the report using your default printer/settings.

20 Test Credits

In order to administer a T.O.V.A. test and thus generate a T.O.V.A. report, you must have one or more **test credits** available on your T.O.V.A. USB device. A test credit is used when a test session is saved from the T.O.V.A. USB device.

The T.O.V.A. USB device holds only one test's data, and the test data can only be saved by using a test credit. If you run out of credits, you cannot continue administering tests until you order more. A new T.O.V.A. USB device will contain five test credits, and, therefore, you can administer five tests before you need to order more credits, though you can order more at any time.

Ordering more test credits is easy. How you order will likely depend on if your T.O.V.A. system can connect to the internet.

20.1 Ordering credits online

With an internet connection, ordering credits is easy:

1. From the main window, choose the **'Credits'** button. The top line of the window will show the number of credits remaining on the attached T.O.V.A. USB device.
2. Under **'Credits to order'** enter the number of credits you want to order and choose **'Purchase credits'**. You will be shown the number of credits to be purchased and the device for which you're purchasing them.
3. Choose **'Purchase'** to confirm the purchase.

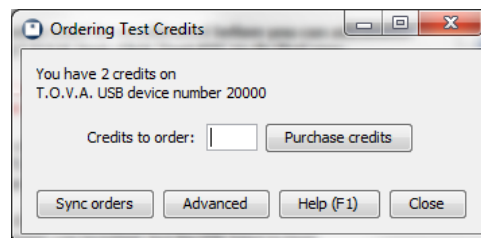


Figure 44: Ordering test credits

Once the transaction is complete, your organization will be billed for your order as previously authorized. If you have questions about billing or pricing, contact T.O.V.A. customer service (see section 27 on page 80 for details.)

20.2 Ordering credits offline

In the T.O.V.A. 9.0, credit ordering is a simple exchange of codes. This exchange is performed automatically if your T.O.V.A. system is connected to the internet. If it is not, you can exchange codes with the T.O.V.A. office by means of email or phone.

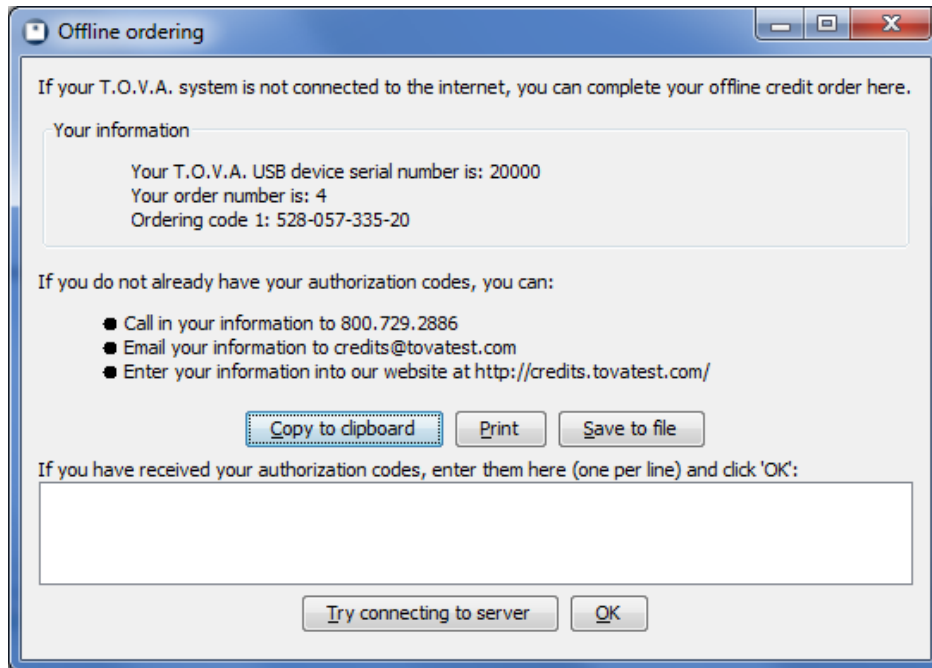


Figure 45: Offline ordering

If your T.O.V.A. system cannot connect to the internet, you will see the Offline Ordering window (Figure 45). At the top, a frame contains **'Your information'**; this is the information that you will send to The TOVA Company when you are ordering credits (or receiving a service order).

As noted, you can contact The TOVA Company in a variety of ways with your **ordering code(s)**, and we will respond with your **authorization code(s)**. Once you've entered the authorization codes successfully, choose **'OK'**.

Sometimes you may order credits over the phone or email. If that credit order is initiated by The TOVA Company instead of your T.O.V.A. system, we call that a **service order**. In that scenario, we will send you a service order authorization code, and you will enter it on this same window. When you click 'OK', the code will process, and a new ordering code will appear under **'Your information'**. It's important that you send that information back to us, via any of those same means (phone, email, website). That will complete the transaction on the server, so that you will still be able to order credits in the future.

Once the transaction is complete, your organization will then be billed for your order. If you have questions about billing or pricing, contact T.O.V.A. customer service (see section 27 on page 80 for details.)

20.3 Service orders

Some users do not order credits directly through the application in the standard way. Instead, they contact us, and we generate a **service order**.

In order to receive credits from a service order, you must either have Internet access to your T.O.V.A. computer or receive a **service code** from us. In the latest version, the T.O.V.A. software will synchronize orders between the T.O.V.A. USB device and the T.O.V.A. server automatically. If that fails, you can attempt to sync manually:

1. Attach your T.O.V.A. USB device and run the T.O.V.A. application.

2. Click '**Credits**' and then '**Sync orders**'.

If your system is connected to the Internet, your device will communicate with our servers, completing the order, and a message should appear with your new total credits available. If your computer is not connected to the Internet, the **Offline Ordering** window (section 20.2 on page 51) will instead appear, where you can manually enter the service code(s) received from us. If there is any ordering code to be sent back, it will appear here under '**Your information**'. You should send that ordering code back to us, via any of the means listed (phone, email, website). This will complete the order on the T.O.V.A. credit servers, synchronizing it with your T.O.V.A. USB device.

For more information, contact T.O.V.A. customer service (see section 27 on page 80.)

20.4 Advanced ordering information

If you encounter a problem with the ordering system, tech support may send you to this Advanced window. This displays your device's information, including all of your device's ordering keys. That information can be sent to us via email from a separate online computer or, if necessary, read out over the phone.

If you do encounter a problem with ordering, there's no need to panic. This window has all the information from your device that T.O.V.A. technical support should need to clear up the situation.

21 Backing up the T.O.V.A. Database

The T.O.V.A. 9.0 maintains all of your subjects' test session data in a database, and it's *critical* that you back up your T.O.V.A. data.

21.1 Easy database backup

The T.O.V.A. 8.2 added a new backup feature to simplify backing up your database.

1. Run the T.O.V.A. and click **'Help'**.
2. In the Help window, click **'Back up database'**.
3. Choose a destination and click **'Save'**.

The T.O.V.A. will begin exporting all the sessions in your database to a T.O.V.A. data file at the chosen location. To restore from backup, simply import the .tova file as you would any other T.O.V.A. export file (see section 22 on page 56 for more information).

Note: If you are using a "Separate" database configuration—separate databases for each user on the PC—you will need to back up each user's database separately.

21.2 Automatic backup

The T.O.V.A. 8.2 added an automatic database backup feature. By default, this backs up your database every 30 days. See section 25.5 on page 66 for details.

21.3 Back up to the T.O.V.A. server

The T.O.V.A. 9.0 can automatically and securely back up your database to The TOVA Company's servers. This is independent of the automatic local backups, and it can upload test sessions as soon as they are saved or modified. This feature is experimental, and we still recommend you employ other backup solutions as well. See section 25.5 on page 66 for options.

21.4 Other backup options

You can also use your PC's own backup software to backup the database folder. There are too many different backup solutions for us to detail them here. What we can tell you is *what* to back up:

1. From the T.O.V.A. main window, click **'Preferences'**.
2. In the Preferences window, click **'Database'** (see Figure 46). Here, you will see the database type (**'Separate'** or **'Shared'**) and path.

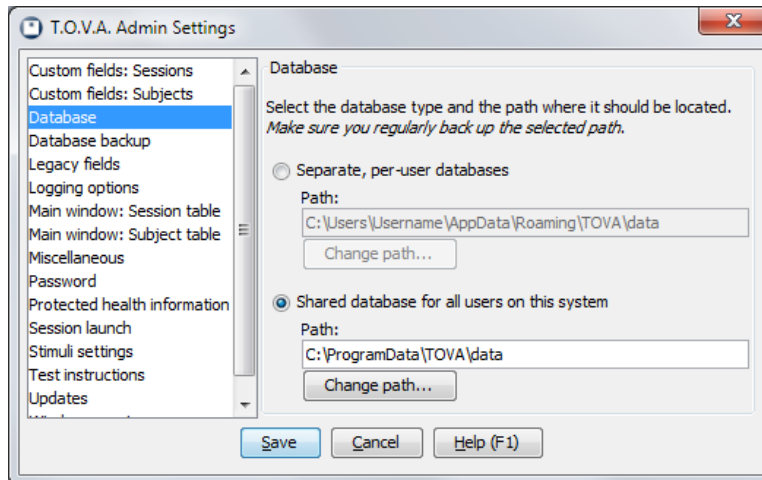


Figure 46: Database options

The path listed here (under the selected database type) is where your database is stored. You will want to back up the entire contents of this path.

Note: If your database type is **‘Separate’**, each user on this system will have their own database. Therefore, you will need to back up *each* of these databases to secure your data.

This does not backup the T.O.V.A. application itself. If your hard drive fails and you have to rebuild your computer, simply re-install the T.O.V.A. At the end of your install, the Configuration wizard will run (or you can run it manually). Again, note the selected database path: that is where you will restore the data you saved.

And if you have specific questions about backing up your T.O.V.A. data, T.O.V.A. technical support (section 27 on page 80) is happy to help! Please call us *before* you lose your data.

22 Importing

The T.O.V.A. 9.0 can import T.O.V.A. 7 data files, as well as T.O.V.A. files exported from other databases (See **Exporting**, section 23 on page 60) and T.O.V.A. backup files. Here's how you do it:

1. On the main window, click **'Import'**. After an information window, a file selection window will appear.
2. Browse your drives to find the files you want to import. The T.O.V.A. 7 stored files at `c:\tova_7\file`, but your system may be organized differently.
3. Once you've found a folder containing the files you want to import, select them and click **'Import'**.
4. This is the Import window (Figure 47). Here you can add more files to import, review the results of imports so far, and even specify default values for custom fields. Click **'Start'** to start the import.
5. Once the import has completed, you've credited any uninterpreted files, and resolved any potential duplicate subjects, click **'Close'**.

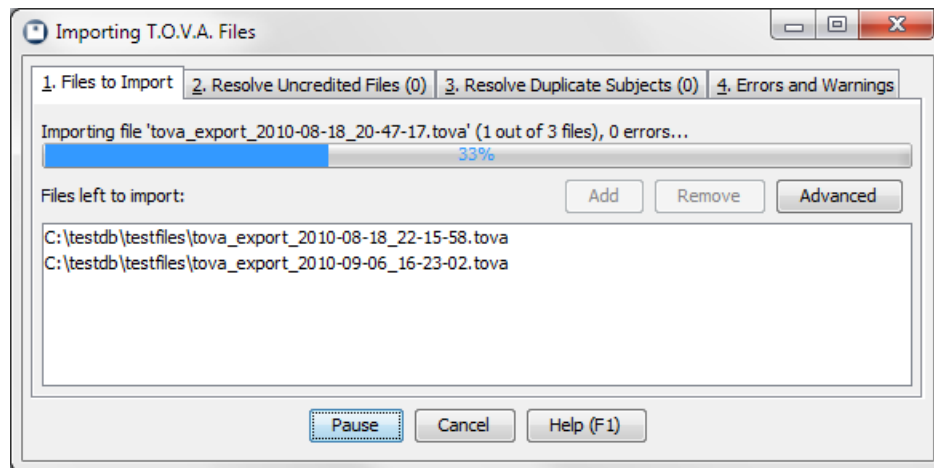


Figure 47: Files to Import tab

The Import interface handles the potentially complex process of importing T.O.V.A. 7 files. At the bottom of the window is the **'Start/Pause'** button, which starts or pauses the import, and the **'Cancel/Close'** button, which aborts an import in progress and closes the Import window when importing is complete.

The window is divided up into four tabs. We'll discuss each of these now.

22.1 Files to Import

This is the first tab (Figure 47), where you will see the list of all the files waiting to be imported. Click **'Add'** to browse and select more files to import and **'Remove'** if you decide you don't want to import certain files after all. As files are imported, they are removed from this list, and the progress bar at the top will show you how far along the import process is, as well as the status. You can also click **'Advanced'** to specify values for custom fields.

22.1.1 Advanced import settings

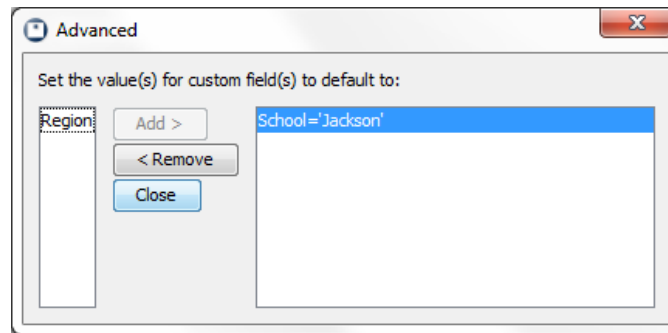


Figure 48: Advanced settings

Here is where you can specify values for custom subject/session fields you may have created. Let's say, for instance, that your organization has three offices: Northwest, Southeast, and Central. It's important to you that you track which tests were administered where, so you created a custom session field named 'Office'. Unfortunately, you have lots of T.O.V.A. 7 data for each of these offices. In this case, you select all the T.O.V.A. 7 files from the Northwest office and add them to your import list. Then you click on '**Advanced**', add the 'Office' field, and specify a value of 'Northwest'. Now you start the import, and all of the tests you import will have that 'Office' field set to 'Northwest'. Once that import is done, remove the custom field value, add a new value 'Office='Southeast'', click '**Close**' and import the Southeast batch of files. Once your files have all been imported, you'll be able to sort the main window by the 'Office' field to easily find the subjects and sessions you're looking for.

For more information on custom subject and session fields, see section [25.3](#) on page [64](#).

22.2 Resolve Uncredited Files

The T.O.V.A. 7 used interpretation credits, so that after you finished a test you would need to "interpret" ("analyze" or "score" in older versions) the data to see the report or even the raw data. T.O.V.A. 7 files that were never interpreted contain "uncredited" data.

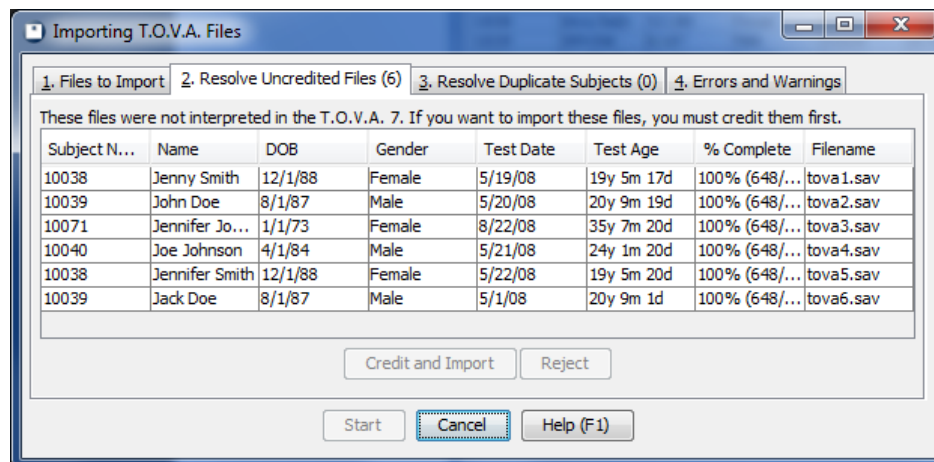


Figure 49: Resolve Uncredited Files tab

The Resolve Uncredited Files tab lists all these and gives you the chance to either credit the tests and import them or reject them for import.

Note: Importing an uncredited file will use a T.O.V.A. 9.0 test credit. Unless you use a test credit, you cannot import the file.

Note: Crediting a T.O.V.A. 7 file for import will add the test data to the T.O.V.A. 9.0 database, but it will not modify the original, uninterpreted data file. The original T.O.V.A. 7 data file will remain uninterpreted. If you then gave that same T.O.V.A. 7 file to a colleague, they would need to use *another* test credit to import it there.

In that scenario, you should credit and import the T.O.V.A. 7 data file, then export the session as a T.O.V.A. file. T.O.V.A. files *always* contain credited data. For more information about Exporting, see section 23 on page 60.

22.3 Resolve Duplicate Subjects

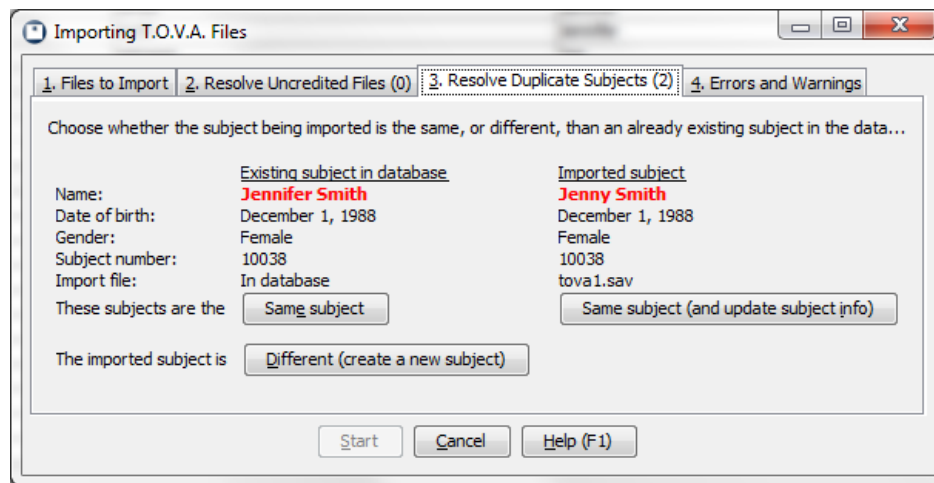


Figure 50: Resolve Duplicate Subjects tab

The T.O.V.A. 9.0 groups all sessions by the subject to whom they were administered. When a T.O.V.A. file is imported, we will check to see if that subject already exists in the database. Sometimes we'll find the subject and match it automatically, but sometimes the information almost, but not quite, matches up. When the import comes to one of these, it will be added to the Resolve Duplicate Subjects tab, and the tab label displays the number of potentially-matched imports.

In the example shown in Figure 50, we see that the last name, birthdate, and subject number are identical, but the first name is different. Maybe there was a typo entering this subject's name. Maybe you have a subject that sometimes goes by 'John' and sometimes by 'Johnny' or 'Jack'.

This tab gives you the opportunity to decide if a subject should be matched, whether the imported subject information should replace the information in the database, or if the imported subject is a different subject entirely.

22.4 Errors and Warnings

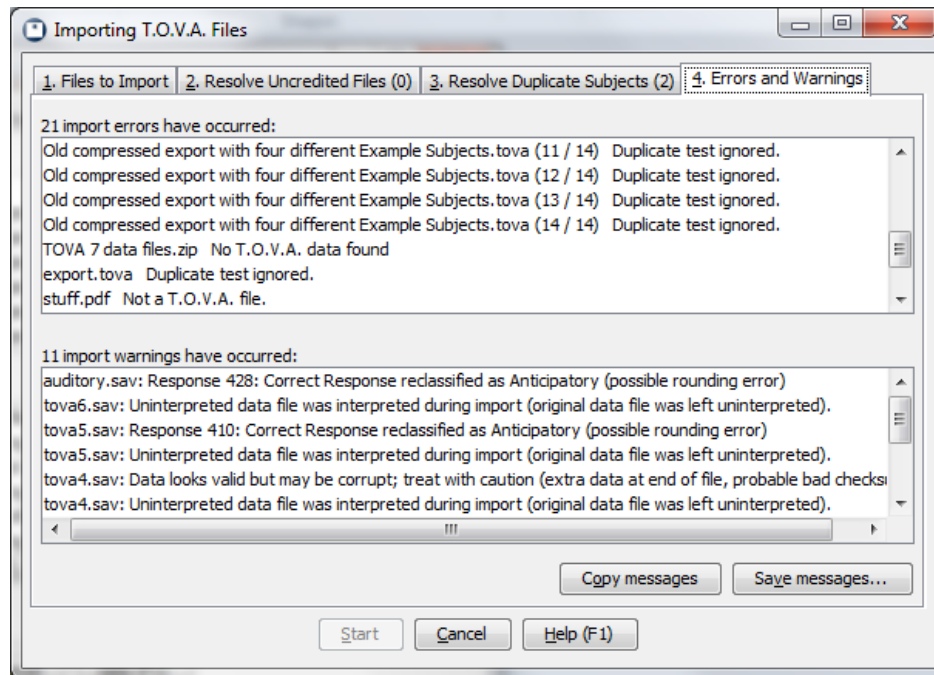


Figure 51: Errors and Warnings tab

The Errors and Warnings tab gives details on any problems that may have been encountered during import. The **‘Errors’** list tells the reason for any files that have failed to import. The **‘Warnings’** list shows where there may have been problems importing a file, but they were not critical, and the T.O.V.A. 9.0 was still able to import it. Any warnings will be added to that session’s **Import Log** in the database.

Use **‘Copy Messages’** to copy the information to your clipboard or **‘Save Messages’** to save it out to a file.

23 Exporting T.O.V.A. data

The T.O.V.A. 9.0 stores your subjects and test data in a database, but if you need to send data to colleagues or technical support, your T.O.V.A. test sessions can be exported.

Note: You cannot export subjects that don't have any assigned sessions.

The process is simple:

1. Find and highlight the session you want to export on the main window. To export multiple sessions, use **'Ctrl'**-click (Mac users, **'Command'**-click) to highlight each additional session, or **'Shift'**-click to highlight a range of sessions.
2. Click the **'Export'** button.
3. Modify export options or leave them at defaults and click the **'Export'** button.
4. If prompted, specify the path and file name for the export file and click the **'Save'** button.

Your T.O.V.A. data has now been exported to a file.

Note: If you select a lot of sessions, this could take a while, and the T.O.V.A. file could become large. By default, though, exports are ZIP-compressed.

Note: Exporting sessions does not remove them from the database.

23.1 Export options

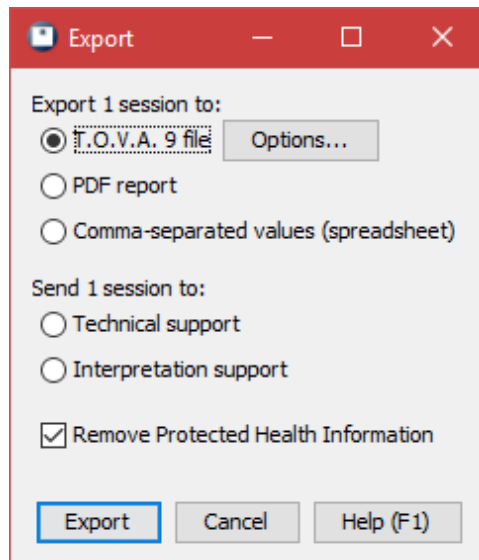


Figure 52: Export options

Let's briefly look over what options we have for exporting T.O.V.A. data.

Export formats - The T.O.V.A. 9.0 supports three export formats:

T.O.V.A. file - This exports the T.O.V.A. data, as well as subject and session data, into an XML format. All the exported data from all the sessions you selected is saved to a single file. That T.O.V.A. file could then be imported (see Importing, section 22 on page 56) into a different T.O.V.A. 9.0 database.

The T.O.V.A. file has a few options of its own, available when you choose 'Options':

ZIP compressed - By default the exported xml is compressed, which can make the file more than 90% smaller than an uncompressed export. De-select this option to export the file uncompressed. Either way, it can still be imported into another T.O.V.A. 9.0 database.

Include interpretation - Along with subject/session information and raw test data, a T.O.V.A. file export can also include notes and information from interpretation. If a report contains notes you have questions about, you can send an export of that session to interpretation support.

PDF Report - This saves a report of your data to a PDF file, such as you might read or print using Adobe Reader. This can be a good solution for sharing the T.O.V.A. report.

Note: You cannot import PDF reports back into the T.O.V.A. 9.0. Only the T.O.V.A. file export can be imported.

Comma Separated Values (spreadsheet) - This option exports T.O.V.A. data in the form of a .csv file, that can be imported by most spreadsheet applications (such as Microsoft Excel).

Note: This data cannot be imported into another T.O.V.A. database. Only the T.O.V.A. file export can be imported.

Send session(s) to technical/interpretation support - In addition to exporting to a file, you can send the selected sessions with a support request to T.O.V.A. technical or interpretation support.

Remove Protected Health Information - It's important to consider how to keep personal health information private when exporting data. This option is selected by default and leaves out of the import any unnecessary data that might reveal the identity of the subject. Specifically, these are subject names and any custom subject or session fields your database has flagged as personal.

For more information on Custom Subject/Session Fields, see section 25.3 on page 64.

For more information on protecting personal health information, see section 24 on page 62.

23.2 Opening T.O.V.A. Export (.tova) files

If a colleague sends you a .tova file, you can double-click on the file to open it in the T.O.V.A.

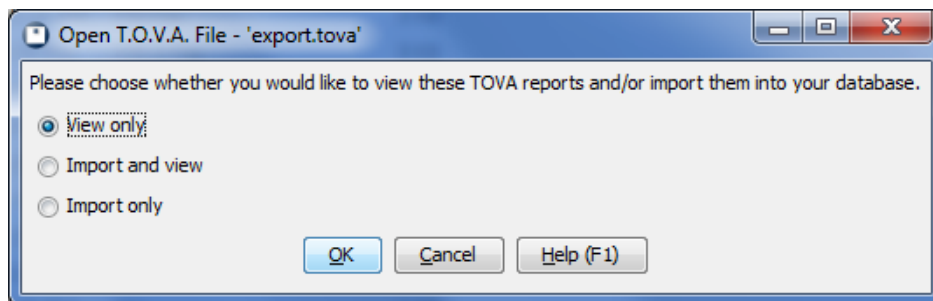


Figure 53: Opening a .tova file.

When you do, you can choose to view reports of the sessions contained in the file and/or import them into your T.O.V.A. database.

24 Protecting Health Information

The Health Insurance Portability and Accountability Act (HIPAA) has had far-reaching consequences, as we're certain you know. We've designed some features of the T.O.V.A. 9.0 to help you fit the T.O.V.A. 9.0 into your HIPAA-compliance procedures.

- Choosing '**Hide Protected Health Information**' in the Preferences (section [25.11](#) on page [70](#)) will leave Subject Name and other protected fields off of the main window and reports.
- Custom fields you create can be flagged as '**Protected Health Information**'.
- Protected fields are left out of exports by default.
- Protected fields are left out of technical and interpretation support exports by default (section [27.4](#) on page [81](#)).
- Subject names are not required. The only required individually identifiable health information is the subject's **date of birth** and **gender**. You can leave names out of the T.O.V.A. entirely and use subject numbers to identify subjects anonymously.
- The T.O.V.A. application can be password-protected.
- The T.O.V.A. database path should be restricted to authorized users, if the computer is ever shared with unauthorized users.

The T.O.V.A. 9.0 has only limited built-in security. Instead, the T.O.V.A. 9.0 assumes that your organization has standard physical and computer security measures in place that meet HIPAA requirements. A T.O.V.A. 9.0 on such a computer should be protected enough for HIPAA compliance.

And as always, if you need more information, please contact T.O.V.A. technical support (section [27](#) on page [80](#)), and we'd be happy to help you with your HIPAA needs.

25 Preferences

The Preferences window is where all the T.O.V.A. settings are managed. Choose the category you are looking for on the left and the settings for that category will be displayed. Choose **'Save'** when you've finished making your changes.

25.1 Admin Preferences

Some T.O.V.A. settings require Admin privileges to change. Even if your login is an Administrator on the system, the T.O.V.A. application may run without Admin privileges (this is the default behavior in Windows).

These restricted preferences can only be modified from **'T.O.V.A. Admin Settings'** (section 34.7 on page 138).

Note: Some preferences that *can* be modified in the T.O.V.A. application are *not* accessible in **T.O.V.A. Admin settings**.

25.2 System Preferences

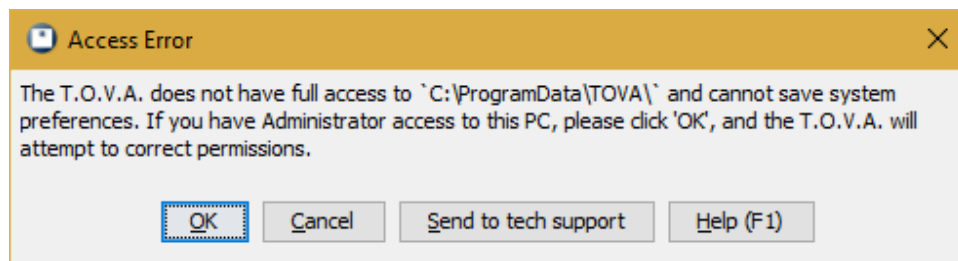


Figure 54: The T.O.V.A. needs full access to the shared TOVA folder

All T.O.V.A. System preferences (as opposed to Admin preferences) should be fully accessible to all T.O.V.A. users. If the T.O.V.A. is unable to write to files in the shared TOVA folder, you may be prompted to let the T.O.V.A. application fix the problem.

If you encounter this error (Figure 54) and you have Administrator access to your Windows PC, click **'OK'** and grant the T.O.V.A. access to make changes to your PC.

Mac users: This built-in function is currently only available for Windows. If the T.O.V.A. reports “Your system preferences couldn't be saved.”, there's a script on your T.O.V.A. CD or flash drive that can correct the problem:

1. Close the T.O.V.A. application.
2. Insert the TOVA CD, which will show up as volume **'TOVA9'**.
3. Go to the 'utilities' folder on the T.O.V.A. CD.
4. Open the **'Fix Mac Permissions'** command script. This will open a Terminal window to run the script.

5. Blind-type your Mac user account password when prompted for authorization. (If you don't have one, get an administrator of this computer to run the script from their account.)
6. When finished, close the Terminal window and start the TOVA application.

Please contact T.O.V.A. technical support if you continue to have permissions issues (section 27 on page 80).

25.3 Custom fields: Subjects and Sessions

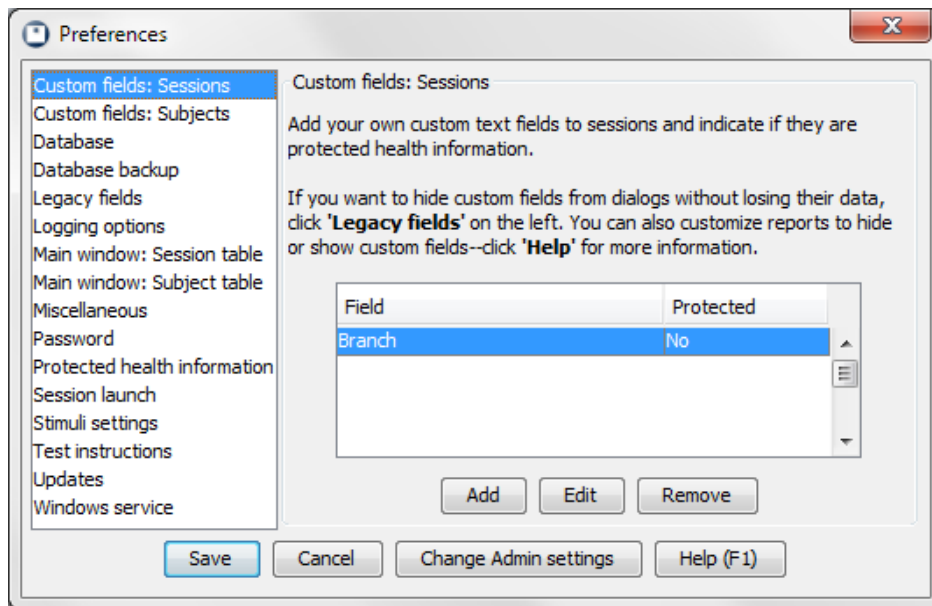


Figure 55: Custom Subject Fields

The T.O.V.A. 9.0 allows you to add your own fields to the T.O.V.A. database and display the information on reports and the main window. This can be of particular use to researchers.

In the **Preferences** window, you can **'Add'** new custom fields, select and **'Edit'** them, or **'Remove'** fields you no longer want. Custom fields can be flagged as containing **Protected Health Information**, in which case they will be removed or hidden along with Subject Name when appropriate (see section 24 on page 62 for more information on PHI).

- Custom fields are treated as plain text and limited to 255 characters; you can use them to store numeric values or dates, but they will be sorted as text.
- Removing a custom field will remove all data entered into that field for all subjects or sessions. If you just want to hide the field from reports, customize the report (section 19.1 on page 45). If you want to hide the field when entering new subjects or sessions, designate it a **'Legacy field'** (section 25.6 on page 67).

There are two kinds of custom fields: subject and session. Subject fields follow the subject through all of their sessions, whereas session fields apply to a specific T.O.V.A. test session. Let's say you're doing a study of how "Hair length" affects attention and impulsivity. While length of hair applies to a subject, it could

easily vary between sessions. The first time you test Tina Anderson, she may have long, flowing hair, but by the time you test her again, she may have cut it short. Therefore, you should add “Hair length” as a session field, not a subject field. Conversely, “Eye color” should be a subject field as it is unlikely to change over the course of one’s life.

25.3.1 Why can’t I see my custom fields?

By default, custom fields will not appear on the main window or report. To add them to the main window, see **Subject/Session Table fields**, section 25.8 on page 68. To add them to the report, see **Customizing the Report**, section 19.1 on page 45.

25.4 Database

Note: Some of these settings are Admin preferences (section 25.1 on page 63).

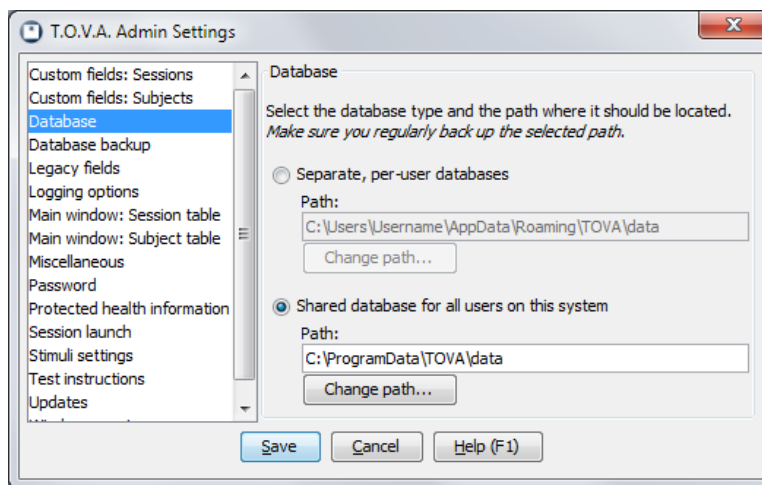


Figure 56: Database options

The T.O.V.A. 9.0 stores all of your T.O.V.A. test sessions in a database. There are two database configurations you can choose from:

Shared - All of the users (clinicians, testers, etc.) on your computer will use the same database. This is the default database configuration and works well if everyone using the T.O.V.A. on the system wants access to the same subjects. By default, a shared database will be stored here:

Windows default path: C:\ProgramData\TOVA\data (sometimes shows up as C:\ProgramData\Application Data\TOVA\data, which is equivalent)

Mac default path: /Users/Shared/TOVA/data

Linux default path: /var/lib/TOVA/data

Separate - Each user on your computer will have their own database. This arrangement is best when there are multiple professionals administering the T.O.V.A. on the same system and they want to keep their subjects’ data separate from each other. **Note:** This is based on your OS’s login; the T.O.V.A. does not keep its own list of users, so if you all log into Windows using the same username and password, you will still all have the same database. By default, a separate database will be stored here:

Windows default path: C:\Users\<>username>\AppData\Roaming\TOVA\data

Mac default path: <your home directory>/Library/Application Support/TOVA/data

Linux default path: <your home directory>/~/.tova/data

See section 34.4 on page 135 for more information on changing your database path.

25.5 Database Backup

Note: These are mostly Admin preferences (see section 25.1 on page 63).

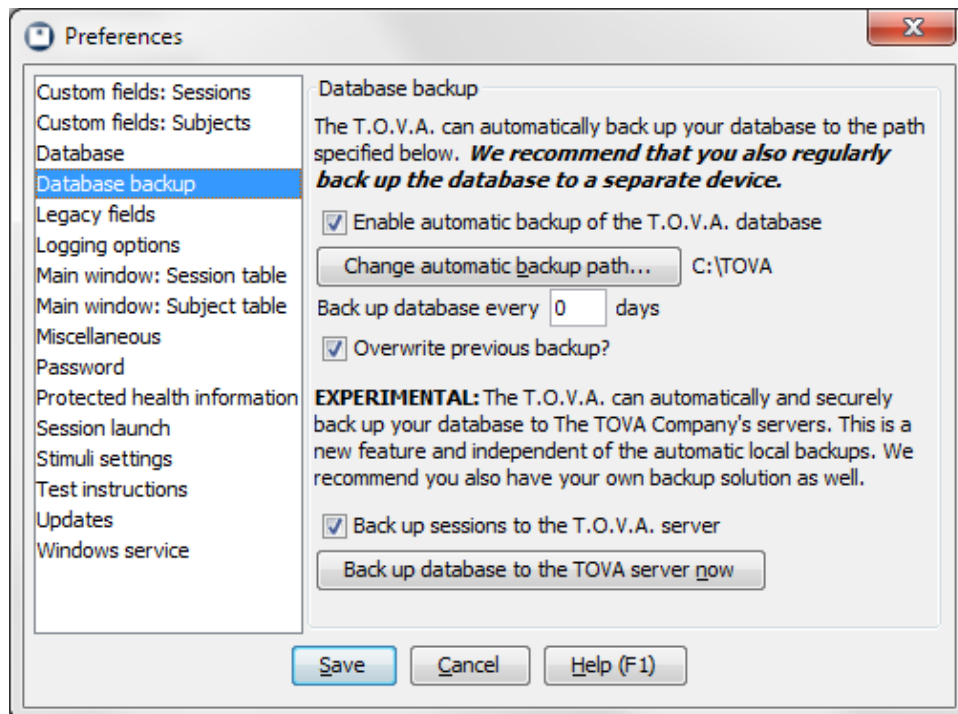


Figure 57: Back up your database automatically

We have always encouraged users to back up their T.O.V.A. database themselves (and continue to do so), but now you have new backup options:

- **Automatic backups** - In the T.O.V.A. 9.0, your T.O.V.A. database will be automatically backed up every 30 days to a single file called `autobackup-complete-xxxxxxx.tova` (where 'xxxxxxx' is an alphanumeric sequence) in your database path. The **Database backup** section of the T.O.V.A. preferences lets you disable this feature or choose a different backup path. You can choose to back up more or less often (e.g., every 7 days or every 90 days). If you change this interval to '0' days, the T.O.V.A. will back up your database every time you start the T.O.V.A. application! Finally, you may uncheck 'Overwrite previous backup', and the current date will be appended to your backup's filename, so that backups from previous days will not be overwritten.
- **Back up sessions to the T.O.V.A. server** - Version 8.2 also added an experimental feature that can automatically and securely back up your database to The TOVA Company's servers. This feature is independent of the automatic local backups, and it is experimental, so it is turned off by default.

If you have blinding enabled (section 35.7 on page 149), you will have separate options for uploading blinded and non-blinded sessions.

You can also click **'Back up database to the TOVA server now'**, and a full backup of your entire database will be uploaded to The TOVA Company server.

- **Manual backup** - You can easily back up your database manually—see section 21.1 on page 54 for details.

25.6 Legacy fields

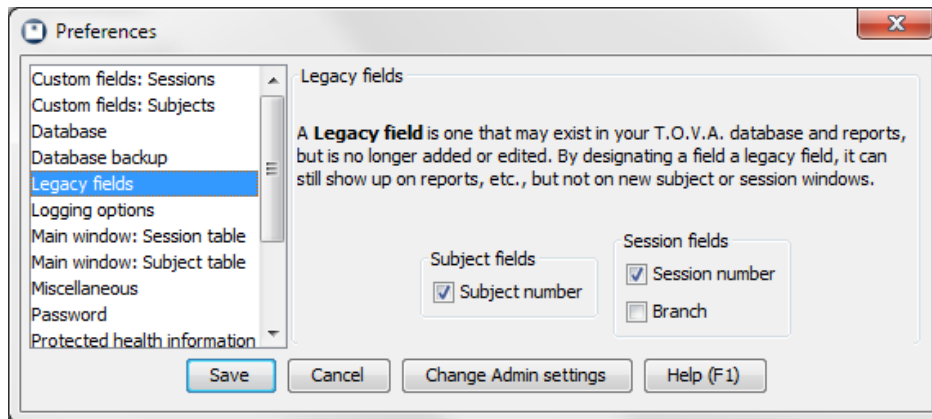


Figure 58: Legacy fields

A field is designated as a **'legacy field'** if it is no longer being added or edited for new or existing subjects or sessions, but it is kept around for historical purposes. For instance, **'Height'** and **'Weight'** were fields in the T.O.V.A. 7, but are not used in the T.O.V.A. 9.0. When you import T.O.V.A. 7 files, height and weight data will be imported as well, but you cannot edit these fields.

If you decide you want to be able to add or edit Height or Weight in the T.O.V.A. 9.0, you should de-select these as Legacy fields. Conversely, if your colleague shares a T.O.V.A. 9.0 export file with you that contains a **'Hair length'** field, you may wish to designate that a legacy field, so that it will not appear as a field the next time you start a new session.

25.7 Logging options

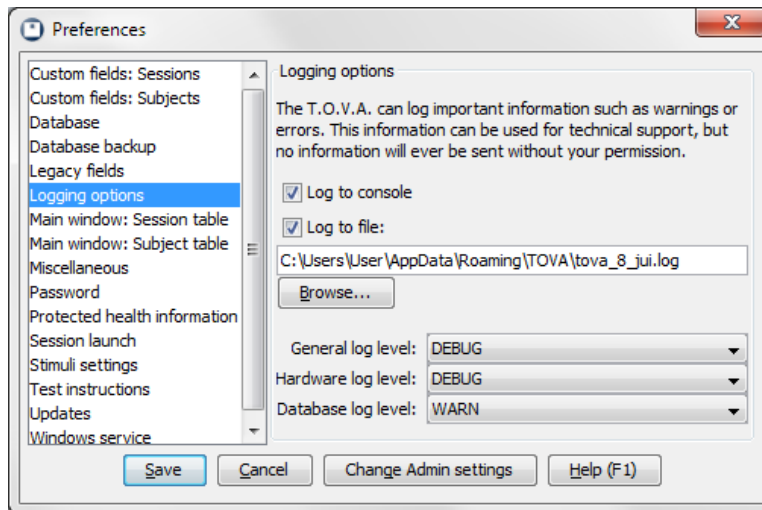


Figure 59: Logging options

Logging is a very useful tech support tool for the T.O.V.A. 9.0. By default, the log will record in a file all error messages you may encounter in the T.O.V.A. By adjusting the settings, you can record more or less information, or none at all, if you choose.

You can specify what information should be logged (by importance/severity), where your T.O.V.A. log file will be stored, and how logging will be performed. Generally, T.O.V.A. users will not want or need to modify these settings from their defaults unless asked to do so by T.O.V.A. technical support.

The T.O.V.A. 9.0 log, as well as other relevant system information, can be sent to T.O.V.A. technical support through our support request feature (section 27 on page 80). The TOVA Company will not collect any information from your system without your consent.

25.8 Main window: Subject/Session Table

With the Subject and Session Table preferences you can select which fields will or will not appear on the main window Subject and Session tables. The Subject table can display any or all of the default Subject fields, as well as any custom Subject fields. The Session table, likewise, can contain all of the default and custom Session fields, as well as all the Subject fields. Select the fields you want to see when browsing subjects and sessions and keep unnecessary information from cluttering your interface.

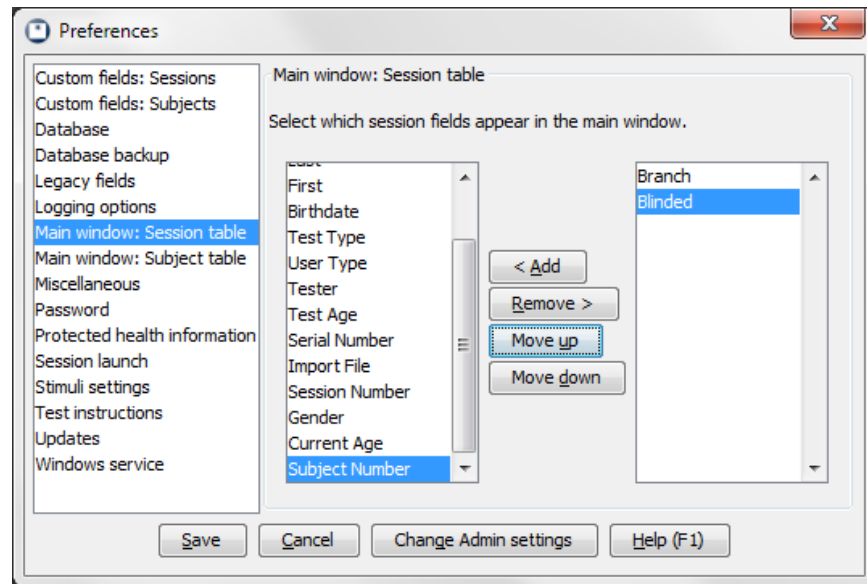


Figure 60: Session Table fields

Note: Even if a private field is added, it will not appear if PHI is hidden (see section 25.11 on page 70).

25.9 Miscellaneous

Note: Some of these settings are Admin preferences. You may need to run ‘**T.O.V.A. Admin Settings**’ (see section 25.1 on page 63) to modify them.

This is our grab bag of system preferences that didn't belong elsewhere. You would do best to ignore this section until and unless you actually need it.

- **Automatic test date/time** - Most users will want to use their system clock to automatically set the Test Date/Time. If your system clock is bad, uncheck this setting to set the Test Date/Time manually. We recommend you fix your system clock instead. **Note:** If your system does not hold the correct time, it usually indicates your system has a bad CMOS battery. This can cause continuous problems. You should consider replacing the battery or using a different system to administer the T.O.V.A. in the future.
- **Default to offline ordering** - Some T.O.V.A. systems have Internet connections that don't work for online ordering, but ordinarily the T.O.V.A. would continue to try to order credits online. When checked, this tells the T.O.V.A. to use offline ordering only. It can also be helpful for fixing some ordering issues.
- **Enable Research mode?** - This will enable features that are not cleared for diagnostic or clinical use as a medical device. More on these features appears in the Research User's manual. For more information, see section 35.6 on page 148.
- **Include blinded subjects** - See section 35.7 on page 149 for information on this setting. *Please do not enable this feature unless directed by T.O.V.A. technical support or by those managing your study.* Contact T.O.V.A. Customer service (section 27 on page 80) for more information.
- **Use PDF reader for printing** - Some printers conflict with our default approach to printing the T.O.V.A. report, causing the report to print very slowly or incompletely. When checked, this option

works around this problem by exporting the T.O.V.A. report to a PDF and printing the report through your installed PDF viewer.

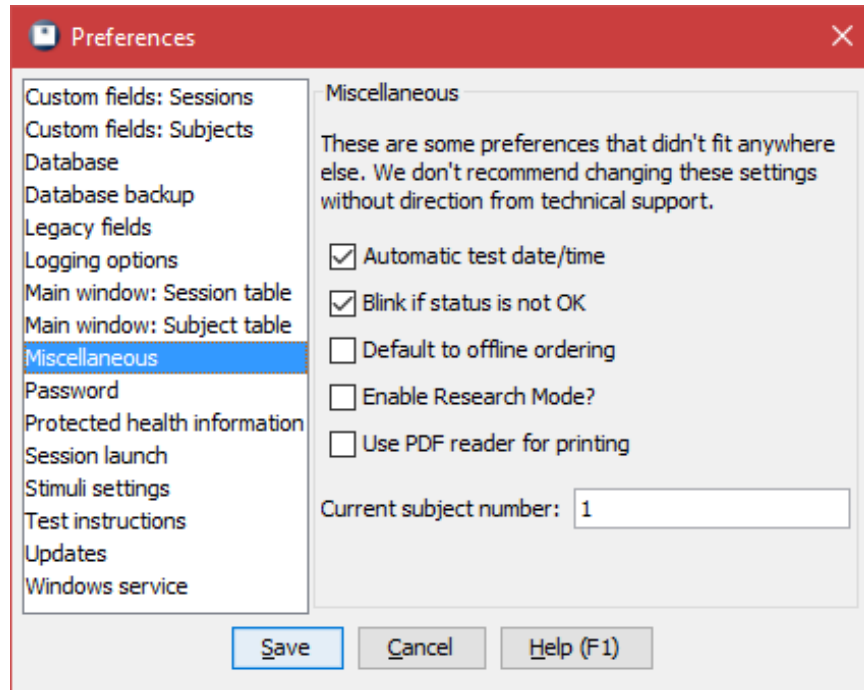


Figure 61: Miscellaneous preferences

- **Current subject number** - Let's say you want to start numbering all your new T.O.V.A. subjects at 20000. This is where you do that.

Note: By default, 'Subject number' is considered a "legacy field". It will not be available for editing until you deselect it under Legacy fields (section 25.6 on page 67).

25.10 Password

Note: This is an Admin preference (see section 25.1 on page 63).

If there are users on your system whom you don't want accessing the T.O.V.A., here you can set a password for the app. This is a system-wide password and, of course, may only be set or removed by an administrator.

Note: This password only controls access to the T.O.V.A. 9.0 application. Securing your T.O.V.A. data is a function of your operation system, through user-access levels and file/directory permissions, and while the T.O.V.A. accommodates this, the T.O.V.A. software does not itself encrypt or restrict your data.

25.11 Protected Health Information

Note: Some of these settings are Admin preferences (section 25.1 on page 63).

If you are using the main window (where you browse subject information) in view of your subjects, you may want to hide Protected Health Information from view. Choosing '**Hide Protected Health Information**' will leave Subject Name and other protected fields off of the main window and reports.

There is also an option here to **‘Display no subjects or sessions on startup and blank search’**. Essentially, this means that until you search for something specific, the main window will display *no* subjects or sessions, instead of *every* subject and session, which is the default behavior. In addition to not revealing PHI, this makes starting up the T.O.V.A. faster, especially if you have a lot of subjects in your database.

See section 24 on page 62 for more information on protecting Personal Health Information.

25.12 Session launch

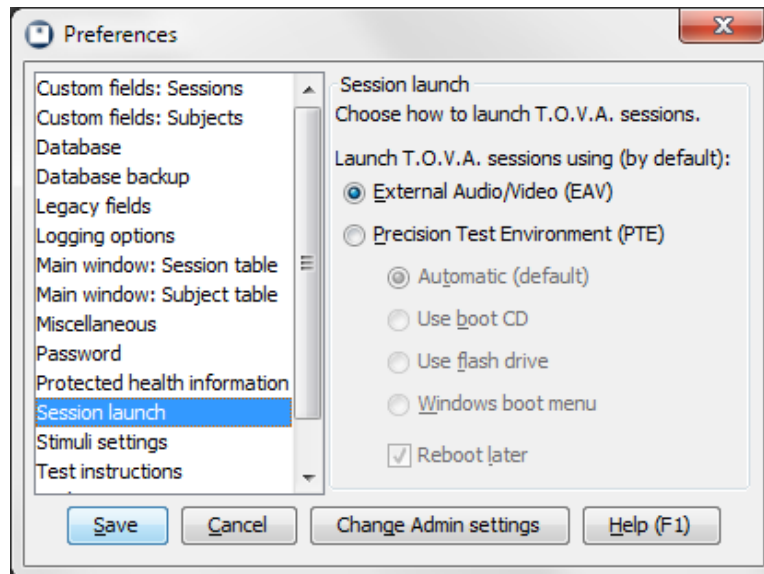


Figure 62: Session launch defaults

Your session launch options determine which session type will be launched and how. You can modify these session launch options in the Preferences window (section 25 on page 63) or for a single session by clicking **‘Options’** in the **‘New Test Session’** window (see section 18.4.3 on page 37);

25.12.1 Session type

You will always launch a T.O.V.A. session the same way, by creating a new session and clicking the **‘Launch’** button. The first option here is to choose what type of session you will launch.

If this is an EAV test session, launching a session will immediately bring up the EAV session screen. Launching a PTE session, on the other hand, requires rebooting your computer.

- For more information on session types, see section 30 on page 110.
- For more information about the PTE, see section 31 on page 110.
- For more information about the EAV, see section 32 on page 124.

25.12.2 PTE options

If you choose to test with the PTE, there are several mechanisms for doing it:

- **‘Automatic (default)’ - (*Windows only*)** By default, when you click **‘Launch’**, the T.O.V.A. will modify your system's boot configuration to trigger the PTE when you reboot. If this method does not work for your system, or if you prefer that the T.O.V.A. not make changes to your system's boot configuration, you should choose one of the other boot options.
- **‘Use boot CD’** - Choose this option to boot the PTE with a T.O.V.A. CD. Then, before you launch a T.O.V.A. session, insert your T.O.V.A. CD. When you click 'Launch', this method will simply reboot your system. If your Windows system fails to boot the CD, you may need to make changes to your BIOS configuration (see section 31.5 on page 114 for more information).
- **‘Use flash drive’** - You may choose this option if your system does not have a CD drive. Before you launch a T.O.V.A. session, plug the T.O.V.A. flash drive into one of your system's USB ports. If your Windows system fails to boot the CD, you may need to make changes to your BIOS configuration (see section 31.5.5 on page 123 for more information).
- **‘Windows boot menu’ - (*Windows only*)** This option was added in v8.2 and can be useful if your system has issues with the T.O.V.A. service and automatic booting. It configures your system to always start up with a boot menu for 30 seconds, giving you time to choose to boot Windows or the T.O.V.A. Precision Test Environment. We don't recommend choosing this option unless specifically directed by T.O.V.A. technical support.

(Mac only) If your Mac fails to boot to the PTE, you may hold the 'C' key during the startup process to force using the CD, or the 'Option' key to see a menu of all bootable devices, like the T.O.V.A. CD or flash drive. The T.O.V.A. boot media may show up in the list as 'Windows' due to how the drive is formatted. Using the keyboard is required on OS X 10.11.

25.12.3 Other PTE options

To launch a PTE session, you will always need to reboot your system. This will happen automatically when you click **‘Launch’**. But if you select **‘Reboot later’**, the T.O.V.A. will exit but not reboot, so you can reboot your system yourself later.

25.13 Stimuli settings

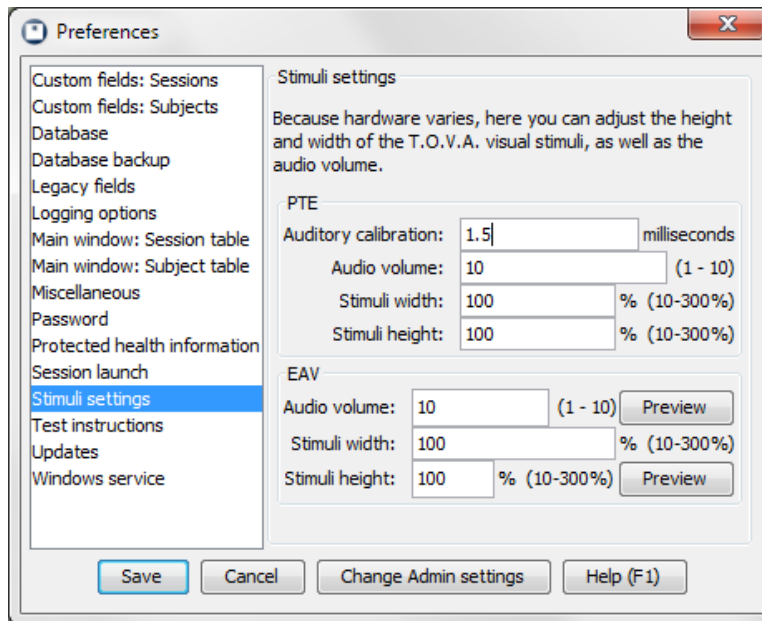


Figure 63: Stimuli settings

These are the settings the T.O.V.A. will use to size the stimuli, as well as simple volume adjustments for the auditory stimuli. The visual T.O.V.A.'s stimuli are two easily discriminated geometric figures centered on the computer screen (Figure 64).

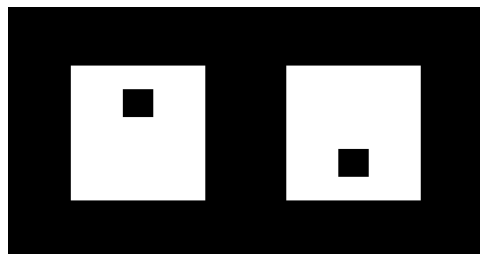


Figure 64: T.O.V.A. Stimuli, Target and Nontarget

The visual T.O.V.A. was normed using stimuli under the following conditions:

- A screen size of 12 inches (measured diagonally)
- The stimuli should appear as squares, roughly 3 inches in size (measured diagonally)
- An eye-to-monitor distance of roughly 36 inches
- Presentation of the stimuli near the subject's eye level

These are the recommended conditions; however, monitor size, type (standard or widescreen), resolution, and distance from the subject's eyes may vary. Target size is important for the following reasons:

- Stimuli that are too small (or too far away) can be visually fatiguing. Since the T.O.V.A. is a test of attention, not visual acuity, the subject must be able to easily discern the target and nontarget stimuli for results to be valid.
- Stimuli that are too large (or too close) require large eye sweeps to discern targets from nontargets. Eye sweeping can slow response time and be visually fatiguing. The subject should be able to see the complete stimuli and screen all at once, without having to sweep their eyes to discern the target/nontarget.

Most computer configurations are well within these parameters. However, some laptops, LCD monitors, or other widescreen displays may not have the capability to “expand” the T.O.V.A.’s smaller VGA testing screen resolution to an appropriate size. This can result in a “miniature screen” in the middle of a larger monitor, and the stimuli are subsequently very small on the screen. To address situations such as this, the T.O.V.A. software has these scale adjustment settings.

It is recommended that you closely approximate the three-inches-diagonal measurement. If the adjustments here are not sufficient to display the stimuli properly, we recommend that a different monitor be used for T.O.V.A. testing.

Stimuli for the auditory T.O.V.A. are two easily discriminated audible tones: the target is G above middle C, and the nontarget is middle C, played through external speakers placed on either side of the display. Since the T.O.V.A. should always be administered in a quiet location, free from distraction (it *is* a test of attention) the volume need only be adjusted to a comfortable level.

The very first setting on this panel we will mention last. ‘**Auditory calibration**’ was added in T.O.V.A. v.8.1, and it is used to adjust test timing to the slight delay (about 3.5 ms) that occurs when using USB speakers. If you are directed by technical support to use USB speakers, we will give you the appropriate value to be entered here. If you are not using USB speakers, this value should be left alone.

25.14 Sync Interface

Note: These settings only appear if you have a T.O.V.A. USB device with the sync interface attached.

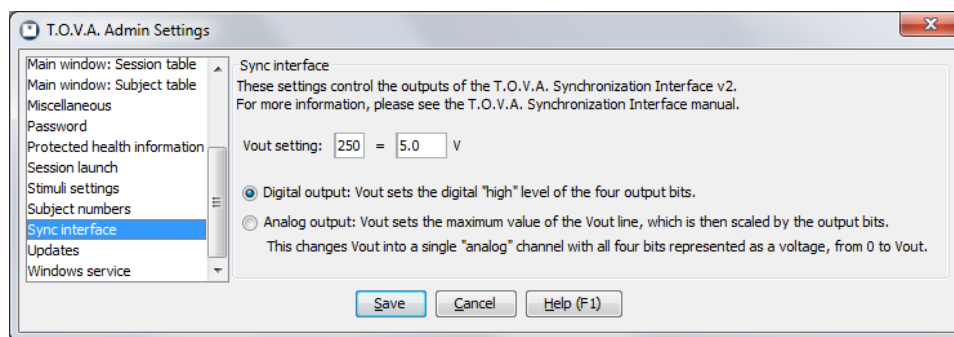


Figure 65: Sync Interface settings

Here you can configure the settings for the Sync Interface output during the T.O.V.A. test. For more information, see the ‘**T.O.V.A. Synchronization Interface manual**’.

25.15 Test instructions

Here is where you can change the default settings for the T.O.V.A. multimedia test instructions (see section 33 on page 126 for more information).

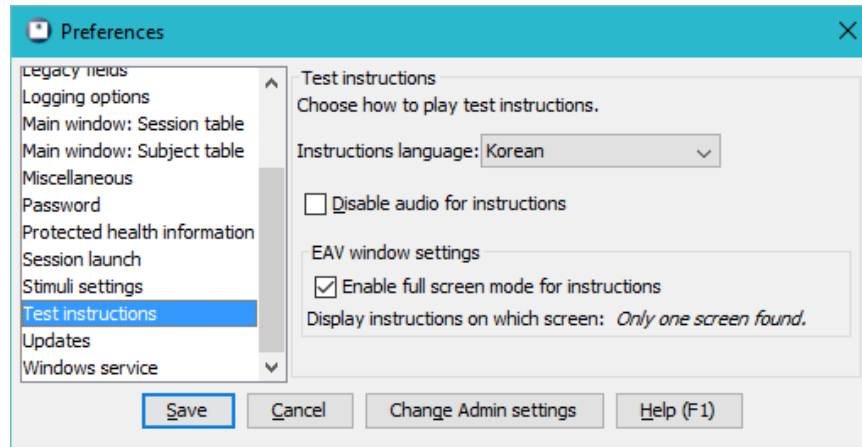


Figure 66: Test instruction options

- **‘Instructions language’** - The T.O.V.A. 8.2 introduced the option to give test instructions in several different languages. This setting applies only to test instructions, not to any other part of the user interface.
- **‘Disable audio for instructions’** - If you choose to disable the audio for the test instructions, you will need to manually step through the instructions. This may be useful if you find that the instructions are spoken too quickly for your subject to understand. See section 33 on page 126 for more information on the test instructions.
- **‘Enable full screen mode for instructions’** - Some Windows systems had problems with the test instructions, so we’ve disabled that full screen mode by default. The change makes it easier to switch away from the T.O.V.A. multimedia instructions to another application, so re-enable this if you like.
- **Display instructions on which screen** - If you have multiple screens or a laptop with an external monitor, this lets you select on which screen to display the test instructions, with the first display numbered ‘0’. **Note:** You need to be using the two as separate screens—“extended desktop”, not “mirroring”—for this setting to function.

If you just need to change these settings temporarily for the session you’re about to give, click **‘Instructions language’** from the New Test Session window (section 18.4 on page 35).

25.16 Updates

Note: This is an Admin preference (see section 25.1 on page 63).

All T.O.V.A. customers are entitled to free software upgrades. Now we can send you updates automatically when we fix bugs or add new features. Here, you can modify your update settings.

Note: While you may or may not elect to download T.O.V.A. updates automatically, we never install an update without asking permission.

25.17 Windows Service

Note: Some of these settings are Admin preferences (section 25.1 on page 63).

Note: This setting only appears on Windows systems.

Most Windows systems that test with the PTE (section 30 on page 110) use the “Automatic” method, so they don't require a boot CD or flash drive for testing. This employs the T.O.V.A. PTE Activation service (section 36.7 on page 153) to boot the PTE.

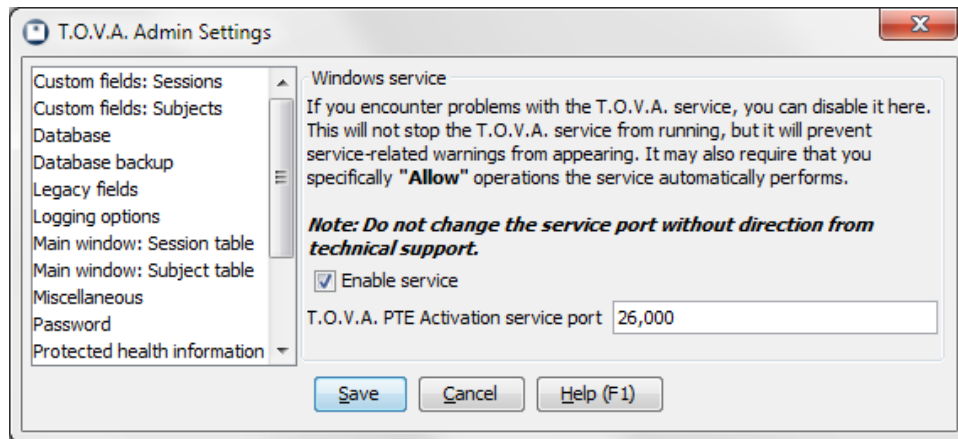


Figure 67: Windows Service preferences

In the Windows service preferences, you can disable the T.O.V.A. service. This may cause the T.O.V.A. to regularly prompt you for permissions, so please see section 36.7.2 on page 154 for more information.

The other setting available here is the T.O.V.A. PTE Activation Service port. ***Please don't change this setting unless instructed by T.O.V.A. technical support!*** Very few people will have trouble communicating with the T.O.V.A. service on this port; if you do, it can be modified here, but it must be also modified in `tova-pte-svc.ini`. See section 36.7 on page 153 for more details on the T.O.V.A. PTE Activation service.

26 The Status Window

One major addition in the T.O.V.A. 8.2 was the Status window. This window is available from the main window by clicking the **'Status'** button. The purpose of this window is to alert you to possible problems with the T.O.V.A. and provide simple solutions.

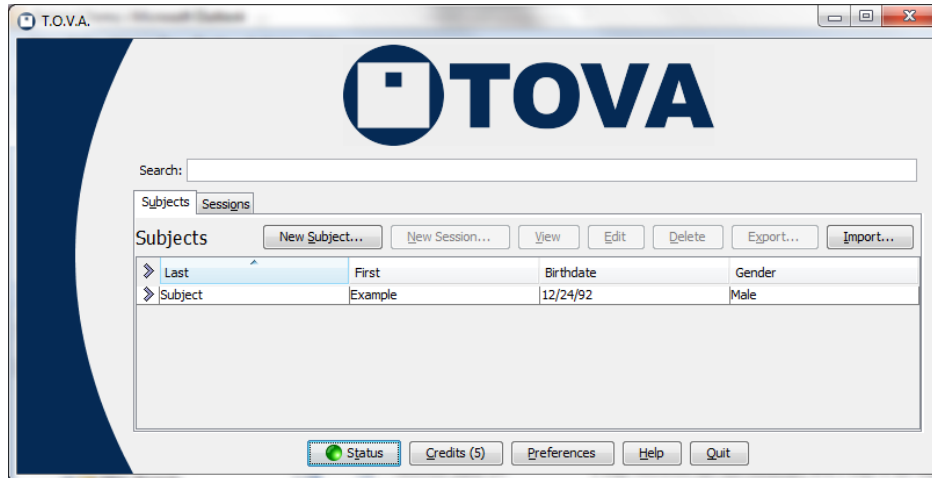


Figure 68: A green Status button indicates no known issues.

To help in identifying problems, the Status window uses condition colors:

Green - The condition is just fine. If the Status button on the main window is green, you should have no problem using the T.O.V.A.

Yellow - This color alerts you to important conditions, such as running low on T.O.V.A. credits, a notification from customer service, or an available software update.

Blue - The condition is unknown—the status is still being checked.

Red - There is a problem that will most likely prevent further testing. This could be an urgent notification from customer service or an error with the T.O.V.A. service. In many cases, this can be easily resolved, but if you cannot, you should contact T.O.V.A. technical support soon.

Black - The condition of this category is unavailable. If there's no Internet access, for instance, the T.O.V.A. can't check online for updates.

Light Gray - This function has been disabled in the Preferences (section 25 on page 63).

If the **'Status'** button on the main window is green, everything should be working. If it's yellow or red, click the button for more specific status information and solutions.

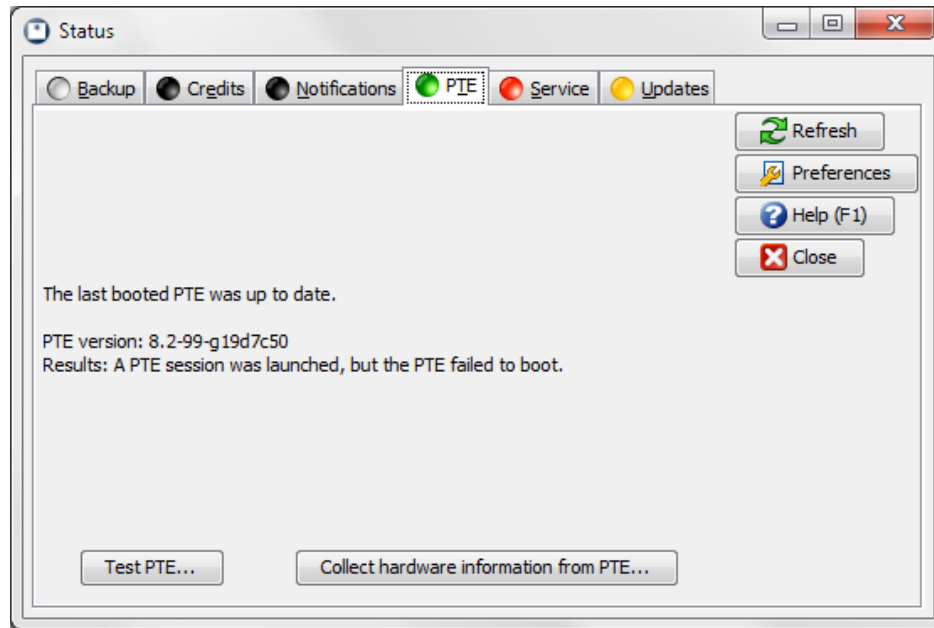


Figure 69: Colors indicate the condition of status categories

Each category pane has several standard options:

Refresh - Recheck the status of the category

Preferences - Modify related preferences (if any)

Help - View the User's Manual section on this category

Close - Close the Status window

In addition to these, status panes often have other buttons available.

26.1 Backup

Here is where you can see when your T.O.V.A. database was last automatically backed up. Click '**Preferences**' to change your automatic backup options (see section 25.5 on page 66 for more information on new backup features).

26.2 Credits

This pane of the Status window can tell you if you are low on credits or if there is session data that should be saved. The category will be unavailable (black) if there is no device attached. See section 20 on page 51.

26.3 Notifications

Notifications are a way The TOVA Company can contact you about account support issues. Accounts are linked to T.O.V.A. USB devices, so to receive notifications you must have Internet access and a T.O.V.A. USB device attached. You can delete messages once you have addressed them.

26.4 PTE

This pane will warn you if your last booted PTE version is out-of-date. This usually indicates you need an updated boot CD (section [31.5.4](#) on page [121](#)) or flash drive (section [31.5.6](#) on page [124](#)). See section [31](#) on page [110](#) for more information about the PTE.

26.5 Service

(Windows only)

The T.O.V.A. Windows service provides access to system functions, such as modifying system boot settings and installing software updates, that are not accessible to all users. This pane communicates any problems with the service and provides options such as restarting the T.O.V.A. service or opening the Windows service console. See section [36.7](#) on page [153](#).

26.6 Update

This pane will alert you to an available software update or tell you if a previous update failed. See section [28](#) on page [84](#).

27 Requesting Service or Support

The TOVA Company is committed to helping our customers however we can to use the T.O.V.A. That's why, with the T.O.V.A. 9.0, you can ask for help right from the T.O.V.A. application. The Help window (click **'Help'** from the main window) contains three buttons to contact the TOVA Company:

Technical Support - Confused about an error message? Something not behaving correctly? You can contact The TOVA Company's **free technical support** here. Plus, you can easily send us screenshots, system information, and logs, and even attach sessions to help us find the solution.

Interpretation Support - If you have questions about test results or the T.O.V.A. report, we offer **free interpretation support**. Plus, if you use the interpretation support interface inside the T.O.V.A. application, you can send us the sessions you have questions about.

Customer Service - Have a question about sales, billing, or anything not technical? Contact customer service here!

And you can still always contact us by phone (**1.800.PAY.ATTN** or **562.594.7700**), email (**info@tovatest.com**), or fax (**800.452.6919** or **562.594.7770**) instead.

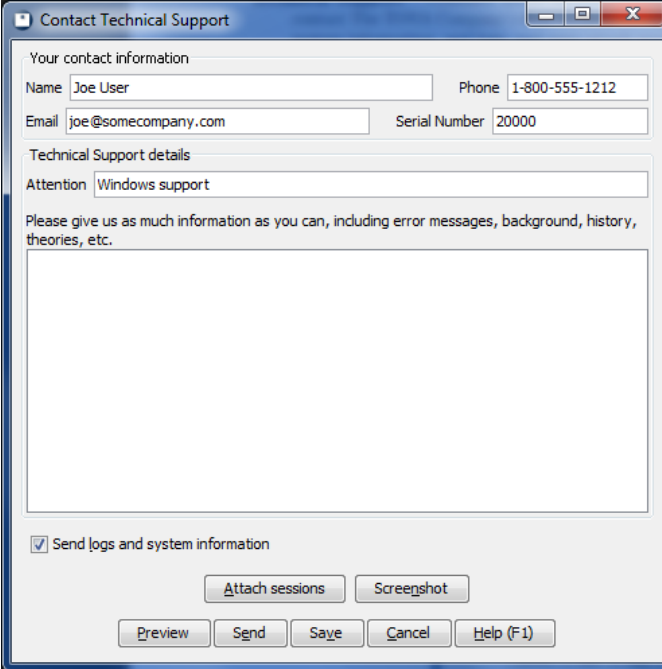


Figure 70: Contact Technical Support

In Figure 70, we see the **Contact Technical Support** window. We'll use it as our example; it has the most features of the three contact operations.

27.1 Your contact information

These four fields tell us how to reach you with the support you require. Your **'Serial Number'** will be read automatically from your device if it's attached. Information entered into these fields will be remembered and filled in should you contact us again.

27.2 Technical Support details

This is where you can ask your questions or give us information about technical issues. It's okay to just leave the '**Attention**' field blank, but if you're working with a specific technical support representative, add their name here to make sure the information goes to the right person.

27.3 Send logs and system information

This is an important one. When this is checked, we will collect information from your system that may help us resolve the issues. Specifically, we send these:

- The state of the attached T.O.V.A. 9.0 hardware
- The T.O.V.A. application log
- The T.O.V.A. install log (*Windows only*)
- The T.O.V.A. PTE Activation service log (*Windows only*)
- System properties of your Java Runtime Environment (JRE) - JRE versions, memory, etc.
- Other system information about device drivers, your drives and partitions, processor, and other hardware.

All of this information is technical and can often help us answer your questions and resolve technical issues. There's a lot of information, and on some systems it may take a minute or two to collect and upload. If you would prefer not to send us any of this information about your system, uncheck this box, and the request will include only the essential information: the serial number of your T.O.V.A. device, the operating system you're running on, and your T.O.V.A. software version. And contact us if you'd like to more details about the information collected.

27.4 Attach sessions

If you have questions for technical or interpretation support about specific subjects or sessions, you can attach them here. When you click the '**Attach sessions**' button, you will be shown a list of subjects and sessions, along with a search bar, similar to the main window. Click to highlight the subject or session you want to attach (selecting a subject will attach all of their sessions). To select more than one, use '**Ctrl**'-click (Mac users, '**Command**'-click) to highlight each additional, or '**Shift**'-click to highlight a range.

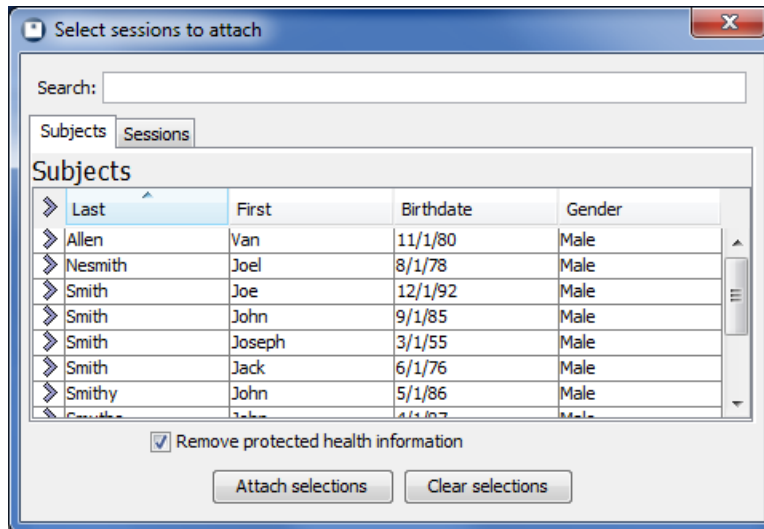


Figure 71: Send sessions with your support request

Notice the checkbox at the bottom of Figure 71, **'Remove protected health information'**. This is selected by default and will strip out of subjects or sessions you attach any information that would personally identify the subject. In rare instances where a question is specific to that personal information, you may uncheck this box. For more information on protecting personal health information, see section 24 on page 62.

Click **'Attach Selections'** to include those selected subjects and sessions or **'Clear Selections'** if you decide not to attach any. When you're finished, the **'Attach sessions'** button will display a green check to indicate sessions are attached.

27.5 Screenshot

Sometimes something may be happening on the screen that's hard to describe to technical support. Click the **'Screenshot'** button, and a small window appears (see Figure 72).

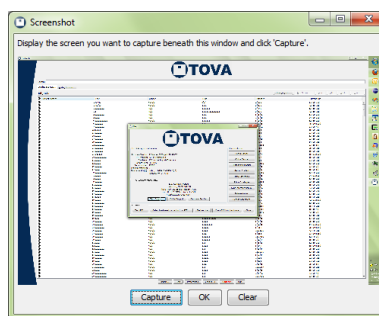


Figure 72: Use screenshot capture to show us your screen

When you click the **'Capture'** button, whatever's showing on the screen beneath will be attached as an image to your support request. A thumbnail of that image will then display in the Screenshot window. If it doesn't look right, arrange your windows and try another capture. If you can't tell, resize the window to make the captured image larger. When you're finished, click **'OK'** and the **'Screenshot'** button will now have a green check, indicating your request has the screenshot attached. You may instead click **'Clear'** if you decided not to attach any screenshot.

27.6 Preview

Preview lets you see all the information and files you'll be sending us when you click the **'Send'** button. It's not necessary, but it's there for those curious or worried about privacy.

27.7 Send

When you choose **'Send'**, all of the information you've selected will be collected together, compressed, and uploaded, through your internet connection, to us. This can be a lot of information, depending on your selections, so it may take a few minutes. When it's finished, you should see a message stating simply, "Your contact request succeeded."

If, however, your upload fails, you might try the next option.

27.8 Save

If your system is not connected to the internet, or if you have problems uploading your contact request, choose **'Save'** to collect and save all the information to a file. Then you can copy the file to another system and/or attach it to an email to **support@tovatest.com**.

27.9 Cancel, Help

You can guess what these buttons do.

28 Updating the T.O.V.A.

Since software updates to the T.O.V.A. are free, we've worked to make keeping your T.O.V.A. up-to-date as easy as possible. When a new version of the T.O.V.A. is available, the T.O.V.A. will download it automatically.

Note: The T.O.V.A. will never update without your consent; you will always be prompted before an update is installed. However, you can disable automatic download of updates in the Preferences (section 25.16 on page 75).

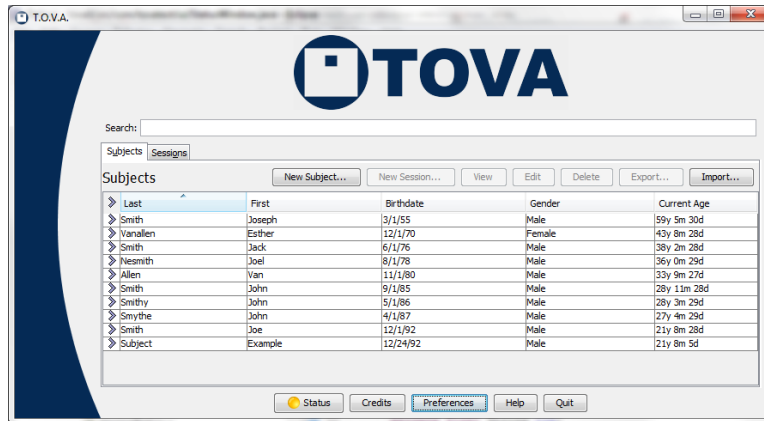


Figure 73: A yellow light on the Status button may indicate a software update

When there is a new update available, the **'Status'** button on the main window will turn yellow.

28.1 Updates

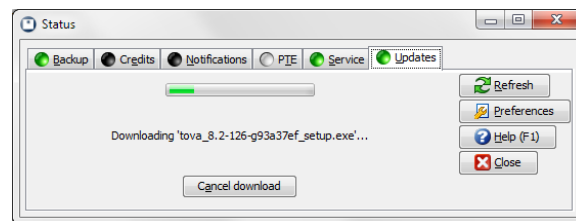


Figure 74: Downloading update

Click the **'Status'** button on the main window and then **'Updates'**, and you'll see the Updates pane. This pane will tell you if your T.O.V.A. is up-to-date, if there's a newer version available, and more. Some of these options may also appear:

- **'Check for updates'** - Checks for a new version of the T.O.V.A.
- **'Download update'** - Starts downloading the new T.O.V.A. version
- **'Install software update'** - Installs the updated T.O.V.A. version
- **'View release notes'** - Displays the ReadMe file, included with your update, which tells you what fixes and improvements it includes

- **'Cancel download'** - Terminates the download of the latest version
- **'Retry download'** - Restarts downloading, if the previous attempt failed
- **'Install update manually'** - If download fails, this opens a link in your browser to download and install the latest T.O.V.A. version. For more information, see section 34.3 on page 134.

Once the T.O.V.A. finishes downloading the latest version, click **'Install software update'** button, and you'll be next prompted to review the release notes and accept the updated license agreement, if any.

Note: Please save or erase any session on the T.O.V.A. USB device before updating the T.O.V.A. software. Software updates usually include a firmware update, and any session data on the device will be lost.

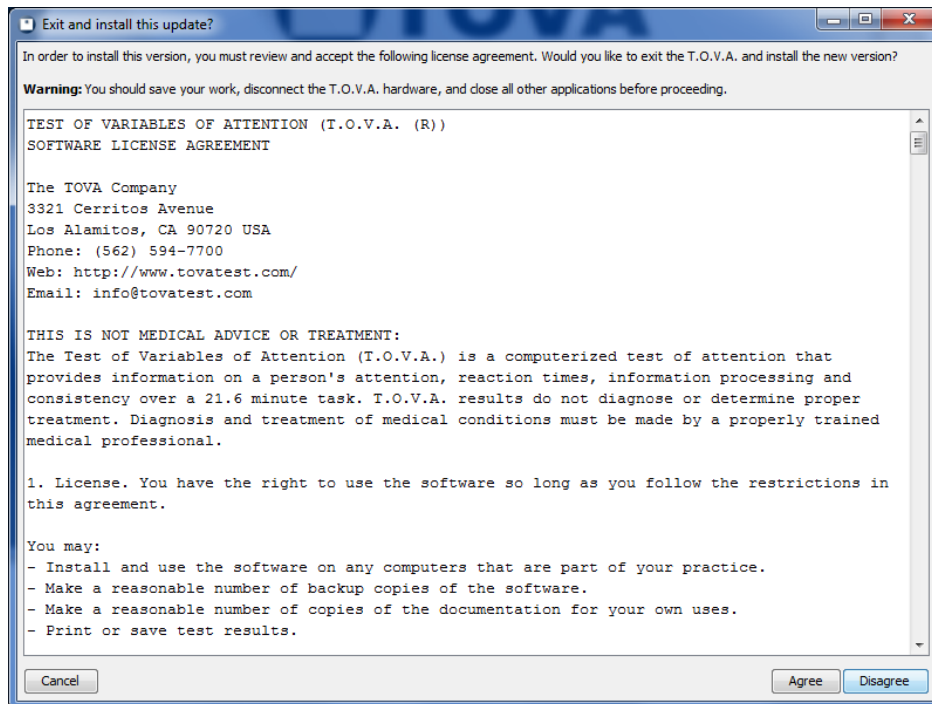


Figure 75: Review and accept the license agreement

If you accept the agreement, the T.O.V.A. will exit and begin the update process. Once the update is complete, the T.O.V.A. will automatically start back up.

28.2 Firmware updates

Some software updates may come with updates to the device or microswitch firmware, the software on your T.O.V.A. hardware. Yeah, the hardware has software, too.

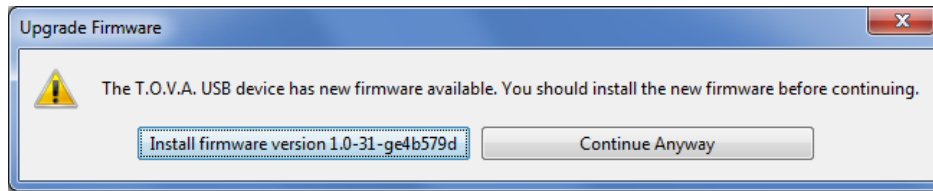


Figure 76: A new firmware update is available

When a firmware upgrade is available, the T.O.V.A. will prompt you to install it immediately (Figure 76). Though you can choose to **‘Continue Anyway’**, the T.O.V.A. will prompt you pretty persistently. Firmware upgrades often involve fixes critical to testing, so we advise you to always install firmware upgrades. Click the **‘Install firmware’** button, and the firmware update will begin. It shouldn't take more than two minutes. **Note:** Please don't disconnect the T.O.V.A. USB device or try to administer a test during a firmware update.

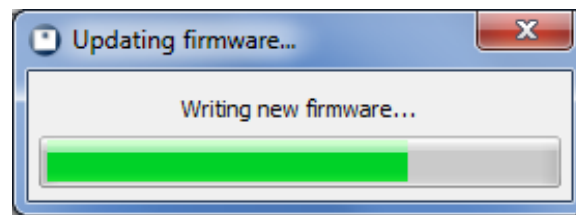


Figure 77: Updating the T.O.V.A. firmware

When the firmware update is finished, you're ready to administer more T.O.V.A. tests. If the firmware update fails, restart the T.O.V.A. application, reattach the T.O.V.A. USB device, and let it try again. The T.O.V.A. USB device must have valid firmware compatible with the software.

28.3 Updating your T.O.V.A. CD or flash drive

Usually an update to the T.O.V.A. means an update to the PTE, to increase compatibility with new hardware, add new features, and fix bugs. If you're using a T.O.V.A. CD to boot the PTE on your system, you need to update that CD to run the latest PTE version. See section 31.5.4 on page 121 for details on where to download the latest CD image and steps to update the CD in your OS.

Likewise, if you're using a flash drive to boot the PTE instead, it also needs to be kept up-to-date. Contact T.O.V.A. technical support for assistance with that.

28.4 When update fails...

We try to anticipate every hardware and software configuration, but inevitably something will happen that causes the automatic update to fail.

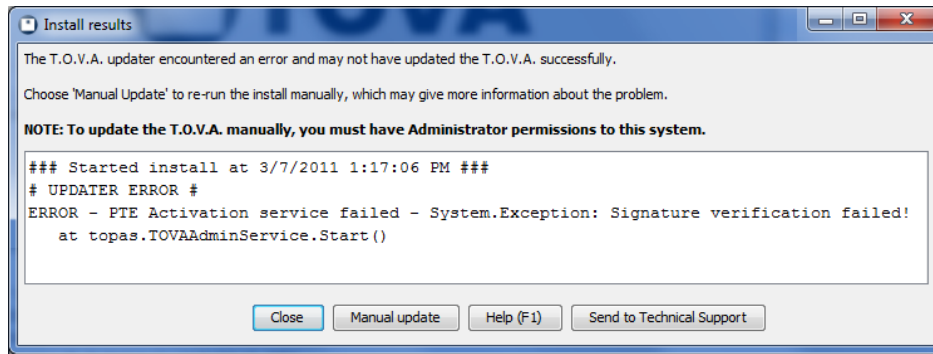


Figure 78: Downloading may have been interrupted. Try it again.

When you return to the T.O.V.A., if there were install errors, the T.O.V.A. will display the install log. You can send us that log, as well as other logs that track T.O.V.A. problems, by choosing '**Send to tech support**'. This can help us diagnose and fix these problems for you and other users. See section 27 on page 80 for more information.

You can also click '**Manual Update**' to try manually updating the T.O.V.A. For more information, see section 34.3 on page 134.

Reference

This is the reference section, where we answer all the questions we didn't answer in the rest of the manual. If you can't find your answer here, don't forget: you can always contact T.O.V.A. technical support (section [27](#) on page [80](#)).

29 Hardware

This reference section deals with the T.O.V.A. 9.0 hardware, what it does, and how to diagnose hardware problems.

T.O.V.A. USB device - See section [29.1](#) on page [89](#).

T.O.V.A. Microswitch - See section [29.2](#) on page [96](#).

Check T.O.V.A. Hardware window - See section [29.3](#) on page [98](#).

Display Calibration - See section [29.5](#) on page [102](#).

General audio - See section [29.6](#) on page [105](#).

PTE Audio - See section [29.7](#) on page [105](#).

EAV Audio - See section [29.8](#) on page [108](#).

29.1 The T.O.V.A. USB device

Not only does the T.O.V.A. USB device securely track your test credits, it's also a miniature computer! Let's look briefly at all that the T.O.V.A. USB device does when you administer a test:



Figure 79: Front of the T.O.V.A. USB device



Figure 80: Back of the T.O.V.A. USB device

1. When you launch a T.O.V.A. test, the pattern for that test is loaded onto the T.O.V.A. USB device along with the practice test, some limited subject and session information, and a few other settings.
2. The first time you administer a Visual test, the T.O.V.A. USB device facilitates calibration. During calibration, you hold the back of the microswitch up to your screen. The microswitch's photodiode registers the calibration flashes, and the T.O.V.A. USB device records your monitor's specific display parameters, so the T.O.V.A. test results will have the highest accuracy.
3. If you're administering an External A/V test, the T.O.V.A. USB device also supplies the test itself, sending out the Visual test video signal to your display and the Auditory test audio to your speakers. Because the EAV test timing is completely managed by the T.O.V.A. USB device, we have the capability to administer the T.O.V.A. test—with ± 1 ms accuracy—without leaving your OS.
4. Every time the subject presses the microswitch button, that button press is registered and stored on the T.O.V.A. USB device.
5. When the test is finished, the T.O.V.A. USB device returns a summary of the administered test.
6. Finally, you use a credit to retrieve the test. The test data is loaded from the device and stored in your T.O.V.A. 9.0 database

Note: You must have a T.O.V.A. USB device to administer tests in the T.O.V.A. 9.0.

29.1.1 That Little Light

The light on the front of the T.O.V.A. USB device indicates to you and to us what the T.O.V.A. USB device is doing. It's also a button you can press if you ever need to reset your T.O.V.A. USB device. It's important to note, however, that the reset light can also be a distraction to your subjects, which is why we recommend that you keep it out of sight during testing. The microswitch has a nice long cable for just this reason, and the reset light is recessed somewhat to make obscuring it that much easier.



Figure 81: Reset light/button

Here are the colors you might expect to see using the T.O.V.A.:

Color	Status	Description
Yellow	Powered	Device is finding power, but is not recognized by your OS.*
Green	Ready	Device is attached and recognized by your OS.
Blue	Testing	Device is running the T.O.V.A. test. <i>If the device is disconnected or loses power while the light is blue, your test data will be lost.</i>
Red	Error	An error prevents testing (e.g., microswitch unplugged). The red light may blink to indicate a specific error.
White	Switch down	The microswitch is being pressed (It doesn't turn white during testing, to avoid distraction).

* **Note:** A yellow light may indicate you haven't installed the T.O.V.A. USB device drivers. You should install the T.O.V.A. software *before* you setup the hardware. See section 9.12 on page 11 for information on installing the T.O.V.A.

29.1.2 T.O.V.A. 8 hardware

To use the T.O.V.A. 9.0 software, you will need T.O.V.A. 9 hardware. You cannot administer the T.O.V.A. test with T.O.V.A. 7 or T.O.V.A. 8 hardware. Please contact T.O.V.A. Customer Service (section 27 on page 80) to purchase a T.O.V.A. 9.0 kit before installing the T.O.V.A. 9.0 software.

29.1.3 Device not found

If the T.O.V.A. does not recognize that your T.O.V.A. USB device is attached, try the following:

1. *Before* you attach the hardware, make sure you install the T.O.V.A. software.
2. Make sure that the USB cable is firmly attached to the T.O.V.A. USB device and your computer's USB port.
3. Exit the T.O.V.A.
4. Disconnect and reconnect the device. When you reconnect, Windows may indicate this with a 'T.O.V.A. USB Device' balloon and/or a sound effect.

5. If your OS recognizes the device, the light should turn green. Run the T.O.V.A. and the device should be recognized.
6. Make sure that you are plugging the device into your computer and not to a separate USB hub.
7. If a USB port on the front of your computer doesn't work, try one on the back, or vice versa.
8. If your OS still won't recognize the device being attached and the light remains yellow, you may need to manually install the drivers. See section [29.1.6](#) on page [92](#)

29.1.4 Other device errors

Sometimes there can be communication problems with the T.O.V.A. USB device. There are two common causes of this:

Sleep mode - If your system goes to sleep while running the T.O.V.A., it can lose its connection to the device. To clear up the problem, exit and restart the T.O.V.A. To avoid this problem in the future, we recommend that you disable sleep mode on your T.O.V.A. system. See section [34.8](#) on page [140](#) for steps specific to your operating system.

USB hub - If your T.O.V.A. USB device is plugged into a USB hub, you will get unpredictable communication problems. You should plug your T.O.V.A. USB device directly into a USB port on your system—**USB hubs are not supported with the T.O.V.A.** See section [13](#) on page [21](#) for more information.

If the above doesn't resolve the problem, try the "Device not found" steps at section [29.1.3](#) on page [91](#). If it continues to happen, there may be a problem with your PC or your T.O.V.A. hardware—contact T.O.V.A. technical support for help (section [27](#) on page [80](#)).

29.1.5 Resetting your audio and video

If ever your screen will not show the correct picture or your speakers are making a sound they shouldn't be, you can reset the T.O.V.A. USB device by pressing the button (that little light) on the front. That will return audio and video control to your system. If you're still having audio or video problems then, it's probably not the T.O.V.A. USB device causing them.

Note: You should also make sure that the USB cable is properly attached, as that power is needed to carry the audio and video signals.

29.1.6 Installing/Fixing the T.O.V.A. hardware drivers

Note: These instructions are for Windows.

If you encounter problems installing the T.O.V.A. USB device drivers, you may need to manually install the hardware. For instance, if the T.O.V.A. hardware was attached *before* the T.O.V.A. software was installed, you could encounter a scenario where the drivers do not install correctly. This is a Windows glitch, but fortunately it can be solved:

Step 1 - Attach the T.O.V.A. USB device to your computer. If the 'Found New Hardware Wizard' appears, go to Step 5.

Step 2 - Choose **'Run'** from the Start menu (or press Window-R).

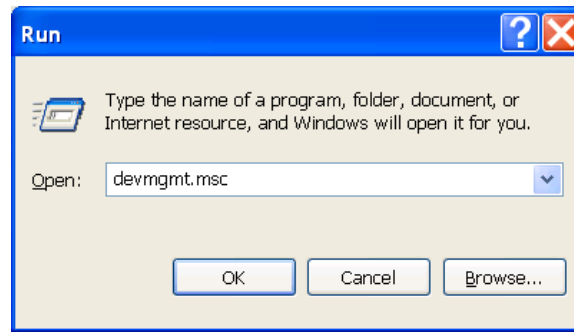


Figure 82: Run the Device Manager

Step 3 - Type `devmgmt.msc` into the **'Open'** field and choose **'OK'**.

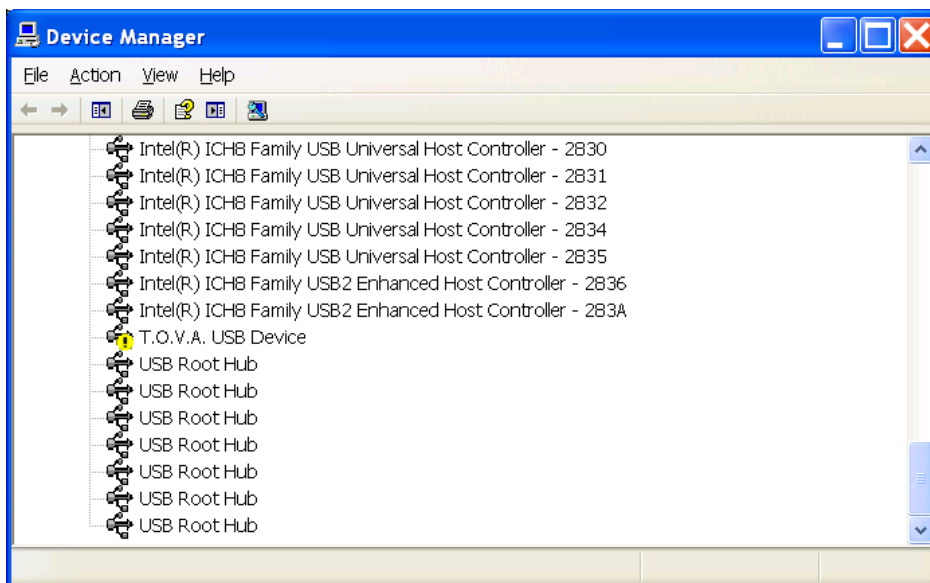


Figure 83: Missing driver in the Device Manager

Step 4 - Look for bright yellow exclamation mark beside **'T.O.V.A. USB Device'** in the hardware list. Right-click the item and choose **'Update Driver'** or **'Update Driver Software'**. This will launch the **'Found New Hardware Wizard'**.

Step 5 - Choose **'Install from a list or specific location (Advanced)'** and click **'Next'**.



Figure 84: Found New Hardware Wizard

Step 6 - Choose **'Search for the best driver in these locations.'**

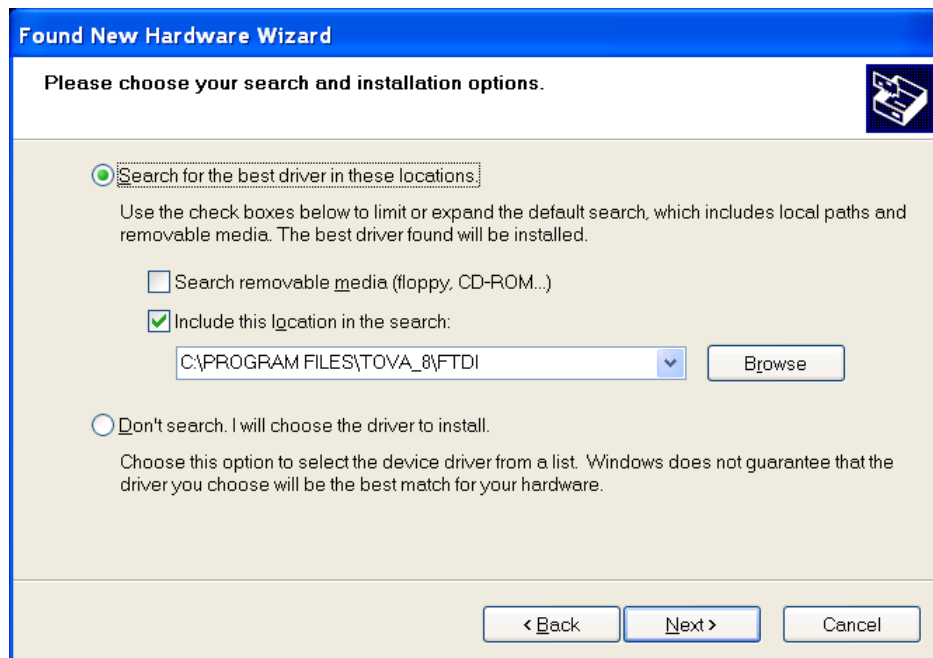


Figure 85: Direct the wizard to the T.O.V.A. drivers

Step 7 - Uncheck **'Search removable media (floppy, CD-ROM...)'**.

Step 8 - Check **'Include this location in the search:'**, browse to the T.O.V.A. install folder (by default, this will be either `C:\Program Files\tova_8` or `C:\Program Files (x86)\tova_8`), select the `ftdi` folder, and choose **'OK'**. Click **'Next'**.

Step 9 - Wait a few moments while the hardware wizard searches for and installs the correct driver.

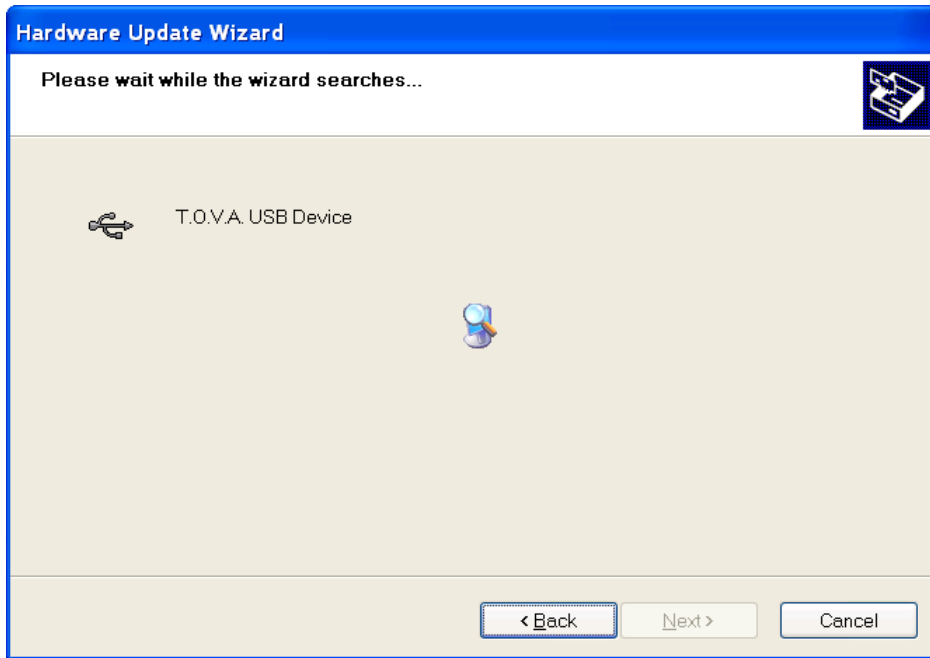


Figure 86: Searching for and installing the drivers

Step 10 - When it's finished, you should see something like Figure 87, indicating that the T.O.V.A. drivers were successfully installed. If not, try repeating these instructions or contact T.O.V.A. technical support for assistance.

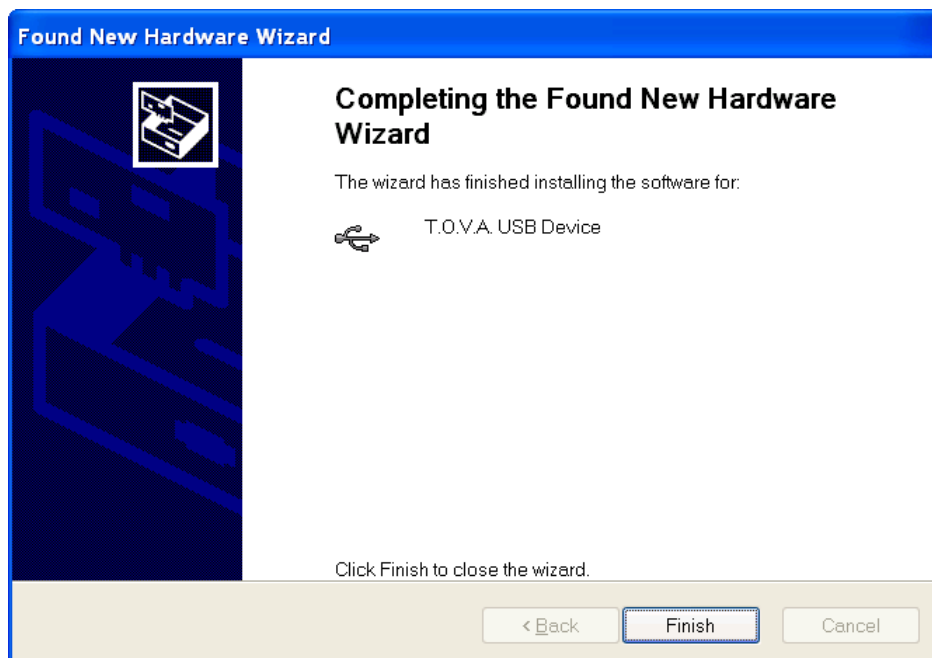


Figure 87: T.O.V.A. drivers installed!

Congratulations! You've successfully fixed a driver installation problem.

29.2 The T.O.V.A. microswitch

Instead of mice or keyboards (both unpredictably inaccurate), the T.O.V.A. uses a standardized microswitch which performs reliably and consistently across literally millions of presses. The T.O.V.A. 9.0 microswitch has a built-in light sensor that we use to calibrate your display. For more information on calibration, see section [18.5.1](#) on page [39](#).



Figure 88: Connector



Figure 89: Microswitch Jack

To connect the new microswitch to the T.O.V.A. USB device, line up the arrows on the top of the connector with the top of the T.O.V.A. device and push it gently into the port. You do not need to twist or turn or squeeze in any way.

To disconnect the microswitch from the T.O.V.A. USB device, grasp the connector on either side and pull it gently but firmly out from the device. Again, you do not need to twist or turn or squeeze the connector in any way.

29.2.1 Why isn't my microswitch working?

First, make sure that the microswitch is plugged into the front of the T.O.V.A. USB device. If it's not, or there's another microswitch error, the light on the front of the T.O.V.A. USB device may be red.

Second, make sure the microswitch 'feels' right. With a gentle press, it should make a sudden transition to the pressed state with a single click. If it feels mushy, or very hard to press, or something is rattling in the case, you're going to need a new microswitch.

Third, go to **'Help'**, **'Check T.O.V.A. hardware'**, **'Check microswitch'** to test your microswitch button. If there is or was a microswitch error, it may be indicated on this window as well. See section [29.3](#) on page [98](#) for more information.

Finally, if the microswitch intermittently works and then doesn't, it should be replaced **IMMEDIATELY**; a test taken with a faulty microswitch can't be considered reliable.

If you need a new microswitch, contact T.O.V.A. customer service (section [27](#) on page [80](#)) as soon as possible and let us know how fast you need a new one. We'll send you a new one right away! **Note:** We might ask you to send us the old one for quality control purposes.

29.3 Check T.O.V.A. Hardware

The Check Hardware window has information and tools for testing and fixing the T.O.V.A. USB device, the microswitch, and your system's connections to them. Let's review them briefly:

29.3.1 Hardware information

On the right side of the Check T.O.V.A. hardware window you are given all the information about your T.O.V.A. hardware.

User type - This identifies whether you have a Clinical or Screening device. **The T.O.V.A. 9.0 is not compatible with Screening devices.** Contact T.O.V.A. tech support (section 27 on page 80) for more information.

Serial number - Your serial number (usually a five-digit number) uniquely identifies your T.O.V.A. USB device and may be used to identify you when you contact The TOVA Company for service or support.

Credits remaining - You must have at least one T.O.V.A. test credit available to administer a T.O.V.A. test—you will use a test credit to save the results of that test. See **Credits** (section 20 on page 51) for more information.

Device version(s) - Gives the firmware version of your attached T.O.V.A. USB device and microswitch. When you update the T.O.V.A. (section 28 on page 84), you will sometimes be prompted to update this firmware as well (section 28.2 on page 85).

Power source - Your T.O.V.A. USB device should always be able to run on power supplied by the attached USB cable.

Session status - Usually, this will usually say '**NONE**' to indicate that any session data has been saved or erased. If it says something else, there may be session data still stored on the T.O.V.A. USB device. Choose '**Check for session**' (detailed below) to save any session data you wish to preserve, as soon as possible.

Other error statuses - If there are problems with your T.O.V.A. USB device or microswitch, you may see other errors here as well. You should report hardware errors to T.O.V.A. technical support immediately to correct problems you may encounter.

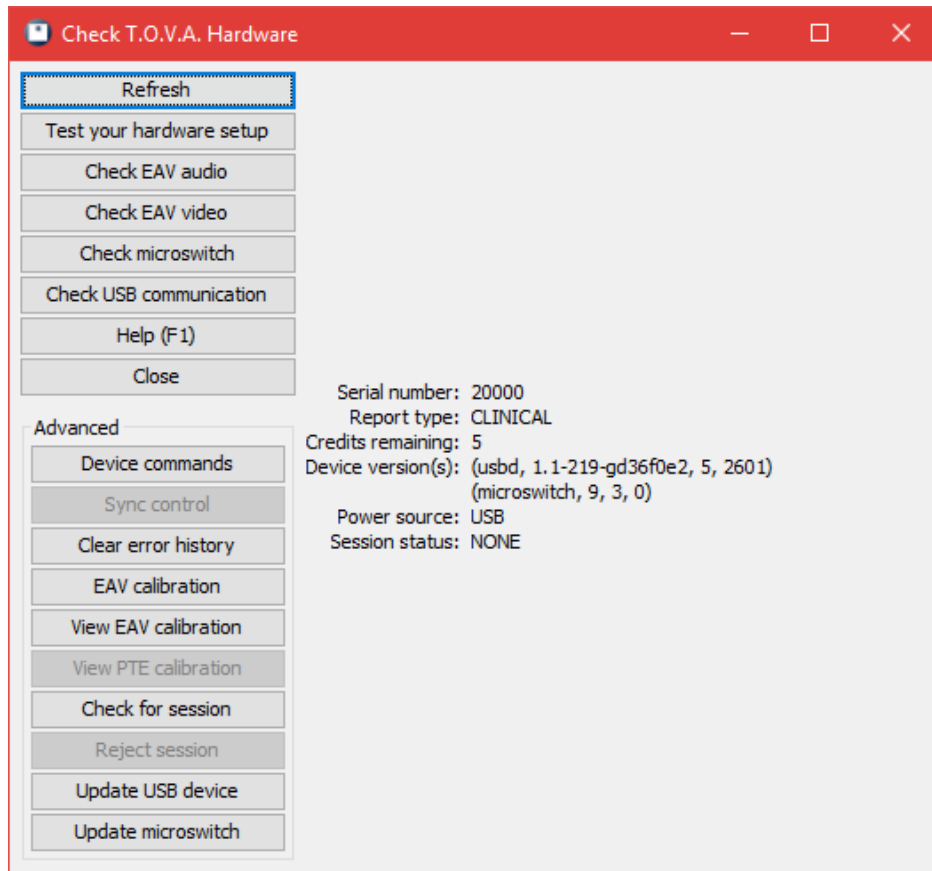


Figure 90: Check T.O.V.A. hardware window

29.3.2 Hardware tools

Refresh - If you connect a new T.O.V.A. USB device, choose **'Refresh'** to load its information

Test your hardware setup - Runs the Hardware setup wizard, which verifies your T.O.V.A. hardware connections step by step (see section 14 on page 23).

Check EAV audio - Lets you play audio from your sound card and from the T.O.V.A. USB device, and adjust the EAV volume to balance the two.

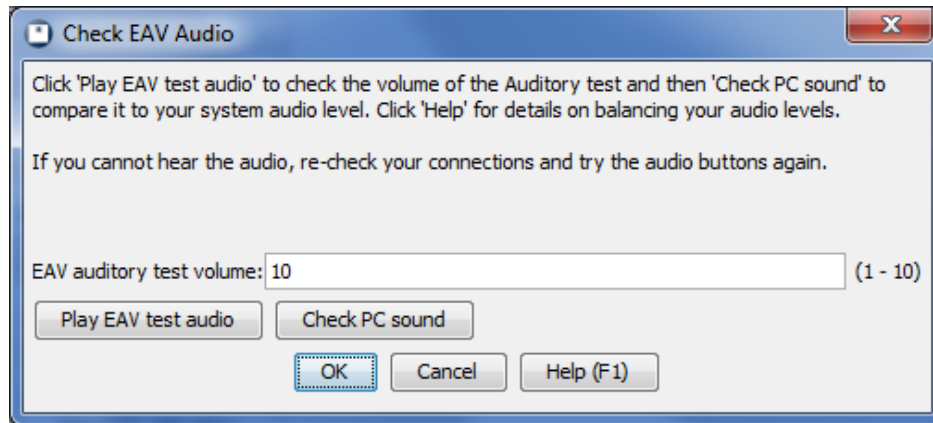


Figure 91: Check the audio volume for EAV testing

Check EAV video - Presents images from the T.O.V.A. USB device to your external display to verify that the video has been hooked up correctly

Check microswitch - This helps you verify that the microswitch is properly attached and recognizing button presses. See section 29.2.1 on page 96 for more information.

Check USB communication - This experimental feature tests communication with the T.O.V.A. USB device. **Note:** Any session data on your T.O.V.A. USB device will be overwritten—only use at the direction of technical support.

Help - Opens the Research User's Manual to this section

29.3.3 Advanced hardware tools

Below these are more advanced functions. **Note:** You should not use these without direction from T.O.V.A. technical support.

Device commands - Useful only at the direction of T.O.V.A. Technical support

Sync control - Tests the synchronization interface (available only if the sync interface is attached to your T.O.V.A. USB device)

EAV calibration - Recalibrates your display for EAV testing

View EAV calibration - Presents the latest results of display calibration for the EAV, with a brief explanation of errors

View PTE calibration - Presents the latest results of display calibration for the PTE, with a brief explanation of errors

Check for session - Manually checks if there is an unsaved test on the T.O.V.A. USB device and offers to save the data.

Reject session - Allows you to erase unsaved test data from the device. **Note:** Data is removed from the device when it is saved to the database. If you do erase data from the device without saving it, it will be lost forever.

Update firmware - Updating the firmware should happen automatically, if ever necessary, when you update the T.O.V.A. (see **Updating the T.O.V.A.**, section 28 on page 84). This option is only useful at the direction of T.O.V.A. Technical support.

Update microswitch - Updating the microswitch firmware should also happen automatically when you update the T.O.V.A. (see **Updating the T.O.V.A.**, section 28 on page 84). This option is only useful at the direction of T.O.V.A. Technical support.

29.4 Manual Sync Interface Control

Note: This is only available if you have a T.O.V.A. USB device with the sync interface attached.

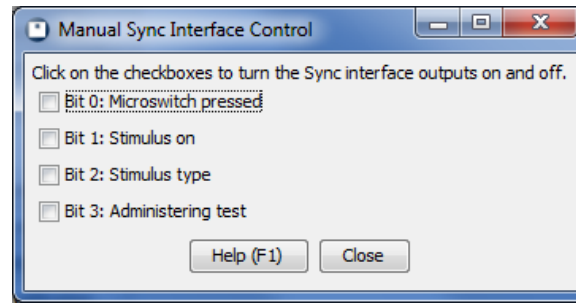


Figure 92: Test the T.O.V.A. USB device sync interface

This is meant to help you debug the outputs of the sync interface by giving you manual control of the output bits. Note that the 'Vout' and analog vs. digital configuration settings cannot be changed here; you have to go to **'Preferences', 'Sync Interface'** in order to change them. For more information, see the **'T.O.V.A. Synchronization Interface manual'**.

29.5 Troubleshooting Display Calibration

You must calibrate your display to administer the Visual T.O.V.A. test. Whether it's a modern LCD display or a big, old CRT monitor, every display has some delay, however brief. Calibration allows the T.O.V.A. to properly account for your display's specific timing, so that the results of the T.O.V.A. will be as precise and accurate as possible.

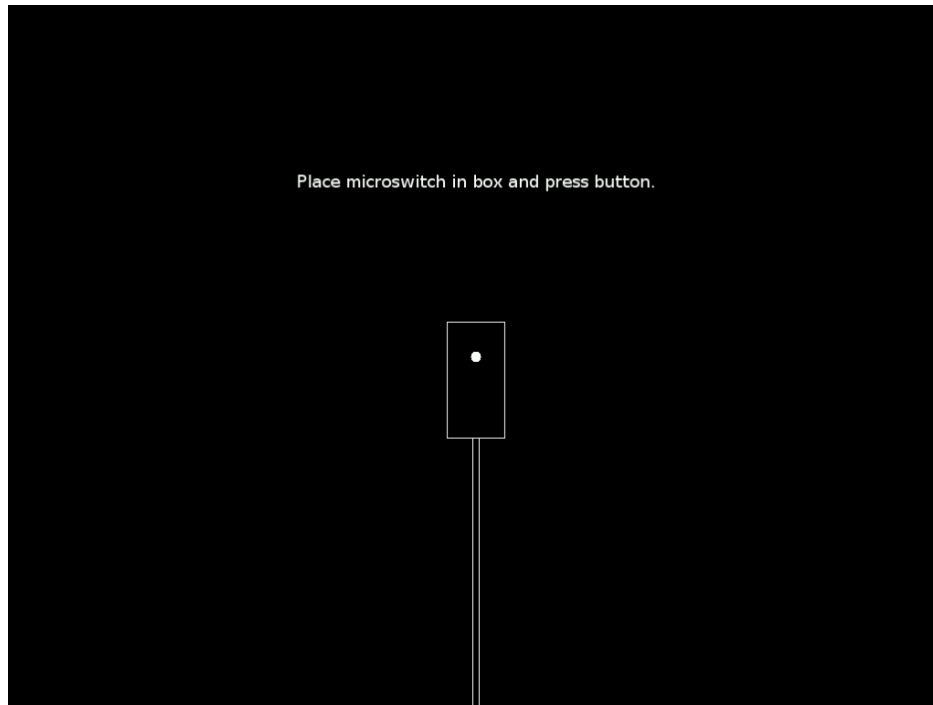


Figure 93: Hold the photodiode up to the rectangle on the screen

Most displays will calibrate successfully. However, others may encounter errors during calibration.

The first thing you should do if your calibration fails is try it again. Make sure that you're holding the microswitch so that the bottom of the microswitch (where the photodiode window is) is directly touching the surface of your screen, but not pressing down hard. The button should be facing outward from the screen and the cord should be hanging down from the back of the microswitch, as indicated on the calibration diagram (Figure 93). Calibration may take a minute or so, but try to hold the microswitch still.

Secondly, some displays may take a few minutes to finish warming up. Restart the calibration and leave the message "Place microswitch in box and press button" on the screen for at least two minutes before starting a second time.

Thirdly, your display may be too dim, and you should increase the brightness and try calibration again. Once calibration is complete, you can lower the brightness again as appropriate.

If you continue to get the same error, the problem can be diagnosed here:

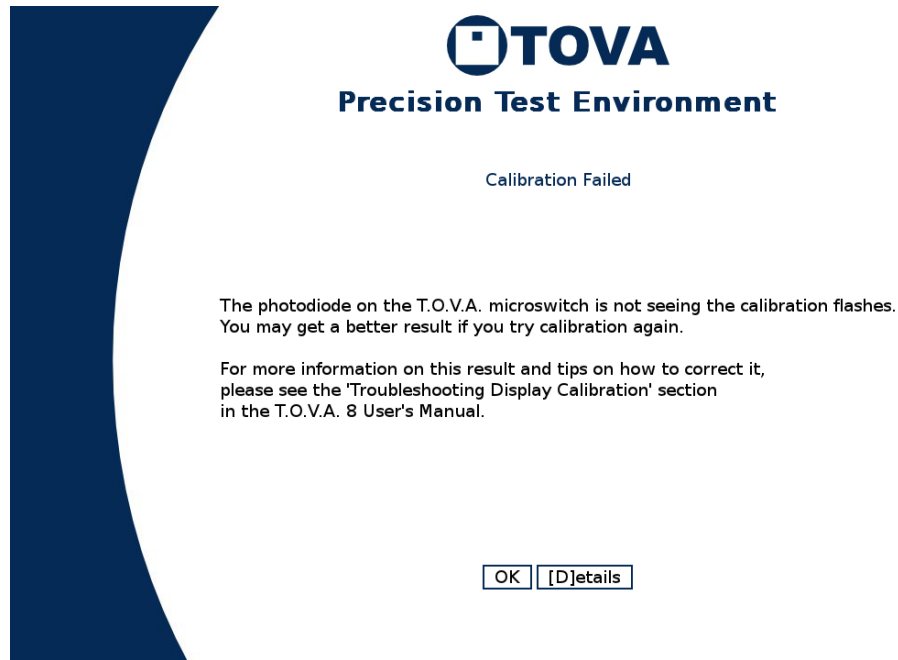


Figure 94: When calibration fails, try again, then consult this section

Calibration was interrupted. - Your calibration was interrupted before it could be completed. You should try calibration again and let it complete.

The photodiode on the T.O.V.A. microswitch is not seeing the calibration flashes. - There are some common reasons for this:



Figure 95: How to hold your microswitch for calibration

- You may not be holding the T.O.V.A. microswitch correctly. Make sure the photodiode window on the back of the microswitch is inside the box on the calibration screen. Make sure the back of the microswitch is actually pressed up against the front of the display. See Figure 95 or go to <http://videos.tovatest.com> for an instructional video.
- Your display may still be warming up. Restart the calibration and leave your display showing the “Place microswitch in box and press button” screen for at least two minutes before starting the calibration routine.
- Your display may be too dim. Try increasing the brightness on your display. Note that if the screen appears too bright after this change, you can reduce the brightness again after calibrating.
- There may be too much light on the display. Direct sunlight shining on your display can sometimes flood the display. Make sure the front of your display does not have direct sunlight on it.

Calibration results had too much drift over time - Some displays introduce random delays in the display of the visual stimuli and thus are not accurate enough for use with the T.O.V.A. test.

The calibration results were too variable - This indicates that our T.O.V.A. hardware could not perceive a consistent video timing pattern.

The calibration routine cannot determine if this display can be used - Timing was not quite consistent enough to calibrate. This usually indicates your display just needs to warm up a bit more.

Once you get a successful calibration, you should be good to administer the test, and you won't need to recalibrate every time. If you replace your system's monitor or video card, however, you should always recalibrate the T.O.V.A. to the new display hardware.

If you continue to receive errors, your display may not be capable of accurately administering the T.O.V.A. test. The T.O.V.A. 9.0 will not administer the T.O.V.A. Visual test on a display unless it can be successfully calibrated. Please contact T.O.V.A. technical support (see section 27 on page 80), so we can get more information about your monitor and recommend other models that will work better.

29.6 General Audio Troubleshooting

Audio is an important part of the T.O.V.A. The T.O.V.A. test instructions are spoken by your PC. The auditory T.O.V.A. test complements the visual test by measuring attention differently. As a result, we want the T.O.V.A. to work with your system's audio hardware. Are your test instructions too loud and your auditory test too quiet, or vice versa? If you're having sound problems with the T.O.V.A., we can help you fix that.

The PTE and EAV tests each have their own volume settings. The sections to follow can help you address volume problems in each testing environment, but first a couple of general audio tips.

29.6.1 Your Speakers

The easiest way to control volume is by raising or lowering the volume on your external speakers. However, if you have no external speakers—a laptop with a basic PTE hardware setup (section 13.1 on page 21), for instance—you can skip to the next section.

If you can't hear the Auditory test or the test instructions, check your speakers first: Are they plugged in, turned on, and turned all the way up?

29.6.2 Instructions audio

The test instructions are accompanied by audio by default. Press the **space bar** to pause or restart the instruction audio and the **'S'** key to turn the audio on (or off) while the instructions are playing. **Note:** With the instruction audio off, the instructions must be advanced manually, using the right arrow key.

29.7 Troubleshooting PTE Audio

For audio problems in the PTE, use the PTE volume controls. From the main PTE menu, press ↑ to raise the volume one step and ↓ to lower it. Each time a brief audio clip will be played, and a number will be displayed. The volume level you choose will be stored when you return to your OS and preserved for your next PTE session.

Note: These volume controls are only available from the main PTE screen and not during the T.O.V.A. test or the Test Instructions.

A Note on the Auditory Test: If the target (higher) tone is significantly louder than the nontarget (lower) tone, the problem is the bass response of your speakers. This can often be an issue with laptops, and you will need to use different speakers to resolve this. Contact T.O.V.A. customer service for recommendations.

29.7.1 PTE Audio Device menu

If your sound works fine in your OS but does not work in the PTE, the PTE may not be selecting the correct audio hardware. You may see an audio error or the speaker button at the bottom of the main PTE menu will be disabled. Click the **wrench button** (or press **'A'**) and then choose **'[C]hange audio device'**. This will present a menu of all of the audio devices the PTE can detect.

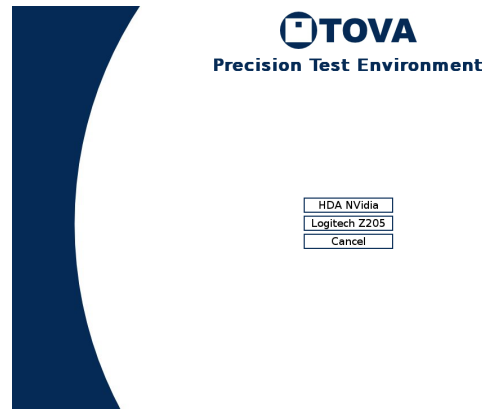


Figure 96: ‘[C]hange audio device’ brings up the audio device selection menu

Select a device, even if there is only one listed, and an audio clip should play at the current volume to test out the device. If the audio played correctly, great! Resume your PTE test session or click ‘**Done**’ to return to your OS. Your device selection will be preserved.

If you get an error after choosing the audio device, go back to ‘**Change audio device**’ again and select a different audio device, if any. If you try all the devices here and no audio plays, your audio hardware may be incompatible with the PTE. If this is your situation, please send your PTE Hardware Information to T.O.V.A. tech support immediately—we are doing our best to make the T.O.V.A. PTE work for every sound card, and information from your system can help us do that. See section 34.1 on page 132 for more information.

29.7.2 Adjust Audio Levels

Note: *Please use this screen carefully, preferably on the advice of T.O.V.A. technical support. The main PTE volume and mixer defaults will work best for most systems, so if it ain't broke, don't fix it.*

While the T.O.V.A. PTE has gotten increasingly proficient at recognizing hardware and adjusting settings to the right default levels, some PCs may still need additional tweaks. If your audio is too quiet, too loud, or distorted somehow, and the main PTE volume can't correct the problem, the latest PTE version has an audio mixer that might help you.

Click the **wrench button** at the bottom of the main PTE menu (or press ‘**A**’) and then choose ‘**[A]djust audio levels**’. Here you will be able to see and adjust all the channels for your PC's audio device. The bar indicates the volume level, and the box next to it whether the channel is turned on or off.

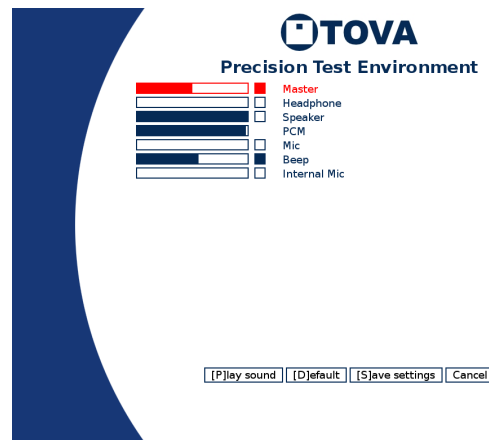


Figure 97: Only the Master and Beep channels are turned on here

Please note that this screen is not about selecting a specific channel to be used by the T.O.V.A., but rather the audio levels contributing to the sound in the T.O.V.A. Some may be best turned off, and some may have no effect whatsoever. We are happy to help you find the settings that will work best for your system.

- Every sound device will have its own set of channels. Yours may have more, fewer, or different channels than you see in Figure 97.
- You can adjust channels by clicking the volume bar where you want the level to be, or clicking the square to toggle the channel on or off.
- You can also adjust channels with your keyboard. The channel selected to adjust will be red. Click the up/down arrow keys to select a different channel to adjust, left/right arrow keys to raise or lower the volume for that channel, and the space bar to toggle the channel on or off completely.
- Click ‘[P]lay sound’ to hear the sound at your adjusted levels.
- Click ‘[D]efault’ to revert to our default audio levels for your system.
- Once you’re finished, click ‘[S]ave’ to preserve your changes, and when you boot back to your OS, your changes will be remembered for future PTE sessions.
- Click ‘Cancel’ to abandon any changes you just made.
- If you call tech support, we will help you find the right adjustments for your system and environment.

29.7.3 Using USB speakers

USB speakers plug into a USB port just like the T.O.V.A. USB device, **instead** of plugging into your audio speaker jack. We sometimes recommend these for PTE audio problems because they are almost guaranteed to work with the PTE—other speakers may or may not. Please only use the USB speaker models recommended by T.O.V.A. customer service, and make sure to set the audio calibration value provided for your speakers.

1. Plug the speakers into your USB port.
2. Run the T.O.V.A. and click ‘**P**references’ and ‘**S**timuli settings’.
3. For ‘**A**uditory calibration’, enter the value given to you by T.O.V.A. customer service for your speaker model, then click ‘**S**ave’.

4. Reboot to the PTE. (For steps on how to do that, see section 31.1 on page 110.)
5. Once the PTE menu boots up, click the **wrench button** (or press '**A**') and choose '**[C]hange audio device**'. This brings up the audio device selection menu, which will look something like Figure 96, except it will list your system's audio devices.
6. Choose the attached USB speakers. This will play a brief audio clip through the speakers and then return you to the PTE menu.
7. Using the arrow keys, raise or lower the volume to the appropriate level. For each step, a brief clip will play. Feel free to run test instructions or an auditory test to verify that the volume works well for you.
8. Reboot back to your OS. Your new audio device selection will be saved and used whenever you boot the PTE for testing.

29.8 Troubleshooting EAV Audio

Note: The External A/V test requires external speakers plugged into your T.O.V.A. USB device. If you have a laptop with no external speakers, for instance, you cannot run the External A/V test.

During an EAV session, your computer can play audio instructing the subject in taking the T.O.V.A. test. However, during an EAV Auditory test, the T.O.V.A. USB device will play the tones. Therefore you have two different audio sources (your computer, the T.O.V.A. USB device). You also have multiple volume controls: your OS's volume (which may have more than one control), the T.O.V.A. USB device's volume, and your speakers' volume. Here are steps you can follow that will solve most EAV audio problems:

1. Run the T.O.V.A.
2. Go to '**Help**', '**Check T.O.V.A. hardware**', and then '**Check EAV Audio**'.
3. Click '**Play EAV test audio**' and note the volume of the audio that plays.
4. Click '**Check PC sound volume**' and note the volume of the audio that plays.
5. If both are too loud or too quiet, adjust your speakers and go back to Step 3.
6. If you can hear the PC sound, but not the EAV audio, try swapping the audio cable plugs: you may have '**audio out**' and '**audio in**' reversed. Then go back to Step 3.
7. If the PC sound is too loud or too quiet, adjust the volume for your OS. You may have buttons on your keyboard for this purpose, or a small icon you click on to bring up your volume control. Adjust the volume there and go back to Step 3.
8. If the EAV audio is too loud or too quiet, choose a different value for the "EAV auditory test volume" and click '**Play EAV test audio**' to test the new volume.
9. If you can hear the high tone well, but not the low tone of the Auditory test, the problem is probably the bass response of your speakers. You will need to use different speakers to resolve this. Contact T.O.V.A. customer service for recommendations.

29.8.1 Speaker noise

We have noticed that sometimes you can hear noise with the EAV setup that you don't hear if the speakers are plugged directly into your PC. We've found this is specifically the case with some laptops—that's because the laptop is actually producing the noise.

While the T.O.V.A. USB device may not be producing this noise, it might be amplifying it. Fortunately, the static or whine should go away during Auditory testing, when the PC sound is cut off. If you find that it does not, try different speakers or contact T.O.V.A. tech support.

30 PTE vs. EAV: The T.O.V.A. Session Types

In the T.O.V.A. 9.0, there are two ways of administering a T.O.V.A. test session: PTE and EAV. When you configure your T.O.V.A. software during install (section 12 on page 19, you must choose one or the other.

Both session types administer the same T.O.V.A. test, giving you the same precise, accurate test results. Both provide multimedia test instructions to prepare your subject for the T.O.V.A. test. Both require you to calibrate your display once before you can administer your first test. The only question is which session type works best for your system:

PTE Setup	External Audio/Video (EAV) Setup
<ul style="list-style-type: none"> • For laptops without an external monitor or speakers • The simplest hardware setup • Requires that you reboot your system to the PTE (Precision Test Environment) to run a T.O.V.A. session 	<ul style="list-style-type: none"> • Best for desktop PCs or laptops connected to an external monitor and speakers • Requires a few additional connections • Allows you to test in your OS (Windows, MacOS) without rebooting

- For more information on PTE testing, see section 31 on page 110.
- For more information on EAV testing, see section 32 on page 124.
- For more information on changing session launch options, see section 25.12 on page 71.

31 The Precision Test Environment (PTE)

The PTE (Precision Test Environment) is a boot environment you can use to administer a T.O.V.A. test outside of the inconsistent timing of modern operating systems like Windows and Mac OS.

Note: Most new Windows 8 and 10 systems *CANNOT* boot the current PTE. For more information, please see section 36.1 on page 150.

Administering a PTE session requires rebooting your computer to our PTE operating system. This can be a complex, technical operation behind-the-scenes (see section 31.4 on page 113), but we've made it simple for you.

Note: For systems with an external monitor and speakers (usually desktop systems), the T.O.V.A. 9.0 can administer tests without rebooting. See section 32 on page 124 for details.

31.1 Testing the Precision Test Environment

To see how the PTE works or test any problems you could encounter without launching a new session, you should test the PTE. This is available at the end of the Hardware Setup wizard (section 14 on page 23) or by choosing the **'Help'** button on the main window. When you choose **'Test PTE'**, you will be presented with a window of options.

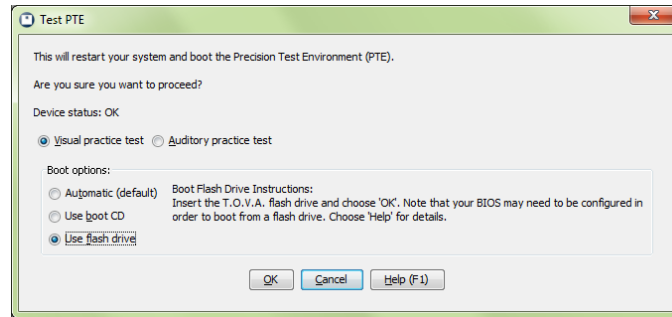


Figure 98: Test PTE options (PC)

When you choose ‘OK’ your system will reboot to the PTE.

Note: Macs and some Windows systems may require using a boot CD or USB flash drive to launch the PTE. Follow the instructions given for your system or see section 31.5 on page 114 for more assistance.

When testing the PTE, you should verify the following:

- Your display has been calibrated correctly (Visual-only) (section 29.5 on page 102)
- You can hear the instructions clearly, but they are not too loud
- That you can complete the Practice test successfully
- That you can hear the Practice test (Auditory-only)

If Test PTE works successfully, you should be ready for PTE testing.

31.2 The PTE interface

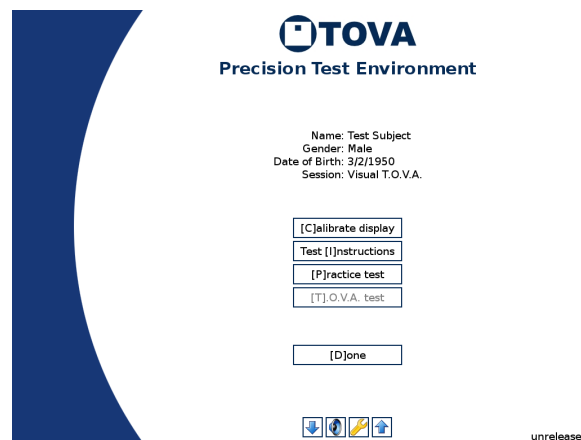


Figure 99: The Precision Test Environment

The PTE interface mimics the External A/V session interface.

At the top you will see the main subject/session information. You should be sure that this is correct, or you may be administering the wrong test!

Below that information is a column of five buttons, one for each of the five steps of administering a T.O.V.A. test. As you complete each step successfully, a green check will appear beside the button. If instead a yellow warning sign appears, that step did not finish successfully, and you may want to repeat it.

Calibrate Display - (*Visual testing only*) - Your first step in the PTE is to calibrate your display. You only have to calibrate one time and the data will be stored for future tests, so you can skip this step in the future, but **you must calibrate before you can administer a PTE test!** Thereafter, the T.O.V.A. will remember your PTE Calibration information, so the next time you test you won't have to re-calibrate. **Note:** If you install a new monitor or video card, however, it's important that you recalibrate the T.O.V.A. to that new hardware.

Note: This button only appears for visual testing. The auditory test does not require calibration.

Once calibration has completed successfully, a green check will appear next to the button. This indicates that the PTE has valid calibration data, and it should also appear automatically the next time you launch a PTE Visual Test session. If your monitor fails calibration, see section 29.5 on page 102.

Test Instructions - This will play the test instructions for your subject. See section 33 on page 126 for more information.

Practice Test - Presents the practice test for the subject. When the subject finishes the practice test, the results of the test will be displayed. If they look unusual, you may want to go back and review the Test Instructions again, to make sure they understood them. You can re-display these results by clicking the small button next to the '**Practice Test**' button.

T.O.V.A. Test - Administers the T.O.V.A. test to the subject. When the subject finishes the test, a summary of the results will be displayed; this is a good time to be sure that all the stimuli were administered, and there were an appropriate number of button presses. You can re-display this summary by clicking the small button next to the '**T.O.V.A. Test**' button.

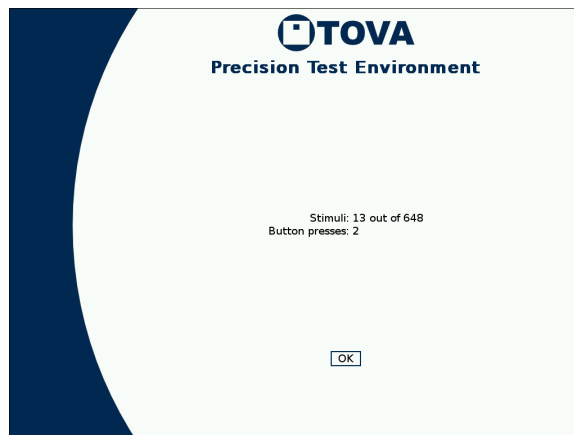


Figure 100: Results of an aborted PTE test

Done - Once you have successfully administered the T.O.V.A. test, you should see four green checks (or three for an Auditory test). Clicking '**Done**' will return you to your OS, where you can save the test results to the database.

Volume controls - At the bottom of the PTE menu are the volume controls. The up arrow (↑) raises the volume one step and the down arrow (↓) lowers it. Each time a brief audio clip will be played, and a number will be displayed. The middle button turns on or off the test instruction audio. **Note:** If you turn off the test instruction audio, you will have to manually step through the instructions using the right arrow key (→) on your keyboard.

Advanced - If you have problems with the T.O.V.A. PTE, T.O.V.A. tech support may ask you to access the new Advanced PTE menu. Click the **wrench button** at the bottom of the main PTE menu (or press **'A'**) to bring up the Advanced PTE menu.

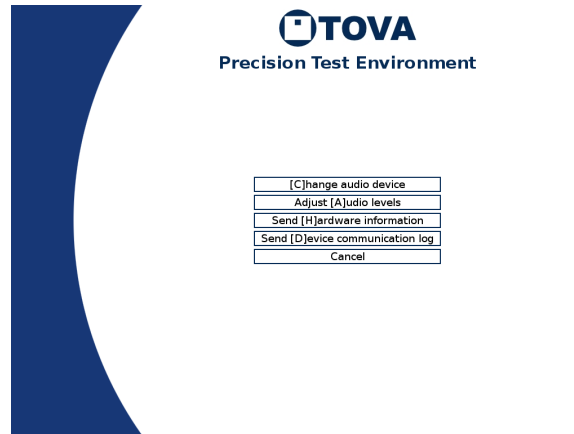


Figure 101: The Advanced PTE menu

[C]hange audio device - On some systems, the PTE may find more than one audio device available, even if you have no special devices plugged in. Click the right one, or try them all. Hit the **'1'** key for the first device, **'2'** for the second, etc. See section 29.7.1 on page 105 for more information.

[A]djust audio levels - The main PTE menu lets you adjust the volume up or down. If the volume is still wrong or the sound is distorted, you may need to make special adjustments here. See section 29.7.2 on page 106 for more information.

Send [H]ardware information - If you encounter problems, this will tell us all about how the PTE sees your system's hardware. See section 34.1 on page 132 for more information.

Send [D]evice communication log - This log can give us information about PTE problems that Hardware Information does not. See section 34.2 on page 133 for more information.

31.3 Special Keys

Note: Unless otherwise noted, special keys function only in the main PTE menu.

Button Keys - You can click on buttons to perform most functions, but you can also use your keyboard. Most buttons have a letter in brackets, such as [P] to start the practice test. Press that key to activate that button or hold the **'Ctrl'** key to activate the results button next to it (e.g., **Ctrl-'P'** to see the practice test results). You should also press **'Enter'** for the **'OK'** button and **'Esc'** for **'Cancel'**.

Volume Control - Press \uparrow or \downarrow to raise or lower the volume. Press the **'S'** key to disable/enable the test instruction audio (even while the instructions are playing).

Esc - The **'Esc'** key will interrupt just about anything that's happening. You can press **'Esc'** during the pre-test instructions, for instance, to skip the instructions and go straight to the test.

31.4 What is the PTE?

Note: This is a rather technical explanation, only for the geeky and curious.

The T.O.V.A. 9.0 Precision Test Environment PTE is a minimal Linux 3.0 system tuned for real-time response. It uses SDL, ALSA, the Speex audio codec, and other standard tools and libraries to present the T.O.V.A. test instructions and stimuli with guaranteed timing accuracy and precision, within a simplified interface.

Entering the PTE requires rebooting out of your normal operating system. If you're using the Microsoft Windows operating system, then each time you launch a PTE test session we use Grub4DOS (a universal boot loader that's a modified version of GNU GRUB) to boot the PTE and then ensure that Windows starts again on your next boot. On Windows, we add the PTE boot image as a boot option; when you reboot to the PTE we send a `/bootsequence` command to the Boot Configuration Data store, which temporarily changes your system's boot display order, causing it to boot the PTE by default.

For our MacOS X customers, and for Windows customers who can't boot the PTE automatically, we provide a bootable flash drive as an alternative. For more information about using the T.O.V.A. 9.0 flash drive, section [31.5.5](#) on page [123](#).

31.5 Using a Boot CD

Your T.O.V.A. CD not only allows you to install the T.O.V.A. and our fine manuals, it also acts as a boot CD. A boot CD is like the boot floppies of yesteryear; put the CD in your CD (or DVD) drive, restart your computer, and then your computer boots (starts up from) the CD instead of from your hard drive.

Why would you ever need this?

- You are using a MacBook or other Apple computer with the PTE.
- You are using a Windows notebook that has difficulty booting the PTE automatically (it has an encrypted hard drive, for instance).

Note: Some systems do not have a CD drive—the T.O.V.A. flash drive is available for these systems to boot the PTE.

31.5.1 Using a T.O.V.A. CD to Boot the PTE

1. Insert the T.O.V.A. CD into the CD drive.
2. Run the T.O.V.A.
3. Start a new session (see section [18.4](#) on page [35](#) for details).
4. At the bottom of the **'New Test Session'** window, verify that the **'Session Launch'** instructions tell you to **'Insert the boot CD'**. If not, choose **'Options'**, check the box **'Use Boot CD'**, and choose **'Close'** (to modify this setting for future sessions, choose **'Save as defaults'** instead).
5. Choose **'Launch'** to restart your computer.

After your system restarts, the T.O.V.A. Boot CD menu (Figure [102](#)) will appear. Wait for three seconds, and the PTE will automatically begin to load up.

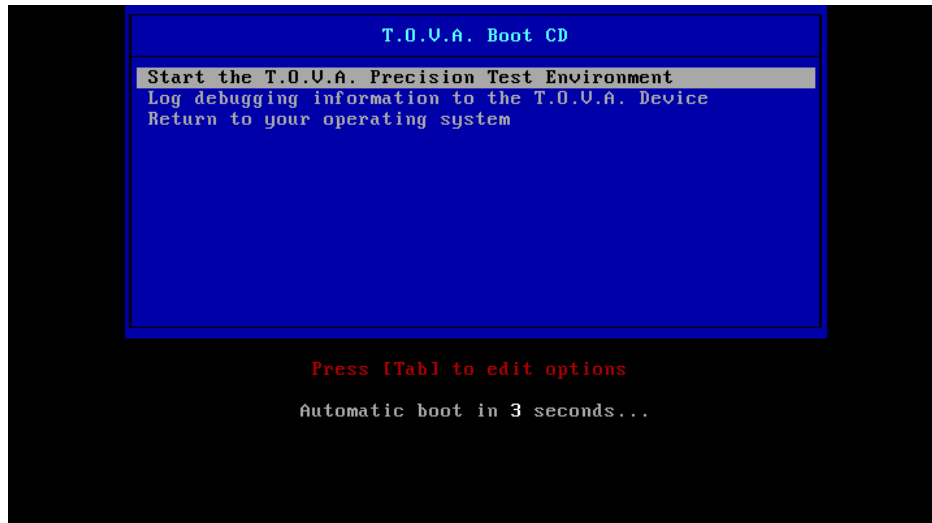


Figure 102: The PTE Boot CD menu appears for only three seconds

Note: When you are finished testing in the PTE, you may need to remove the T.O.V.A. CD or flash drive to boot back to Windows.

What should you do if you never see the T.O.V.A. Boot CD menu and your system boots instead back to your OS? You have a couple of options, depending on your OS:

- First, double-check that you actually inserted either a T.O.V.A. CD or flash drive (not both).
- Use the boot device menu available on most systems (section 31.5.2 on page 115).
- (*Mac only*) Simply hold down ‘C’ while rebooting to boot the CD.
- (*Windows only*) Change the system’s boot order priority in the BIOS (section 31.5.3 on page 117).

If you see the T.O.V.A. Boot CD menu but you never get past the screen in Figure 102, the PTE may be incompatible with your system’s video configuration. Please boot the CD again and choose “Log debugging information to the T.O.V.A. Device”. When this has finished, reboot your system back to your OS. The T.O.V.A. will start up and ask to send your information to T.O.V.A. technical support. If you say yes, this will tell us what kind of hardware you have and what problems may be occurring with it, so that we may fix the PTE to work for systems like yours in the future.

31.5.2 Choosing a One-Time Boot Device

Using your system’s boot device menu is similar to accessing your system’s BIOS, except the boot device menu does not make any change to your system’s settings. The upshot is that you will need to bring up this menu every time you boot to the PTE, but because you’re choosing a “one-time” boot option, you won’t have to remove the T.O.V.A. CD or flash drive to boot back to your OS.

The general steps are these:

1. Insert a T.O.V.A. CD or flash drive.
2. Launch a T.O.V.A. PTE session (section 18.5 on page 39). Your system will reboot automatically unless ‘Reboot later’ is selected in the launch options (section 18.4.3 on page 37).

3. Trigger your system's boot device menu.
4. Select the T.O.V.A. boot device.

Let's explore these last two steps in detail.

31.5.2.1 Triggering the Boot Device Menu

When you launch a PTE session, pre-2015 Mac systems should always boot the T.O.V.A. CD or flash drive automatically. (This was a new feature in the T.O.V.A. 8.2.)

But if that fails, Mac users can simply hold down the **'Option'** key while rebooting to bring up the boot device menu. The device may show up in the list as "Windows" due to how the volume is formatted.

Many Windows PCs use a similar method: Hold down the **'F12'** or **'Delete'** key while rebooting and the boot device menu will appear.

However, the **trigger key** that you use for this varies between manufacturers and models. When your system first powers on, and it shows the manufacturer's logo, watch for a clue such as "Enter to choose a boot device" or "Esc for boot menu". If that message does not appear, the trigger key might be any of the following: 'Delete', 'Esc', 'F1', 'F2', 'F10', or 'F12'.

If holding the key doesn't work, you may instead need to hit the trigger key at just the right moment, usually right when the manufacturer's logo first appears (e.g. "Dell", "HP", "Compaq", etc.). When Windows has finished shutting down, the screen will go black or display a message like "no signal". At that moment, start hitting the trigger key repeatedly.

If you see "Windows Boot Manager", you're too late—you'll need to reboot your system and try again. If you see "Starting Windows", wait for Windows to load and the T.O.V.A. to start up again, and then relaunch your T.O.V.A. session. If none of the tips above work—and you may have to try them more than once to be sure—you might need to ask your company or organization's system support or contact your system's manufacturer for more information on triggering your system's boot device menu.

And you can always contact T.O.V.A. technical support (section 27 on page 80) for assistance; we'll help in any way we can.

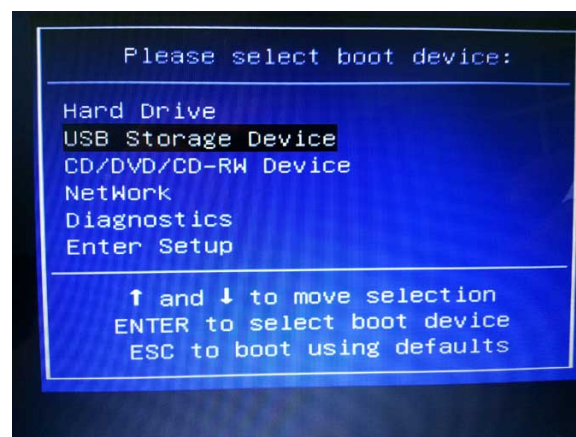


Figure 103: For the T.O.V.A. CD, look for "CD" or "DVD"

31.5.2.2 Selecting the T.O.V.A. Boot Device

Once the boot device menu appears (e.g., Figure 103 or Figure 104), stop hitting or holding the trigger key. If you are booting the T.O.V.A. CD, highlight your CD/DVD drive in the list (look for 'CD' or 'DVD' in the name), and press 'Enter'. Likewise, if you are booting the T.O.V.A. flash drive, look for 'USB' or 'Flash' in the name.

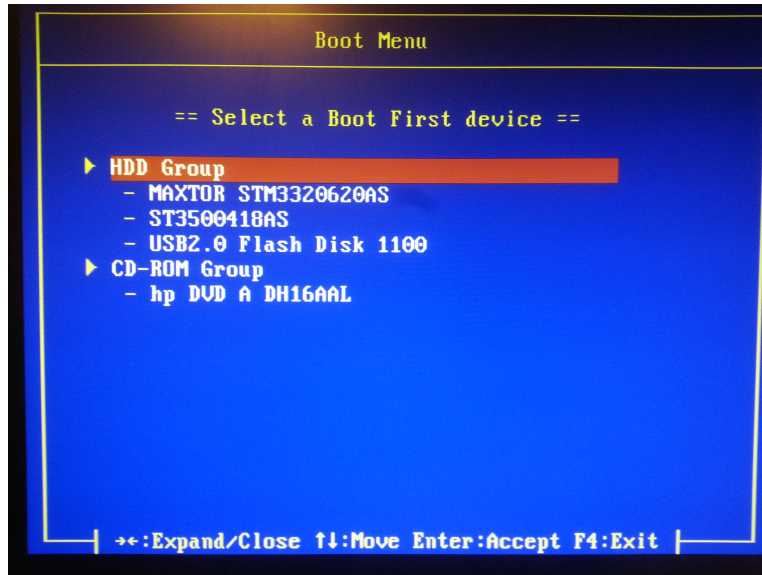


Figure 104: For the T.O.V.A. flash drive, look for 'USB' or 'Flash'

31.5.3 Modifying Boot Order in the PC BIOS

Note: *This section is for Windows PC users.*

If you insert a T.O.V.A. CD into your CD-ROM drive and restart your system, the system should boot to the CD, meaning that it will try to load the T.O.V.A. Precision Test Environment instead of running Windows. If it does not, however, ***don't panic!*** You probably just have a different boot configuration. We can probably change your system so that it will try to boot to the CD before the hard drive. It just means we're going to have to change your BIOS settings. Okay, you can panic now.

Just kidding. The truth is that configuring your BIOS is pretty easy. Telling you how to configure your BIOS is virtually impossible. This is because almost every system does it differently, and only some of them give you helpful clues along the way. You may have to reboot your system two or three times before we figure it out. But we *will* figure it out.

It may help you in performing this task to imagine that you are a BIOS ninja. It sounds ridiculous, and it is. But to change your boot order, we will need to strike quickly and slip in and out without disturbing the environment, and most of all, adapt to the unexpected. That sounds like a ninja to us, but if it sounds like a platypus to you, hey, it's your imagination.

31.5.3.1 Reboot Your System

This is the easy step, because you'll always have to do this first. Unless your computer is currently off, in which case step one will be **Turn your system on** instead.

31.5.3.2 Getting to the BIOS

When you first reboot your system, you will likely see some kind of logo, and some information about your RAM or processor you probably usually ignore. You will hopefully also see something like "Press F10 to enter Setup" or "Hit DEL for BIOS". If you don't see it the first time, reboot your system and look again.

There is always a chance that there will not be any such helpful message. One of our test systems, for instance, does not. As it turns out, the key to press is 'F1', but we've seen quite a few others. If you have no message, try the following:

'Delete', 'Esc', 'F1', 'F2', 'F10', 'F12'

Here's where you're gonna need those ninja-like reflexes. Whichever key it turns out to be, it will need to be pressed while that initial splash screen appears, which could be as long as twenty seconds or as short as one. Furthermore, even if you press the right key, it may not immediately respond. If none of those work, and you may have to try them more than once, you might need to contact your company or organizational system support, the tech support that came with your system, or you can always try T.O.V.A. technical support.

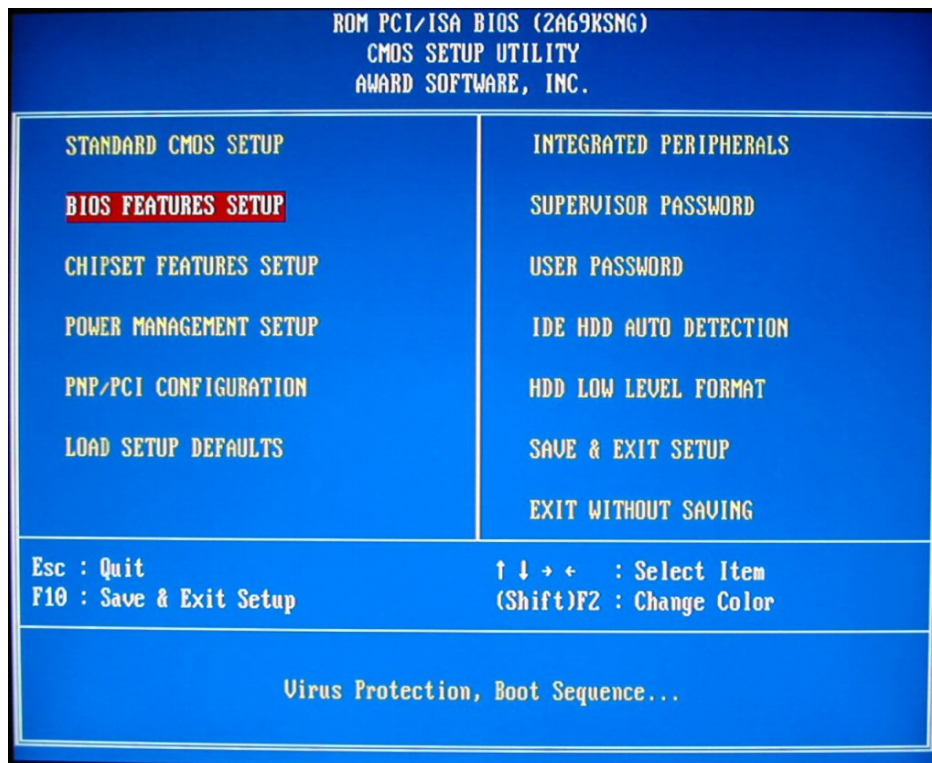


Figure 105: Award BIOS start screen, with the cursor on the correct section.

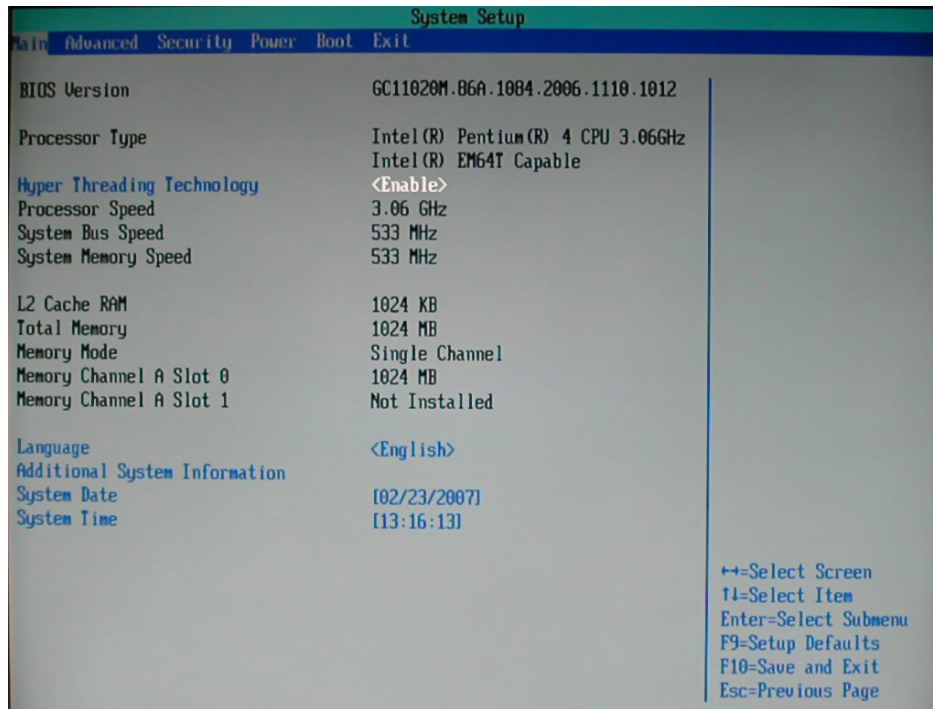


Figure 106: Intel BIOS start screen. You'll want the **'Boot'** tab (at the top).

31.5.3.3 Using the BIOS Utility

When you've successfully entered the BIOS Configuration program, you will most likely see a DOS-style application, without windows or a fancy GUI. Use your ninja powers of perception to examine your environment. There will probably be some basic directions somewhere on the screen telling you how to navigate the program. As with the last step, no two BIOS utilities are alike, so we can't give you any specific instructions.

We can tell you roughly what you are looking for. You want to change the **'Boot order'** or **'Boot configuration'**. Essentially, have your keen ninja senses open for the word "Boot". You will probably not find it in the top level menu, so don't be surprised if you have to check two or even three levels deep for the setting.

Note: You should be careful not to change anything else while you're here, but every BIOS utility we have ever seen has a way to exit the BIOS without saving changes. If your ninja skills fail you, and you think you might have unintentionally changed a setting, *Don't panic!* Slowly, carefully follow the instructions on the screen to exit the BIOS without saving. Then reboot your system and try again.

31.5.3.4 Changing the Boot Order

Eventually, hopefully, you will find a setting for something like **'Boot Order'**, **'Boot Priority'**, or **'Boot Sequence'**. This is your target! Again, we wish we could tell you specifically how to change this setting, but we can tell you what you are trying to do.

Every time your system reboots, it checks a sequence of devices, one after the other, looking for an operating system. Once it finds that operating system, it stops looking. Among these device may be: Floppy drive, more than one hard disk drive (HDD), USB drive, CD and/or DVD drive, and more. What we want to do is change this sequence so that before it checks your hard drive, it will check your CD drive. How all those

other devices get prioritized is up to you.

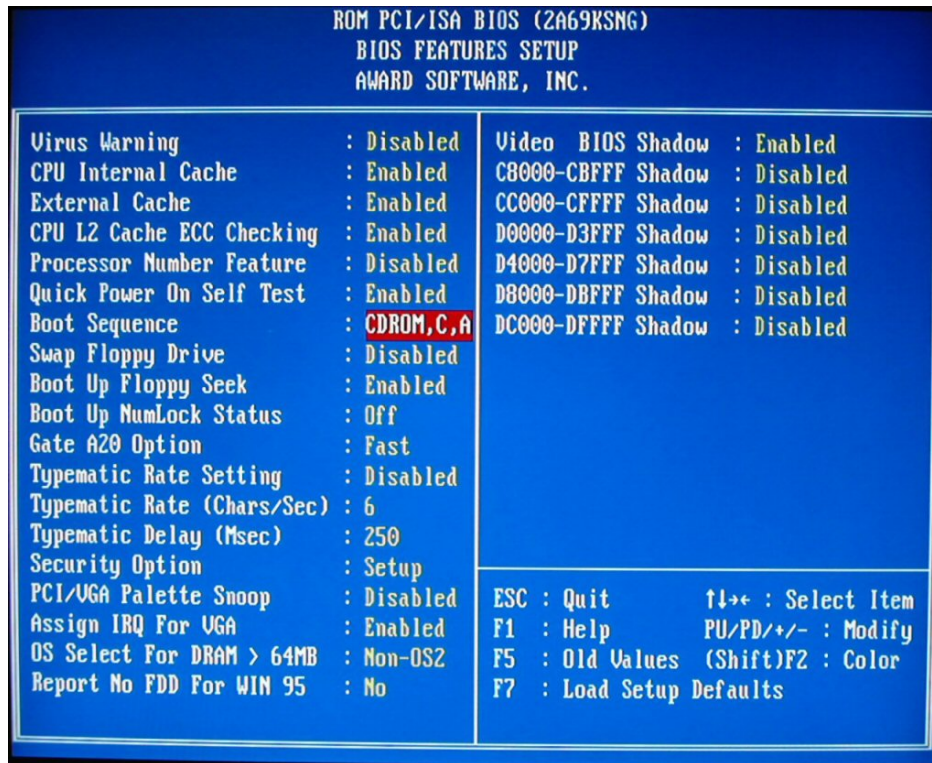


Figure 107: Award BIOS setup page, with the boot order entry highlighted.

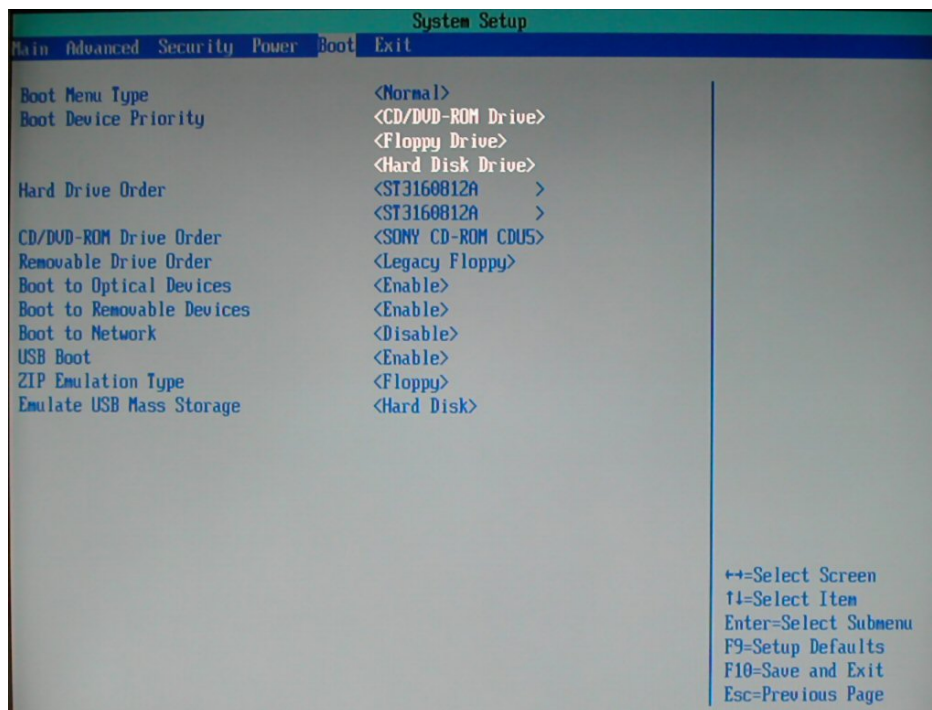


Figure 108: Intel BIOS boot screen, with the boot order entry highlighted.

31.5.3.5 Exiting the BIOS Utility

Now that we've changed our boot order, we need to slip out of here unseen, without accidentally changing anything else. Examine the directions carefully, looking for a key that will let you **'Save and Exit'** or **'Save Changes'**. You may be able to do this from this screen or you may have to return to the main menu. If you've changed the boot sequence and you haven't touched anything else, save your changes and exit.

Now reboot your system with the T.O.V.A. CD in the drive and try again. This time it should boot to the T.O.V.A. PTE. Congratulations! Your mission is complete, and your honor is intact!

If it didn't work, you may want to review the directions, as unhelpful as they are, and try again. Or you may want to call T.O.V.A. Ninja, er, we mean, technical support. Our highly-trained operators will be honored to serve you.

31.5.3.6 Problems Booting Windows

On a very few systems, we've found that giving the CD drive boot priority can cause the hard drive not to boot. The system checks for a CD and, if the CD is not there, assumes there's nothing else to boot. In this case, you will want to reverse your changes above and use the instructions in the next section (section 31.5.2 on page 115) for the boot device menu.

31.5.4 Burning/Updating a T.O.V.A. CD

Note: To update your flash drive, see section 31.5.6 on page 124.

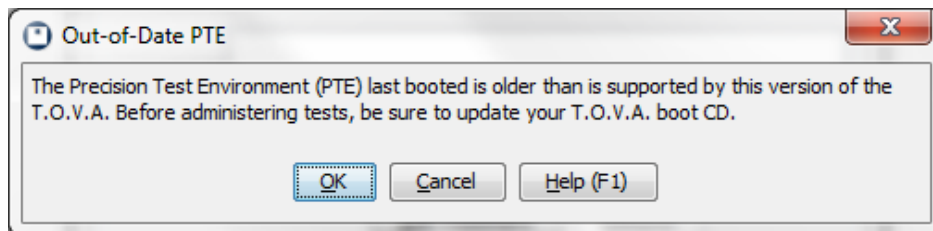


Figure 109: Keep your T.O.V.A. CD up-to-date

If you are using a CD as a boot CD, it is critical that you update it every time you update the T.O.V.A. so that you're using the latest version of the PTE. While we provide no automated way to do this on Windows, the T.O.V.A. 8 CD itself was a CD-RW and can be updated by most CD-RW drives and CD burning software. If you do not have a T.O.V.A. CD, you can burn the T.O.V.A. CD image to any blank CD-R.

31.5.4.1 'Update_CD' script for Macs

The T.O.V.A. 8.2 for Mac added a script for downloading and burning the latest CD image all in one step.

1. Insert the T.O.V.A. CD, a CD-RW, or blank CD-R.
2. In the **'TOVA'** folder of your **'Applications'** folder, open the **'Update_CD.command'** script.
3. A Terminal window will open, which will download the latest install CD image and burn it onto the CD you put in the drive. This will take several minutes, and the disk will eject when the process is

complete. If there is an error message, you should copy it and send it to us in a Tech Support Request. Otherwise, you can close the Terminal when the CD ejects.

The script will download the latest version of the CD image from our website and then burn it to the inserted CD. When it has finished, your CD is up-to-date, and you can use the CD to boot the PTE or reinstall that version of the TOVA software.

31.5.4.2 Downloading the new image

Downloading the latest install CD image is easy, but the image can be quite large, over 150 MB. **Note:** This can take awhile even on broadband connections.

1. Open a browser and go to http://files.tovacompany.com/images/9.0/tova_install_cd.iso.
2. Follow the prompts and download the latest .iso image to your desktop, Downloads folder, or some other known location.

Once you've downloaded the image, you need to burn it to a CD.

31.5.4.3 Burning a CD under Mac OS

The **'Update_CD'** script (section 31.5.4.1 on page 121) will automatically download the latest T.O.V.A. CD image and burn it your blank or rewriteable CD. You can also use the Disk Utility to manually burn a CD if you prefer to use a GUI.

1. Insert the T.O.V.A. boot CD (which is a CD-RW) or a blank CD-R/RW.
2. Open **'Disk Utility'**. The easiest way to find it is to type "Disk Utility" into Spotlight, the magnifying glass icon at the top right of your menu.
3. Click the **'Burn'** icon in the toolbar (or **'Burn...'** in the Images menu, or Command-B).
4. Find and select the file `tova_install_cd_<version>-g<nnnnnn>.iso` that you downloaded.
5. Click **'Burn'**.
6. In the next dialog, click **'Burn'**. (default options are OK: Verify burned data, and Eject disc)
7. If asked to erase the disc, click **'Erase'**.

31.5.4.4 Burning a CD under Windows

There is no standard way to burn a CD under Windows, so we are unable to provide thorough instructions. If you are uncomfortable with these directions, you may want to consult your tech support staff.

1. Insert the T.O.V.A. boot CD (which is a CD-RW) or a blank CD-R/RW into your CD burning drive. If any Autorun window pops up, close it.
2. Right-click on the downloaded ISO image.

3. Here's where it gets tough: In Windows 7, you may be able choose **'Burn disc image'** from this popup menu. This will open the image in the 'Windows Disc Image Burner', and you should be able to simply select **'Burn'**.

If that option is not available to you, choose to **'Open'** the .iso in your CD burning software. Because different systems have different burning software, we cannot guide you through this; you will need to navigate your own software to burn the .iso image to the CD. **Note:** You do not want to just 'add' or 'copy' the .iso file to the CD. You want to **burn the image to the disc**.

4. If warned about erasing the disc (Figure 110), choose **'Yes'** or **'OK'**.

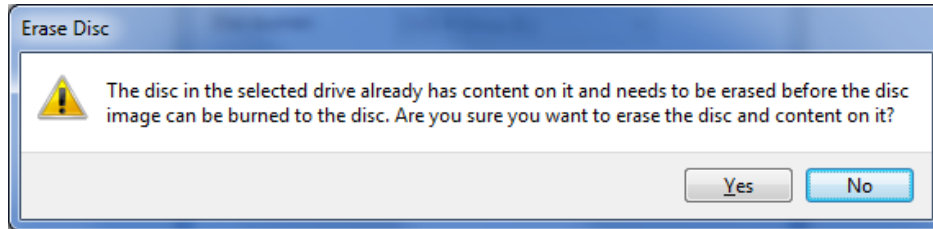


Figure 110: Erase warning—choose **'Yes'**

The burning process should take only a few minutes. When it's done, you'll have a fresh new T.O.V.A. CD with the latest PTE.

31.5.5 Using the T.O.V.A. flash drive

The T.O.V.A. 9.0 flash drive is included with your T.O.V.A. 9.0 kit. It's a USB stick that contains installers and documentation for the T.O.V.A. 9.0 and can be used for booting the PTE.

Some systems may already be configured to boot from a flash drive, some will need to be reconfigured, some will need special actions (pressing **'Esc'** or **'F12'**) at the boot screen, and a few systems simply will not do it.

If you do not have a T.O.V.A. flash drive, please contact T.O.V.A. customer service. If you have a T.O.V.A. flash drive, you can select it as a launch preference for booting the PTE:

1. Run the T.O.V.A. and choose **'Preferences'**.
2. Choose **'Session launch'**.
3. Select **'Precision Test Environment (PTE)** and **'Use flash drive'**.
4. Choose **'Save'**. The T.O.V.A. will now expect to boot the PTE using the T.O.V.A. flash drive.

Mac OS X 10.11 users will need to use the keyboard to select the T.O.V.A. flash drive. Hold the **'Option'** key after the startup chime when rebooting to bring up a menu of boot devices. Select the flash drive in the list. It may be labelled "Windows" due to how the drive is formatted.

If you have problems using the T.O.V.A. flash drive, contact T.O.V.A. technical support. We will do our best to help you get it working or offer alternatives.

31.5.6 Updating the T.O.V.A. 9.0 Flash Drive

If you are using the T.O.V.A. flash drive to boot the PTE, it is critical that it remain up-to-date, with a version of the PTE that matches the T.O.V.A. software. If you have a Windows PC, contact technical support for information on updating your T.O.V.A. flash drive or creating or ordering a new T.O.V.A. flash drive.

If you are using a Mac, the T.O.V.A. 8.2 for Mac added a script for downloading and burning the latest PTE image to your T.O.V.A. flash drive all in one step.

1. Plug in the T.O.V.A. flash drive. (For safety, this script will only work for USB Flash drives labeled 'TOVA9'.)
2. In the 'TOVA' folder of your 'Applications' folder, open the 'Update_Flash_Drive.command' script.
3. A Terminal window will open, which will download the latest PTE boot image and burn it onto the T.O.V.A. flash drive. This will take several minutes. The final step will ask for your password to authorize writing to our flash drive. Please type it at the "Password:" prompt; your typing is not shown on the screen for security. If there is an error message, you should copy it and send it to us in a Tech Support Request. Otherwise, you can close the Terminal when the script says, "Flash drive updated to PTE version..."

The script will download the latest version of the PTE boot image from our website and then burn it to the T.O.V.A. flash drive. **Warning:** to save download time, this is a different image than the writable Installer image that is shipped on the T.O.V.A. flash drive. The previous contents, including documentation and installers, will be erased. Please save any files you have written to the flash drive before running this script. When it has finished, you can use the T.O.V.A. flash drive to boot the latest PTE.

32 External Audio/Video (EAV) Setup

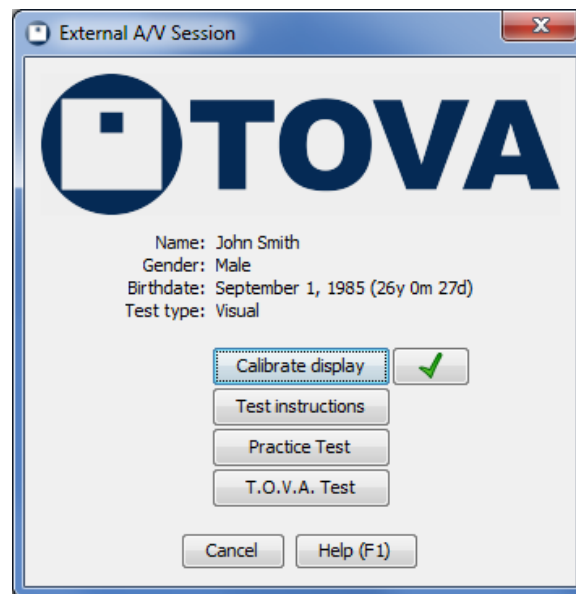


Figure 111: External A/V session

The T.O.V.A. 8 added a new kind of T.O.V.A. test session, the **External Audio/Video session**, that does **NOT** require rebooting your system. That's because instead of relying on your system clock, video, etc., the new T.O.V.A. hardware handles the timing itself.

What an External A/V session **DOES** require is a desktop system *or* a laptop with an external monitor (and speakers for the Auditory test). There must be an external monitor plugged into the T.O.V.A. USB device for T.O.V.A. testing without rebooting to the PTE.

The T.O.V.A. USB device is installed between your computer and your monitor and speakers. When connected correctly, this will have no effect on how you use your computer: Video and audio simply pass through the T.O.V.A. USB device. When you start the T.O.V.A. test, however, the T.O.V.A. USB device temporarily interrupts your audio and video, instead displaying the T.O.V.A. test. Once the test is completed (or interrupted), your audio and video pass through as normal.

Note: Please make sure to disable, at least temporarily, any Sleep/Standby/Hibernate power settings for your system. Because External A/V testing does not use the keyboard or mouse, some systems will shutdown due to inactivity. See section 34.8 on page 140 for more information.

We manage the video (or audio) and microswitch, removed from your operating system's unpredictable delays, so you get the same reliable timing precision and accuracy we have been providing for decades.

If you cannot provide the EAV test's hardware requirements, you will want to use the PTE test instead (section 31 on page 110).

If you have set up your hardware for EAV testing, you can check that it's working and connected correctly. Run the T.O.V.A. and go to **'Help'**, **'Check T.O.V.A. Hardware'**, **'Test your hardware setup'**. This wizard will walk you through verifying all of your connections.

Note: If the first page of the Hardware Setup wizard talks about the "PTE" instead of the "EAV", you need to change your launch settings. Run the T.O.V.A. and go to **'Preferences'**, **'Session launch'**, select **'External Audio/Video (EAV)'**, and click **'Save'**, then try the Hardware Setup wizard again.

33 Test Instructions



Figure 112: Test Instructions

The T.O.V.A. 8 introduced new multimedia test instructions, with text to read and audible instructions to listen to. There are even pictures to illustrate how the test will appear and how to hold the microswitch.

The T.O.V.A. 8.2 added several new languages, so that you can give your test subject instructions in their own language: Danish, English, French, German, Hebrew, Korean, Spanish, and Swedish are currently available. We hope to add more languages in the future—contact T.O.V.A. customer service to let us know which you'd like to see instructions in (section 27 on page 80).

As with previous versions, the T.O.V.A. tester may also choose to give test instructions manually. The sections to follow will tell you how to adjust and control the multimedia test instructions to suit your needs and the needs of your subjects.

33.1 Language

For information on changing the language of your T.O.V.A. Test Instructions, see section 18.4.2 on page 36.

33.2 Controls

By default, the T.O.V.A. test instructions are automatic, but to better control the pace of instructions, you may want to turn off the sound and read the instructions aloud. While the instructions are playing, you can press **'S'** to turn off and on the sound, the **space bar** to pause the instructions, and the **left and right arrow keys** to go forward or backward. Press **'Esc'** to skip the instructions completely.

Note: If the instruction audio is turned off or unavailable (missing or unrecognized sound card, for instance), the instructions will not proceed automatically. You must skip through the instructions manually with the **right arrow key** or **space bar**.

33.3 Reading the instructions aloud

The following are instructions you may read aloud to the subject. The wording assumes that you are stepping through the multimedia instruction pages. You may want to adapt them to your needs and those of your subject, particularly if you're only using the book. The images to follow can help you. If you would like these instructions in a different language, please contact T.O.V.A. customer service (section [27](#) on page [80](#)).

33.3.1 Visual practice test instructions

Read the following:

Welcome to the T.O.V.A. test.

Hold the button in your writing hand with your thumb resting lightly on top of the button, like this. (*indicate Figure 113*) When you press the button, let up as soon as you hear the click (*click the button*); you don't have to hold it down.



Figure 113: How to hold the microswitch

This test measures your ability to pay attention. Two different squares will flash on the screen. One square has a small black square near the top, like this (*indicate Figure 114*), and the other has the small square near the bottom, like this (*indicate Figure 114*). The squares will flash on the screen, like this: (*Multimedia instructions show a brief animation of the test.*)

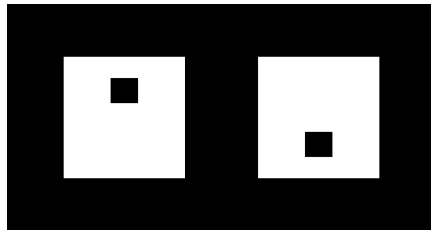


Figure 114: Visual Test Target/Nontarget stimuli

Press the button as fast as you can every time you see a square with the small square near the top and don't press the button when the small square is near the bottom. Once again, press the button only when you see the small square near the top.

Don't guess which square will flash; make sure you see it before you press the button. Try to balance speed and accuracy: press the button as fast as you can, but also try not to make any mistakes. If you do make a mistake, don't worry: anyone can make a mistake on this test.

Let's review:

- Press the button as fast as you can, but only when you see the small square near the top.
- When you press the button, only press it once and don't hold it down. Just "click" the button.
- Finally, don't go too fast or try to guess; take enough time to see which square it is.

You are about to take a short practice test. After a countdown, the squares will begin to flash. Remember, be as fast and accurate as you can.

33.3.2 Visual Test instructions

For subjects over 5.5 years old, read the following:

You are about to take the T.O.V.A. test, which will take about 20 minutes.

You might notice that your eyes get a little tired. Even so, try and do the best job you can. Remember to press the button as quickly as you can, but only when the small square is near the top.

For subjects 4 to 5.5 years old, read the following instead:

You are about to take the T.O.V.A. test, which will take about 10 minutes.

You might notice that your eyes get a little tired. Even so, try and do the best job you can. Remember to press the button as quickly as you can, but only when the small square is near the top.

33.3.3 Auditory Test instructions

Note: Even when the sound is turned off, the multimedia test instructions will demonstrate the auditory stimuli audibly.

Read the following:

Welcome to the T.O.V.A. test.

Hold the button in your writing hand with your thumb resting lightly on top of the button, like this. (*indicate*) When you press the button, let up as soon as you hear the click (*click the button*); you don't have to hold it down.



Figure 115: How to hold the microswitch

This test measures your ability to pay attention. Two different tones will play on the speakers. One tone is a high note, and the other is a low note. The tones will play every few seconds.

Press the button as fast as you can every time you see hear the high note and don't press the button when you hear the low note. Once again, press the button only when you hear the high note.

Don't guess which tone will play; make sure you hear it before you press the button. Try to balance speed and accuracy: press the button as fast as you can, but also try not to make any mistakes. If you do make a mistake, don't worry: anyone can make a mistake on this test.

Let's review:

- Press the button as fast as you can, but only when you hear the high tone.
- When you press the button, only press it once and don't hold it down. Just "click" the button.
- Finally, don't go too fast or try to guess; take enough time to decide which tone it is.

You are about to take a short practice test. After a countdown, the tones will begin to play. Remember, be as fast and accurate as you can.

33.3.4 Auditory Test instructions

For subjects over 5.5 years old, read the following:

You are about to take the T.O.V.A. test, which will take about 20 minutes.

You might notice that you get a little tired. Even so, try and do the best job you can. Remember to press the button as quickly as you can, but only when hear the high tone.

For subjects 4 to 5.5 years old, read the following instead:

You are about to take the T.O.V.A. test, which will take about 10 minutes.

You might notice that you get a little tired. Even so, try and do the best job you can. Remember to press the button as quickly as you can, but only when hear the high tone.

34 How-To

This reference section gives simple instructions on technical procedures.

34.1 Collecting hardware information from the PTE

If you encounter problems using the T.O.V.A. PTE, we may ask you to send us a Hardware Information log from the PTE. This will send us information about how the PTE sees your system hardware and may enable us to improve the next version of the PTE.

Note: Generating a PTE log will overwrite any test data on the T.O.V.A. USB device.

34.1.1 ...Starting from your OS

If you're not in the PTE at the moment (i.e., you're in Windows or MacOS, and you can run other applications, browse the web, etc.), sending us hardware information is easy!

1. Quit all of your open applications, saving your work as necessary.
2. Attach your T.O.V.A. USB device and run the T.O.V.A. If prompted, make sure to save any session data still on the T.O.V.A. USB device.
3. Choose **'Help'** and then **'Collect hardware information from PTE'**.
4. Here you have to answer a question: *Are you able to boot to the PTE menu?*

If you are, just boot to the PTE as usual. Choose **'OK'**, and your computer will begin restarting. It will collect the information and return to your OS.

If you are not able to boot the PTE, use the T.O.V.A. flash drive to send us a log:

- (a) If **'Use flash drive'** is not already checked, please check it.
- (b) Insert the T.O.V.A. flash drive that came with your T.O.V.A. kit.
- (c) Choose **'OK'**, and your computer will begin restarting.
- (d) **(Mac-only:)** After the power light goes out, press and hold the **'C'** key until the CD begins to boot.
- (e) Your computer *should* restart from the flash drive, and you should see a blue menu that says **'T.O.V.A. Boot Media'**.
Note: If your computer does not boot from the flash drive, then you may need to reconfigure your computer; see section 31.5.3 on page 117 for more information.
- (f) At the blue screen, you have three seconds to use your up and down arrow keys to select the **'Log debugging information to the T.O.V.A. Device'** menu item. If you don't get to it in three seconds, you can reboot your computer to try again.
- (g) Hit **'Enter'**, and the PTE will log your computer's hardware information to the T.O.V.A. USB device. When it's done, your computer will restart.
- (h) Eject the CD after your computer restarts. If you get back to the blue menu, then choose 'Return to your operating system'.

5. Your computer will start back up and, once you're logged in, automatically run the T.O.V.A. Note that it may take a few minutes to start up, depending on your computer.

6. Once the T.O.V.A. has started up, a dialog will appear saying, "There is important technical information from the PTE...". Choose '**Yes**'.
7. Enter any necessary information into the technical support request window and choose '**Send**'.

The information you send may help us resolve the issue for you and likely others as well. Thank you for helping us improve the T.O.V.A.!

34.1.2 ...Starting from the PTE

If you're already in the PTE and encountering problems, sending us hardware information is still pretty easy:

Note: Generating a PTE log will overwrite any preference changes and test data on the T.O.V.A. USB device.

1. Click the **wrench button** at the bottom of the main PTE menu (or press '**A**'). This will bring up the advanced PTE menu (Figure 116).
2. From the menu, choose '**Send [H]ardware information**'. The screen will change to a black screen with lots of white techno-babble. When it's done, your computer will restart.

NOTE: If you are using the T.O.V.A. boot CD, eject it now.

3. Your computer will start back up and, once you're logged in, automatically run the T.O.V.A. Note that it may take a few minutes to start up, depending on your computer.
4. Once the T.O.V.A. has started up, a dialog will appear saying, "There is important technical information from the PTE...". Choose '**Yes**'.
5. Enter any necessary information into the technical support request window and choose '**Send**'.

34.2 Sending a device communication log

If we believe there is a specific problem involving communication with the T.O.V.A. USB device, we may direct you to send us a **Device communication log**. The purpose of this log is to record the nitty-gritty details of interactions between the T.O.V.A. USB device and the PTE.

Note: Generating a PTE log will overwrite any preference changes and test data on the T.O.V.A. USB device.

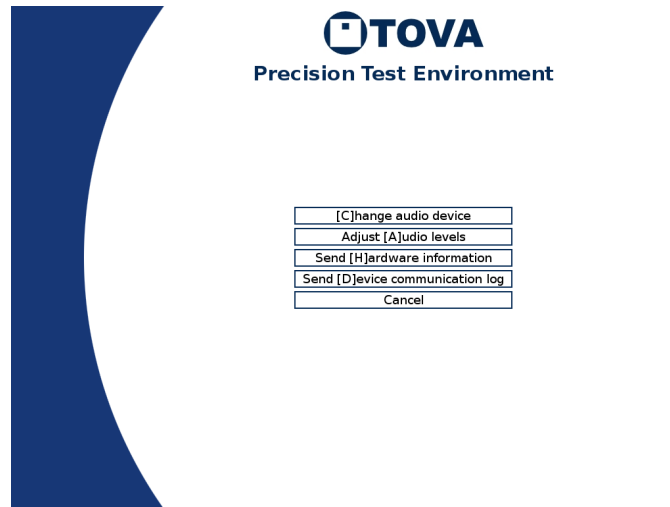


Figure 116: The advanced PTE menu

1. Launch a PTE session as you normally would (this will not cost you a test credit). After your system finishes rebooting, the PTE menu should appear.
2. Since we need a log of interactions during specific tasks, you should perform those tasks now. For instance, if this is a problem with calibration, do a calibration; if it happens during a practice test, run a practice test; etc. When you have finished the task, press **'Esc'** to return to the PTE menu.
3. Click the **wrench button** at the bottom of the main PTE menu (or press **'A'**) and then choose **'Send [D]evice communication log'**. The screen will change to a black screen with lots of white techno-babble. When it's done, your computer will restart.

NOTE: If you are using the boot CD, eject it now.

4. Your computer will start back up and, once you're logged in, automatically run the T.O.V.A. Note that it may take a few minutes to start up, depending on your computer.
5. Once the T.O.V.A. has started up, a dialog will appear saying, "There is important technical information from the PTE...". Choose **'Yes'**.
6. Enter any necessary information into the technical support request window and choose **'Send'**.

The information you send may help us resolve the issue for you and likely others as well. Thank you for helping us improve the T.O.V.A.!

34.3 Manually updating the T.O.V.A.

With the T.O.V.A. 9's Automatic Update, we've tried to make keeping your T.O.V.A. up-to-date with the latest features and fixes easier than ever. However, sometimes automatic update will fail (Did you really close *all* your programs before updating?), and in this case you may want to update your T.O.V.A. manually.

A manual update works just as well as the automatic one, with one caveat: You must have access to Administrator permissions. Here's how you do it:

1. Find the latest update. Go to <http://files.tovacompany.com/installers/release/current.cgi>.

This will give you the **installer** (a **‘.pkg’** or **‘.exe’** file), and you should download it to somewhere you can find it.

Note: The installer is large (about 125 MB at the moment). If you have problems downloading it, you might need to find a system with a better internet connection. We've seen problems with some Wi-Fi connections, though most work fine. You can always download the installer from a more reliable connection to a USB flash drive and take it to the other machine. If you do not have a flash drive available for this purpose, you can request one from The TOVA Company.

2. Exit the T.O.V.A. and any other applications that are running (You should do this before installing any application, really).
3. Run the installer. Just like the first time you installed the T.O.V.A., it may confirm/request Admin permissions, ask you to accept the license, etc.
4. Once finished, you may run the T.O.V.A.

That's it! The good thing about a manual update is that it may make apparent what error was causing the update to fail before, and perhaps even let you correct it.

34.4 Moving a T.O.V.A. database

Note: We recommend **ALWAYS** backing up your T.O.V.A. database (section 21 on page 54) before attempting any procedure such as this.

Moving your database is pretty easy in the T.O.V.A. 9.0. First, *make sure you've backed up your T.O.V.A. database* (section 21 on page 54). Then simply change your database path, and the T.O.V.A. will offer to move the database for you. Here's how it works:

- If you browse to select a database path, `\data` will be added at the end. That `\data` folder (and the files and folders inside it) is your database. If you type your path into the **‘Path’** field, the `\data` folder is not added; your database path will be as you typed it.
- When you choose a new database path and then click **‘Save’**, the T.O.V.A. will check if there is a database there already. If there is, it will connect to the new database and shut down the old one.
- If there is no database at the new path you've chosen, when you click **‘Save’** you'll be given the option to move the previous selected database to the new location. Make sure that the old path and the new path are correct, so that the correct database is moved to the correct location. The database will be copied to the new location and the database at the old location *will be deleted*. Therefore, this should **NOT** be used as any kind of backup technique.
- If there is no database at the new path, and you choose not to move the database, a new database will be created at the new location, containing one example subject.
- If the path does not contain a database, make sure that it is fully accessible and either empty (containing no files or subfolders) or non-existent (the path will be created when it creates the database).
- The T.O.V.A. 9.0 does not support network share databases or simultaneous access by multiple users at this time! **Storing data on a server or network share will most likely result in lost data!** You should store your data locally on the hard drive, and while multiple user logins on the same computer may use the T.O.V.A., each must close the application before the next may open it.

Note: To move your database to a different computer, you can simply back up your database (section 21 on page 54), copy the backup file to the new computer, and import it (section 22 on page 56).

You can still always move your database as you previously could in the T.O.V.A. This includes these main steps:

1. Exit the T.O.V.A. 9.0.
2. Discover the current location of your database.
3. Move the `\data` folder to the new location
4. Point the T.O.V.A. to the new location of the database.

If you're not comfortable with these steps, contact T.O.V.A. technical support for assistance. We are happy to help.

34.4.1 Notes on choosing a database path

You can choose a different location to store your database (see section 25.4 on page 65 above). Click '**Change path**' to select a new database location, or you can type the path into the selected '**Path**' field. There are a few things to remember when changing your database path:

- If you are using a '**Separate**' database (section 25.4 on page 65), there will be a separate database for each user on the system. If moving to a different computer, each of these user's databases (if any) may need to be moved.
- If your computer is shared by multiple users, make sure that all of the users can access the new path to the database.
- Do **NOT** move your database to a shared or network drive. The T.O.V.A. database must be stored locally—moving it elsewhere will likely result in data loss.

Note: If your computer is shared by multiple users, make sure the new path to the database has the correct file/folder permissions.

34.5 Database fails to open

There are a few different reasons why a database may fail to open:

WARNING! Storing data on a server or network share will most likely result in lost data! Many of the problems below can be caused by attempting to share a T.O.V.A. database over a network. This is **NOT** supported and will inevitably cause problems.

The T.O.V.A. database is locked by another user. While you may share a T.O.V.A. database between multiple users on a system, the T.O.V.A. application cannot be run by multiple users simultaneously. User 1 and User 2 may both run the T.O.V.A. application on the same PC, and they may either share a database or each have their own database (section 25.4 on page 65), but User 1 *must* exit the T.O.V.A. application completely before User 2 may run it. The T.O.V.A. 9.0 does not support simultaneous access by multiple users at this time.

The database path is not valid. It may include characters that your operating system doesn't allow for path names. The path may be to a drive that no longer exists or is unavailable.

You may not have full access to the T.O.V.A. database. The T.O.V.A. database is a folder containing many other files and subfolders. Any user of the T.O.V.A. will need full access to all of those files and folders, even if they don't intend to make changes. It may be that you have logged in as a different user than before, or that the permissions on the database files or folders have been changed. Examine the permissions on your T.O.V.A. database path, contact your IT department to correct the problem, or contact T.O.V.A. technical support for assistance (section 27 on page 80).

Your database fails to upgrade after updating to 8.2. This can be caused by minor database corruption—contact T.O.V.A. technical support for assistance (section 27 on page 80).

The T.O.V.A. database may have become corrupt. Because there are so many files and folders in the T.O.V.A. database, it is possible for problems to occur: a system might shut down unexpectedly or your system's hard drive glitches or fails. The database automatically corrects many problems, but some issues that cannot be fixed automatically. **Note:** Serious database corruption can be caused if you locate your T.O.V.A. database on a network server or shared drive.

The T.O.V.A. 9.0 has built-in automatic backups (section 25.5 on page 66), though we recommend you also perform your own system backups to a secure location. If you have full access to the database path and the T.O.V.A. database still fails to open, please contact T.O.V.A. technical support (section 27 on page 80). We can often help users recover some or all of their data.

34.5.1 Moving the database aside

If your T.O.V.A. database cannot be opened, the T.O.V.A. may offer to move the non-working database aside. If successful, the T.O.V.A. can then create a new, empty database where the former database was. That way, you can test new subjects, then contact The TOVA Company at a convenient time to recover your previous data, if possible. The original database that could not be opened will be preserved, renamed, in the same database folder.

34.6 Reassigning a session to a different subject

Note: It's important that you make sure you're administering the T.O.V.A. test for the correct subject, as children below the age of five-and-a-half do not take the same test as older subjects. If you administer the wrong test to your subject, the T.O.V.A. will not be able to properly interpret it.

Note: Do not try to reassign the test by editing the subject! If the test is assigned to Joe and it should have been assigned to Mary, editing the subject information will only leave you with two identical 'Marys'.

You can reassign tests that have been administered or assigned to the wrong subject, but you should do so cautiously. Do the following:

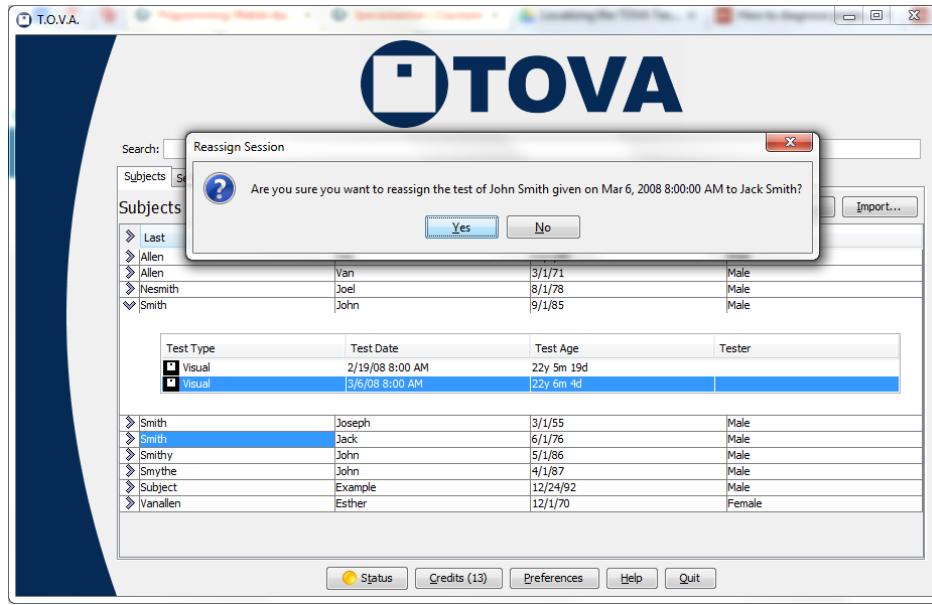


Figure 117: Click and drag the session

1. If you have too many subjects to see both subjects at the same time, enter search terms that include both subjects and as few others as possible. For instance, you could use `sub:24 OR sub:17` to view only those two subject numbers. See section 35.2 on page 142 for more search options.
2. Click the **'Subjects'** tab, if it's not already selected.
3. Click the '>' symbol, in the left-most column, to expand the subject that contains the test to be moved.
4. Click the test to move and, holding the left mouse button down, drag the test to the target subject. Release the mouse button.
5. Click **'Yes'** to confirm that you want to reassign the test.

34.7 Modifying Admin Preferences

There are certain T.O.V.A. preferences that require administrative privileges to access. If you are unable to access Admin preferences in the T.O.V.A. 9.0, you should run **T.O.V.A. Admin Settings** with administrative privileges.

Note: We do not recommend configuring the main T.O.V.A. 9.0 application to always run with elevated permissions.

Note: Some preferences that *can* be modified in the T.O.V.A. application are *not* accessible in **T.O.V.A. Admin settings**.

34.7.1 On Windows

Windows has a security feature called User Account Control. Even if you are an Admin user, you will usually run applications *without* Admin privileges. However, as long as you have access to an Administrator account, you can still modify T.O.V.A. Admin preferences.

The easiest way is from the T.O.V.A.'s Preferences window, which got a new button in v8.2, '**Change Admin settings**'.

1. From the Preferences window, click '**Change Admin settings**'. The Preferences window will close.
2. When prompted, agree to allow this program to make changes on your computer (Figure 118).
3. T.O.V.A. Admin Settings will open, allowing you to modify the Admin settings. When you've finished, click '**Save**'.

You can also still use the separate T.O.V.A. Admin Settings application:

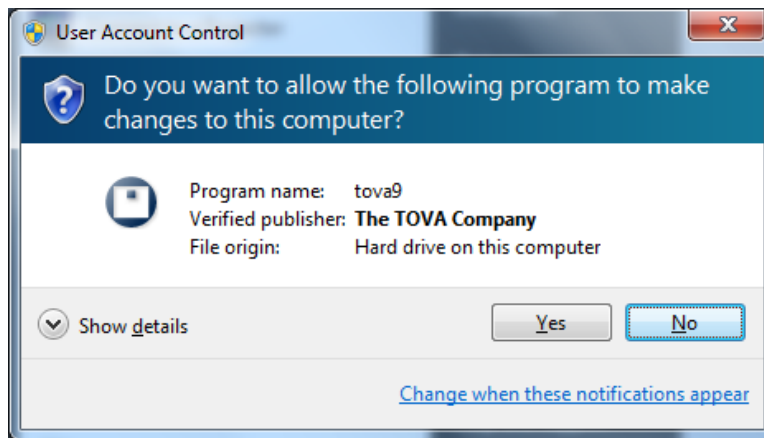


Figure 118: UAC message on Windows 7

1. Quit the T.O.V.A. application.
2. Go to the '**T.O.V.A. 9**' group in your Start menu.
3. Click on '**T.O.V.A. Admin Settings**'.
4. When prompted, agree to allow this program to make changes on your computer (Figure 118).
5. T.O.V.A. Admin Settings will open, allowing you to modify the Admin settings. When you've finished, click '**Save**' and run the T.O.V.A. normally.

34.7.2 On Mac

Most users who have one account on their computer have that account configured as an Administrator already and can edit admin preferences. There is a script in the TOVA folder to give more limited users temporary access to admin preferences.

1. Quit the T.O.V.A. application.
2. In the Finder, go to the TOVA folder in your Applications directory.
3. Double-click on 'TOVA Admin Settings.app'.
4. A password dialog will appear. Enter your password or the username and password of an Administrator on the system.

5. T.O.V.A. Admin Settings will run, allowing you to edit the admin preferences. See section 25 on page 63 for more information.
6. When you have finished editing preferences, click **'Save'** to save your changes.

34.8 Disabling Sleep mode

When a computer is not being used for a while, some systems are configured to go into “Sleep mode”, “Standby mode”, “Hibernation”, or some other power saving state. While this is good for conserving energy, it can be bad for External A/V testing. Because the T.O.V.A. test does not use the computer or mouse, some systems can fall asleep during a test, which will essentially ruin the results of the test.

To counter this, we've implemented a “mouse jiggle”. While the T.O.V.A. test is being administered, the mouse cursor will move just slightly to the left and then the right. None of this is visible to the subject, because the T.O.V.A. USB device is sending a different video signal to the screen.

The mouse jiggle does not work on all PCs, however. To be on the safe side, we recommend that you disable Sleep Mode on any T.O.V.A. system where you intend to do External A/V testing. If that's not possible, the computer should wait at least an hour.

Note: How to disable Sleep Mode on a given system can vary somewhat. If the instructions below don't work for you, contact your system's manufacturer.

34.8.1 Disabling Sleep mode on Windows 7

1. Click the Start button and type **'Power'**.
2. From the list that appears, choose **'Power options'**.
3. Select a new power plan if you want. For the selected plan, choose **'Change plan settings'**.
4. Under **'Put the computer to sleep:'**, choose **'Never'**. You may have to disable this in multiple places (**'Plugged in'**, **'On battery'**, etc.).
5. Click **'Save changes'**.

34.8.2 Disabling Sleep mode on Windows 8/10

1. Bring up the Start page and type **'Power'**.
2. Click **'Settings'** and then choose **'Power options'**.
3. Select a new power plan if you want. For the selected plan, choose **'Change plan settings'**.
4. Under **'Put the computer to sleep:'**, choose **'Never'**. You may have to disable this in multiple places (**'Plugged in'**, **'On battery'**, etc.).
5. Click **'Save changes'**.

35 Other Features

This reference section contains articles on specific features of the T.O.V.A., discussed in more detail.

35.1 The Main Window

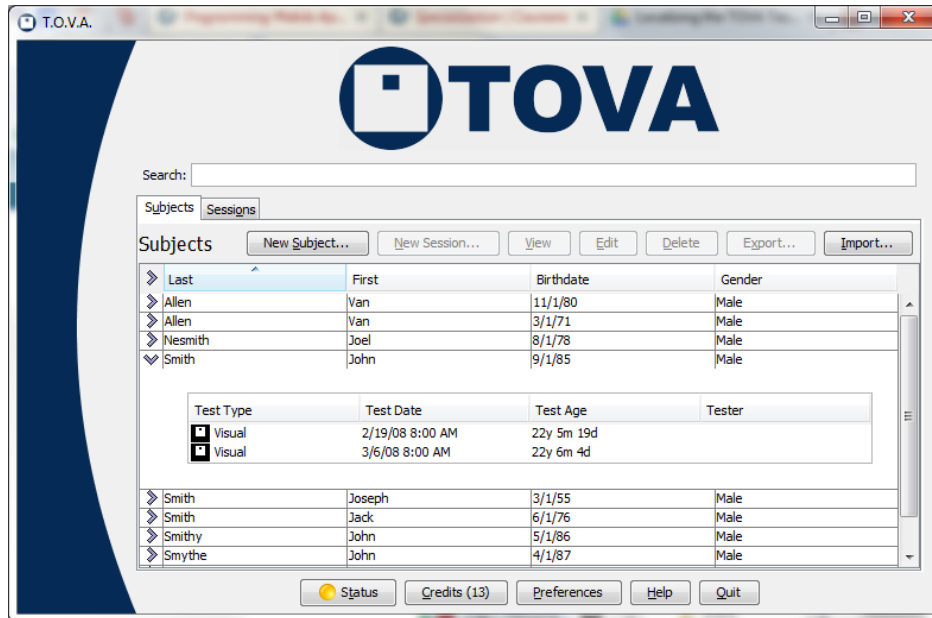


Figure 119: The main T.O.V.A. window

Everything starts from the main T.O.V.A. window. Some of these options may not always be available.

Search - Enter the text or date you're searching for into the Search field and press **'Enter'**. If you have a lot of subjects and sessions, this is indispensable. See section 35.2 on page 142.

Subjects - Click on this tab to browse your list of Subjects. Then, click on the '>' symbol at the left to display the sessions administered to that subject.

Sessions - Click on this tab to browse your list of Sessions.

New Subject - Create a new subject. See section 18.3.1 on page 33.

New Session - Start a new session for the selected subject. See section 18.4 on page 35.

View - Show a report for the selected session. See section 19 on page 44.

Compare - When you select multiple sessions in the current tab, you can choose **'Compare'** to see a report comparing the sessions. See section 19.3 on page 47.

Edit - Modify information for the selected Subject or Session. See section 35.3 on page 145.

Delete - Delete the selected Subjects or Sessions. This will permanently remove them from the T.O.V.A. database.

Export - Export the selected Subjects or Sessions to a T.O.V.A. file, CSV, or PDF. See section 23 on page 60.

Import - If you have old T.O.V.A. 7 data files or T.O.V.A. 8/9 files from a colleague, here you can import that data. See section 22 on page 56.

Preferences - Change the settings for the T.O.V.A. See section 25 on page 63.

Credits - This button tells you how many credits your T.O.V.A. USB device has. Click the ‘Credits’ button to order more. See section 20 on page 51.

Status - This launches the T.O.V.A. Status window, a new feature for v8.2. The “light” on the button will be green if all is well and yellow or red if there is a problem. See section 26 on page 77.

Help - Here you can read the other manuals, test the T.O.V.A. USB device and PTE, and contact us. See section 35.5 on page 146.

Quit - Quit the T.O.V.A. This closes all other T.O.V.A. windows.

35.2 Searching/Sorting Techniques

There's a search field at the top of the T.O.V.A. main window. When you type a search term and press ‘Enter’, the tables update to display subjects and sessions that match your search.

How it works is best explained with an example: If you enter `joe smith`, the search will return the subjects and sessions that contain `joe` and `smith`. This might mean a subject named `Smith` whose T.O.V.A. test was administered by a tester named `Joe`. It will also find subjects and sessions containing a name such as `Joel Nesmith`, and `John Smithy` whose Treatments include `3 cups of Joe`. It won't, however, find records that have `joe` but not `smith` or vice versa; by default, search looks for records containing **all** search terms.

You can also use the OR operator. Enter `joe OR smith` to find all the subjects and sessions that contain either `joe` or `smith`. **Note:** OR must be capitalized, or it will be treated like another search term (`joe or smith` will look for subjects and sessions containing `joe`, `or`, and `smith`).

Confused yet? Play around with it—we bet you'll figure it out!

Text searches include the following fields:

- Subject first and last name
- Comments
- Tester name
- Treatments
- Any custom subject field
- Any custom session field

If you give an integer(1234), then the term is also matched against subject number and session number.

You can also use dates: If a term is parsable as a date (5/12/2009), the results will include subjects with that birthdate *and* sessions with that test date. You can also use `before:` and `after:`, to provide a range of test dates; for instance, `after:9/1/2004 before:9/8/2004` will return all the tests administered September 1st through 7th, 2004. (**Note:** Test dates are interpreted as 12 midnight, so `after:9/1/2004` includes all tests administered that day, but `before:9/1/2004` would not include any.)

Finally, as with other search engines, you can search on multiple terms. If you enter `john smith`, for instance, you will see all of the subjects/sessions that include the word “joe” and the word “smith” anywhere in the subject or session information (including the comments, tester, custom fields, etc.) You can also enter

35.2.1 Specifying a field to search

You can restrict a search value to a specific field using the following strings. **Note:** With spaces, you must use quotes around field-specific search terms, like this: "Subject Number:123".

Field to search #	Type #	Labels that can be used
Subject number	numeric	subject number, sub, subject
Session number	numeric	session number, ses, session
First name	string	first name, first
Last name	string	last name, last
First and last	string	name
Comments	string	comments, com, comm
Tester Name	string	tester name, tester, user
Medications	string	medications, med, meds, treatment, treatments
Serial number	string	serial, serial#, serial #serial number

35.2.2 Other notes

- Searching is case-insensitive: jOe Smith is the same as Joe Smith.
- The - prefix prevents matching entries that have that substring in the searched fields. Joe -Smith will return all the subjects/sessions containing Joe that do not contain Smith
- Any string that is surrounded by quotes should be matched exactly (this allows for matching spaces in names), e.g. Van Allen as opposed to VanAllen. However, "Joe Smith" will not return the subject named Joe Smith, because Joe and Smith are in separate fields. It would return a test administered by Dr. Joe Smith however.
- Asterisks are treated literally, not as a wildcard, because we already match substrings; Joe* will find neither "Joe" nor "Joel".

35.2.3 Sorting

Sorting your T.O.V.A. data works just like most software. In the main window, click on any column header to sort the rows of the table by that field, in ascending order. So when you click on 'Last', it reorders the rows by the subjects' last name, from 'A' to 'Z'. Click the same column a second time, and it will sort in *descending* order, from 'Z' to 'A'. Simple!

35.2.4 Searching/Sorting Tips

- By default, subjects and sessions are sorted in column order (first column, second column, etc.)
- If you've recently tested a subject, there's a fast way to find the subject quickly:
 1. Click on the 'Sessions' tab.

2. Click on the '**Test Date**' column header twice. The Sessions table will sort the most recent tests administered to the top.
 3. Highlight the session and then click '**New**', and you will create a new test session for that subject.
- If you've recently imported a session or sessions, use search to go right to them:
 1. Click on the '**Sessions**' tab.
 2. Click on the '**Import Date**' column header twice. (**Note:** If the Import Date column is not visible, go to '**Sessions table**' in the **Preferences**, section 25.8 on page 68.) to add it to the visible fields.
 3. The Sessions table will sort the most recent tests imported to the top.
 - To sort on multiple columns, click the column headers in reverse order. For instance, to order sessions by gender and then by test date, click on '**Test Date**', then '**Gender**'. You'll get all the female subjects' sessions in chronological order, then all the males'.
 - Even if you're hiding Protected Health Information (see section 24 on page 62), you can still search on subject name and other protected fields.
 - If you have a lot of subjects and sessions, it can take a while for the T.O.V.A. to finish loading them. Don't wait! Immediately type the subject name you're looking for, before the others finish loading, and press '**Enter**'. The loading process will stop and instead load only your search results.

For instance, if you run the T.O.V.A. intending to retest Mary Smith, type **Mary** and press '**Enter**', and you'll only see those subjects or sessions. If that's taking too long, add **Smith** and press '**Enter**' again. Or enter gibberish (such as **ujxzda**) and press '**Enter**', and it will clear the search results and stop loading altogether.

35.3 Edit Session Information

Figure 120: The Edit Session window

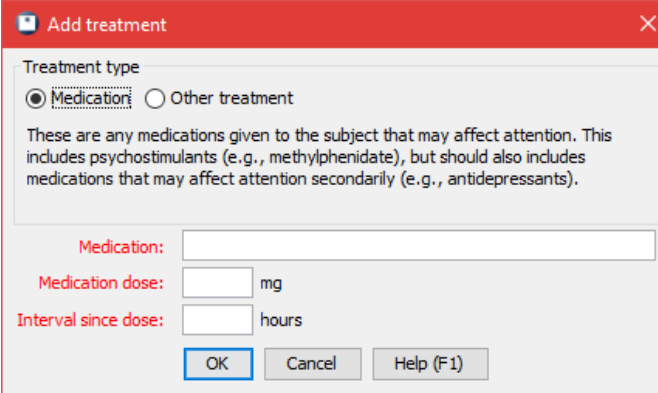
After you administer a session, you may want to add more information, such as medications administered (see **Treatments**, section 35.4 on page 146) or comments about the session that you did not note beforehand. You can also update any custom session fields you have added to your T.O.V.A. database. From the main window, select the session and click **'Edit'**.

Note: While you can also modify the test date/time here, you should do so with caution. It will affect the calculated age of the subject and dictate the norms used to interpret the results of the test. If your system clock is incorrect, please correct it. If it does not hold the correct time, this can be a serious system problem; you may want to consider using a different system to administer the T.O.V.A. in the future.

35.3.1 Advanced session information

If you are using USB speakers recommended by tech support to administer auditory tests, you should already have a calibration value under **'Preferences'**, **'Stimuli settings'**. If you administered a session before you added this calibration setting, here is where you can modify the setting so that the timing for this session is properly calibrated. If that didn't make any sense to you, *DON'T TOUCH THIS SETTING*. Instead, if you're worried, please contact T.O.V.A. technical support (section 27 on page 80).

35.4 Treatments



The screenshot shows a dialog box titled "Add treatment" with a red header bar. Inside, there are two radio buttons: "Medication" (which is selected) and "Other treatment". Below the radio buttons is a text area containing the text: "These are any medications given to the subject that may affect attention. This includes psychostimulants (e.g., methylphenidate), but should also includes medications that may affect attention secondarily (e.g., antidepressants)." Below this text area are three input fields: "Medication:" followed by a text box, "Medication dose:" followed by a text box and "mg", and "Interval since dose:" followed by a text box and "hours". At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help (F1)".

Figure 121: Enter the medication information

You can track medications and other treatments in the T.O.V.A. 9.0. When starting a new session or editing an administered session, click '**Add**' to add a treatment to the list. There is no limit to the number of treatments you can add to a session.

You can add three different types of treatments:

- **Medications** - These are any medications given to the subject that may affect attention. This includes psychostimulants (e.g., methylphenidate), but should also includes medications that may affect attention secondarily (e.g., antidepressants).
- **Other treatments** - Non-medication treatment for attention, such as neurofeedback

35.5 The Help Window

Here you can read the other manuals, test the T.O.V.A. USB device and PTE, and contact us.

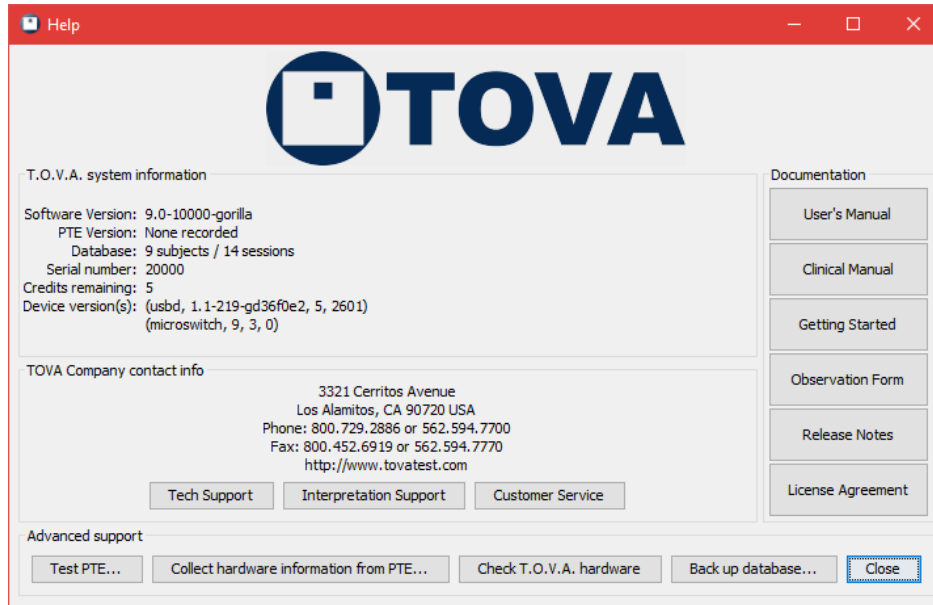


Figure 122: The Help Window

35.5.1 T.O.V.A. System Information

This displays information about your T.O.V.A. software and hardware, useful to T.O.V.A. technical support.

35.5.2 Contacting Us

If you need to contact The TOVA Company for support or service, this tells you all you need to know, such as our phone number and web address. For the best service, click one of these buttons to use our built-in Support/Service Request feature. See section 27 on page 80.

35.5.3 Documentation

You can access any of the manuals or other T.O.V.A. documentation from the Help window. If you want to learn more about the T.O.V.A., we've put all the information here:

User's Manual - You're reading it now!

Professional Manual - Describes the internal guts of the T.O.V.A. from a test construction and statistical point of view

Getting Started - Goes directly to the '**Getting Started**' section of the User's Manual

Sync interface manual - Information on using the T.O.V.A. Synchronization Interface (not included in the T.O.V.A. 9.0 kit)

Observation Form - This form is designed to provide information about factors that may influence T.O.V.A. test results. This form should be filled out prior to the administration of each test.

Release Notes - Information on changes to the T.O.V.A. software

License Agreement - Important legal information about the T.O.V.A.

35.5.4 Advanced Support

For the most part, you will not need to use the Advanced Support features here. However, if you contact T.O.V.A. technical support, they may ask you to try one of these operations to help diagnose a problem.

Test PTE - This option is useful when you've installed the T.O.V.A. on a new system, and you want to make sure the PTE will boot correctly. It is disabled and not useful if you're configured for EAV testing. See section 31.1 on page 110 for more information.

Collect hardware information from PTE - Automatically reboots your system to and from the PTE for the purpose of collecting critical hardware information. You should probably only do this if requested by T.O.V.A. technical support. It is disabled and not useful if you're configured for EAV testing.

Check T.O.V.A. hardware - Contains a number of functions to test your T.O.V.A. hardware and its connections. See section 29.3 on page 98.

Back up database - The T.O.V.A. 8.2 introduced this quick and easy way to back up your entire T.O.V.A. database. See section 21 on page 54.

Close - Closes the Help window.

35.6 Research Mode

There are a few features that were part of the T.O.V.A. 8 that were removed from the T.O.V.A. 9.0 when it was cleared by the FDA as a medical device. These features have not been cleared for use in a clinical setting, but if you would like to use the T.O.V.A. in a non-clinical research setting, you can switch to "Research mode" in the T.O.V.A. Preferences (section 25.9 on page 69). Test sessions administered in Research mode will be flagged as research sessions, and the T.O.V.A. report will reflect this.

Likewise, the T.O.V.A. Synchronization Interface (see the T.O.V.A. Sync Interface manual for more information) is intended for research use only and sessions administered using the device will produce research sessions. A warning will appear whenever you start a new session with the sync interface attached unless you enable Research mode in the Preferences.

When the T.O.V.A. is in Research mode, "Research Mode" will appear under the T.O.V.A. logo in the main window.

35.6.1 Features

When the T.O.V.A. is in research mode, these additional features become available:

- **Export** - Additional export options are available in Research mode:
 - Exporting T.O.V.A. sessions to a spreadsheet (CSV).
 - Exporting T.O.V.A. sessions as an uncompressed XML file.
 - Including interpretation in export.
- **Documentation** - Additional manual buttons appear in the Help window:
 - Research version of the User's manual appears in place of the User's manual
 - Professional manual

- Sync interface manual

All manuals are available from your Windows Start menu, even with Research mode disabled.

- **Subject blinding** - An optional blinding feature is available, to assist with double-blind studies.
- **Report** - The T.O.V.A. report has additional options:
 - Histogram page
 - Analyzed Data Graphs page
 - Copying text from report
- **Alternate test formats** - An “Advanced” button in the New Test Session window offers additional test formats.

For more information about these features, see the T.O.V.A. Research User's manual. Let us know (section 27 on page 80) if there are features you would like available for clinical or research use in future versions of the T.O.V.A.

35.7 Double-Blind Studies

If you are participating in a double-blind study, the 8.2 version of the T.O.V.A. includes new features to support you. Under ‘**Miscellaneous**’ in the Preferences window (section 25.9 on page 69), there is an option to ‘**Include blinded subjects**’. Checking this option will enable the T.O.V.A. to create blinded subjects and to separately enable or disable the automatic backup of their data to our servers (section 25.5 on page 66). Subjects will be blinded by default, and you will **NOT** be able to view reports for their data. Additionally, blinded subjects **cannot be unblinded** (or vice versa) after they are created. ***Please do not enable this feature unless directed by T.O.V.A. technical support or by those managing your study.*** Contact T.O.V.A. Customer service (section 27 on page 80) for more information.

36 Miscellaneous

This reference section contains the articles that don't fit elsewhere.

36.1 Windows 8 and 10

The T.O.V.A. 9.0 is compatible with most Windows 8 and Windows 10 desktops using EAV testing (section 32 on page 124). However, new Windows 8 and 10 systems are required (by Microsoft) to have UEFI with SecureBoot enabled. Because of that, these laptops cannot boot the PTE automatically. Some can be configured to boot the PTE from the T.O.V.A. CD or flash drive, but that can be difficult for users who are not tech savvy and impossible on many systems.

For this reason, you should not try to use the PTE on a new Windows 8 or Windows 10 system at this time. Overcoming this problem is a priority for us, and we hope to have a solution soon.

Note: If you have an older system (Windows 7 or earlier) that you updated to Windows 8 or 10, it will most likely not use UEFI, and it should boot the PTE just fine.

Note: The **Skylake** line of Intel processors does not support the BIOS video extensions that we use for precise timing. As a result, the vertical sync fails, and *the current PTE will not boot on systems that have it, including Windows 7 systems.*

This includes, but is perhaps not limited to, the following models:

- HD Graphics 510
- HD Graphics 515
- HD Graphics 520
- HD Graphics 530
- Iris Graphics 540
- Iris Graphics 550
- Iris Pro Graphics 580

36.2 Java

Note: This is here for Windows users and does not apply to Mac systems.

The T.O.V.A. 9.0 is a Java program, and that means it requires the Java Runtime Environment (JRE) to run. Specifically, the T.O.V.A. 9.0 uses **Java 8** (sometimes called JRE 1.8).

In previous T.O.V.A. releases, we installed the Java 6 in a conventional way. This became a problem because, when new Java versions became available, Java 6 might be uninstalled, and the T.O.V.A. (which expected Java 6) would stop working. Additionally, some users have had security concerns about the installed Java.

With the T.O.V.A. 9.0, we are instead installing a local copy of the v8 JRE for the T.O.V.A. to use. This will not be updated or uninstalled by the Java installer and does not require Java to be conventionally "installed" at all. It does not need to be installed or enabled in your browser either. We think this will be a simpler approach for our customers.

If you still have Java 6 installed from an earlier version of the T.O.V.A., you may uninstall it. However, be aware that *other software on your PC may still use Java 6 and require that it be installed*. That is why we do not uninstall it automatically when you update to the T.O.V.A. 9.

If your IT department requires that all software uses the latest Java version, they can copy their preferred version of the Java files into the following path:

C:\Program Files (x86)\tova_9\Java or C:\Program Files\tova_9\Java),

Is all this now clear as mud? Please contact T.O.V.A. technical support (section 27 on page 80), and we'll be happy to answer your questions or assist you with any changes. We want to keep our T.O.V.A. users up and running!

36.3 Errors in the T.O.V.A.

Yeah, we'd prefer there weren't any errors in our software too. But occasionally—sometimes even through no fault of our own—the unexpected occurs.

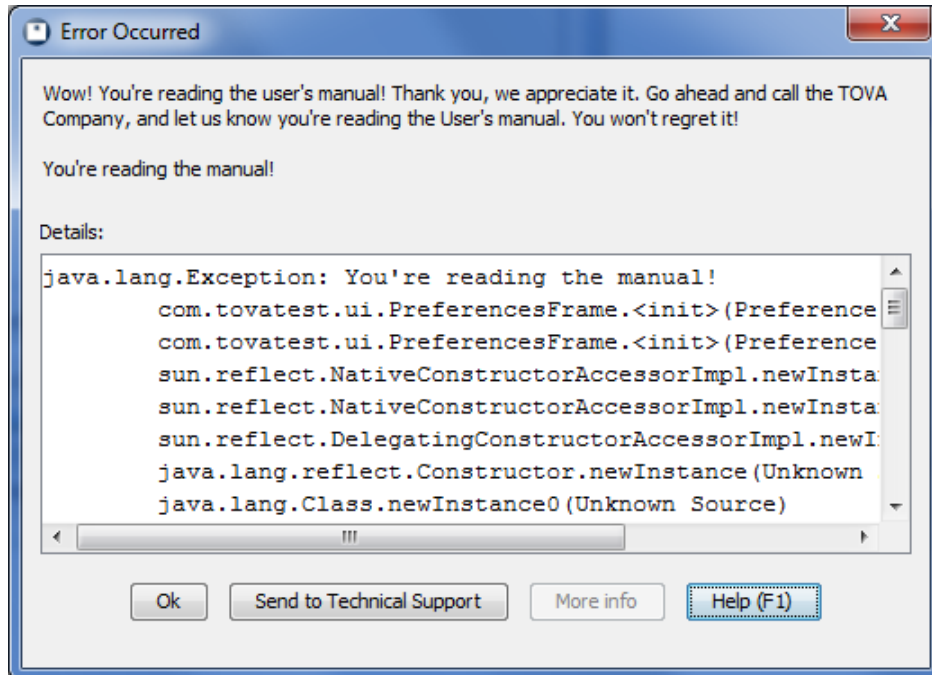


Figure 123: An Error window

Sometimes the error may make perfect sense to you. We try to generate meaningful error messages, but it's not always possible.

If a message confuses or disturbs you, please contact T.O.V.A. technical support. The best way to alert us is using the T.O.V.A.'s built-in tech support interface: Just click 'Send to tech support' from most error windows or see section 27 on page 80 for more information. If your need is urgent, you can call us at 1-800-PAY-ATTN (1-800-729-2886), or you can email us at info@tovatest.com. Best of all, our Tech Support is always **FREE!**

36.4 Finding your data

Having trouble finding your T.O.V.A. data? There are a few possible explanations for this:

- If you don't see all of your subjects or sessions, your view might still be restricted by the **'Search'** field. Clear any text in the field and press **'Enter'** to view all of your subjects and sessions. Remember that you can sort on any column by clicking the column, and sort the other direction by clicking it a second time.

Note: Even if there was nothing in the search field to begin with, there can be occasional display glitches. Pressing **'Enter'** will refresh the contents of the main window and fix most of these problems. If you find any repeatable problems ("Every time I do *this*, the display does *that*."), please let us know. We want to fix any such problems.

- There are two database configurations: Shared and Separate. You can find your current selection in the Advanced Preferences (section 25.4 on page 65). If you select a **'Separate'** database, each login on your system will have its own database, and you will not see each other's subjects and sessions. If you use a different login than usual, then, you won't see your usual subject data.
- Do you have your database stored on a network shared drive? The T.O.V.A. 9.0 only supports storing your database locally, not on a network. See section 25.4 on page 65 for more information.

36.5 Linux and the T.O.V.A.

While we do not support running the T.O.V.A. on a Linux-based OS, the configuration should be workable. Because of the many flavors of the OS and the limited audience, we have not written specific procedures for a Linux install or operation. Our developers regularly run the T.O.V.A. on Debian GNU/Linux, however, so here is what we can recommend to those brave pioneers who prefer (or require) this environment.

Warning: These notes are intended for experts in Linux system administration. We welcome suggestions both for improving the T.O.V.A.'s support for Linux and for improving this documentation.

- We don't have an installer for Linux, and not all of the components needed for a fully-functioning T.O.V.A. 9.0 on Linux are distributed with the Windows or Mac installers. Please contact T.O.V.A. technical support if you would like a copy of the components you need.
- When you install by hand, you may need to edit system configuration. On Debian at least, the kernel `sysctl net.ipv6.bindv6only` is set to 1 out of the box. Sun Java fails to bring up networking with that setting. To fix on Debian:

- edit `/etc/sysctl.d/bindv6only.conf`
- change the line saying `net.ipv6.bindv6only = 1` to 0 instead
- run `sudo /etc/init.d/procps restart` to apply the change without rebooting

- To use the T.O.V.A., you need a path to store your database. The T.O.V.A. supports a choice of two default locations, or you may select another path. You will need to make sure that you have write permission to that directory. For more information on database paths, see section 25.4 on page 65.
- The Automatic Update features provided by the T.O.V.A. on Windows and Mac are specific to those platforms and not currently supported in Linux.
- Communications with the T.O.V.A. USB device requires `libftd2xx.so` from FTDI. As of this writing, FTDI only provides x86 and x86-64 builds of that library for Linux, so those are the only architectures

where the T.O.V.A. is fully usable. Additionally, you need a JNI stub to use that library with Java applications like the T.O.V.A. 9.0, and we do not include the Linux version of that stub with the Windows or Mac installers, so you will need to get it from T.O.V.A. technical support.

If you only want to examine T.O.V.A. files from other T.O.V.A. users, you should be able to use the T.O.V.A. 9.0 on any platform with a JVM compatible with Java 8.

- The T.O.V.A. 9.0 Precision Test Environment is implemented as a stripped-down Linux installation. While you technically could run the PTE from within a standard Linux installation, we strongly discourage doing so as such a configuration will not have sufficiently accurate timing for reliable test results. Instead we recommend either configuring GRUB to boot the PTE's kernel and initramfs, or using the T.O.V.A. installation CD, which doubles as a PTE boot CD.
- Our developers would love to hear from you if you actually try using the T.O.V.A. 9.0 in Linux! Please tell us how it goes.

36.6 The T.O.V.A. application is already running?

If you try to run the T.O.V.A. and you get this message, it indicates that the T.O.V.A. is already running. If you were to run your Windows Task Manager, though, you would not find `tova.exe` and killing `tova-pte-svc.exe` would not help you.

The T.O.V.A. is a Java application (which is why it runs on both Windows and Mac systems) and runs on your system as `javaw.exe`. If you arrive at this window, clicking **'Restart'** will tell the other T.O.V.A. instance to exit. On the other hand, if you perhaps forgot the T.O.V.A. application was already running, you can just click **'OK'**, and the new instance will exit.

If the T.O.V.A. encounters a serious problem and the previous instance will not terminate, click **'OK'** and end any other `javaw.exe` tasks that are running, reboot your system, or just contact T.O.V.A. technical support (section 27 on page 80). We're happy to help.

36.7 T.O.V.A. 9 PTE Activation service

Note: This section applies only to Windows users.

The T.O.V.A. 9 PTE Activation service is a background service we install on Windows to perform important tasks related to booting the PTE and installing T.O.V.A. updates. Windows users with limited permissions would not normally have access to all the functions this service performs. Therefore, instead of requiring that all T.O.V.A. users have Admin rights in Windows, the T.O.V.A. 9 service acts as a system administrator to carefully perform these operations on request. These include the following:

- Making temporary changes to the Boot Configuration Data
- Moving other files related to booting the PTE
- Rebooting your system
- Verifying the authenticity of updates to the T.O.V.A. and then installing them

36.7.1 Service status

Click the **'Status'** button on the main window and then **'Service'**, and you'll see the current status of the T.O.V.A. 9 PTE Activation service. If the service has unexpectedly stopped or failed to start, click **'Start'**

service' to attempt to restart the service. (**Note:** This requires administrator access to your PC.)

'View Windows services' will launch the Windows Services console. Here you can see all of your installed Windows services, including the T.O.V.A. 9 PTE Activation service.

If you are unable to resolve any problems, you can disable the T.O.V.A. service (see section 36.7.2 on page 154 for details). Otherwise, click **'Send to tech support'** for more help with the problem.

36.7.2 Disabling the service

Some Windows systems encounter problems with the T.O.V.A. service (conflicting security settings, for instance). In version 8.2, we've created a workaround: disabling the service.

The T.O.V.A. service performs necessary operations that many Windows users don't have access to. When you disable the service, the T.O.V.A. performs the same operations without employing the service. Since these are advanced operations, you may be prompted to "allow the following program to make changes to this computer" before and after launching a T.O.V.A. session. Granting this permission requires you to have administrator access to your system.

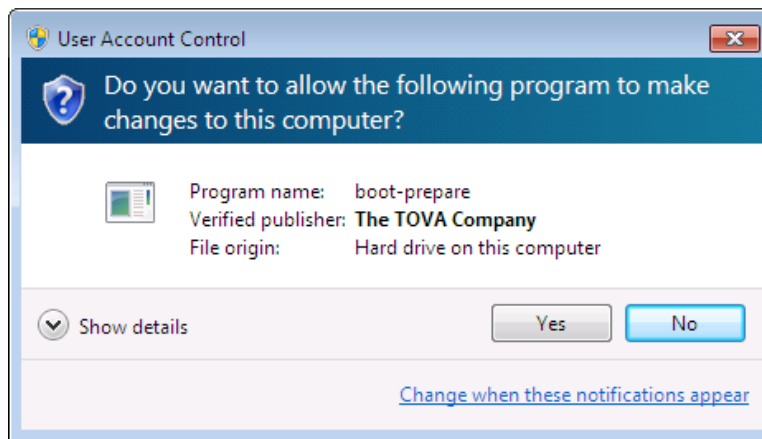


Figure 124: Without the service enabled, you must grant the T.O.V.A. permission to make changes

You can disable the service as follows:

1. Run the T.O.V.A. program and choose **'Preferences'**.
2. Choose **'Windows Service'**.
3. Uncheck the **'Enable service'** box and click **'Save'**.

If the Admin prompts become too tiresome, you may also want to select **'Windows boot menu'** in your Session launch preferences (section 25.12.2 on page 71).

Please note: Disabling the T.O.V.A. service in T.O.V.A. preferences will not stop the service from running in the background or uninstall it from your PC, but that should not be necessary. If you have problems with the T.O.V.A. 9 PTE Activation service itself, even after it has been disabled, please contact T.O.V.A. technical support (section 27 on page 80).

36.7.3 Service errors

The T.O.V.A. 9 PTE Activation service is a background service we install on Windows to perform important tasks related to booting the PTE and installing T.O.V.A. updates.



Figure 125: Failure to connect to the service

If you see the dialog above (Figure 125), there can be several reasons:

- **The T.O.V.A. 9 service may have failed to start.**

You can start the service manually:

1. Go to **'Start'**, **'Run'** or hold the **'Start'** key and press **'R'**.
2. Enter `services.msc` and press **'Enter'**. This brings up the **Services** window.
3. Highlight **'TOVA 8 PTE Activation'** and, if it's not already running, **'Start'** the service.

If you receive an error, the service won't start, or it stops after it starts, please send a Tech Support Request to T.O.V.A. technical support (see section 27 on page 80 for details). You may have software that is blocking the service, or it may not have installed properly.

- **The T.O.V.A. 9 service may still be starting up.**

Windows startup is a little funny, and sometimes the T.O.V.A. 9.0 application starts up before the service. The T.O.V.A. will wait and try five times to communicate with the service, but depending on your system's configuration, speed, age, etc., it's possible that it might take longer. If you find that the T.O.V.A. 9 service is already running, try restarting the T.O.V.A. to see if it still fails to communicate.

- **Port 26001 may be blocked or reserved**

The T.O.V.A. 9 service communicates locally on port 26001 by default. Windows Firewall, even if it blocks that port, will not block our communication because it's local to your machine; in other words, we don't use that port to communicate over your network or the internet. So this possibility is not likely, but we can handle this too.

If you must block that port on your system, you can change the port number we use in the T.O.V.A. Preferences (section 25.9 on page 69) and in `\tova_8\service\tova-pte-svc.ini`. **Note:** You must change **both** settings for communication to work.

36.7.4 “Prepared for PTE”

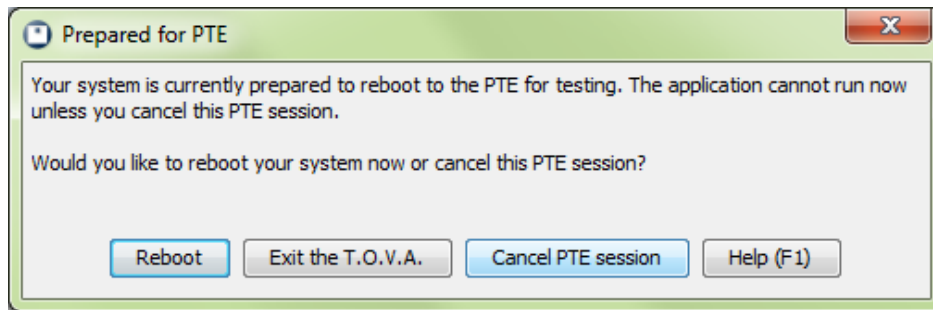


Figure 126: Ready to boot the PTE

Some users might not want the T.O.V.A. to reboot their system, and so we offer the option ‘**Reboot later**’ in the PTE launch settings. The T.O.V.A. prepares your system to boot the PTE and then exits. If, instead of rebooting your system, you run the T.O.V.A. application, you will see this window (Figure 126), giving you the option to have the T.O.V.A. reboot your system or cancel booting the PTE. The latter will clear away the prepared files, restore your normal boot settings, and start the T.O.V.A. application.

36.8 Startup

The T.O.V.A. will automatically startup after returning from the PTE. If you want the T.O.V.A. never to startup automatically in Windows, remove the shortcut from your Startup folder. For more information on the PTE, see section 31 on page 110.

36.9 Problems saving a session

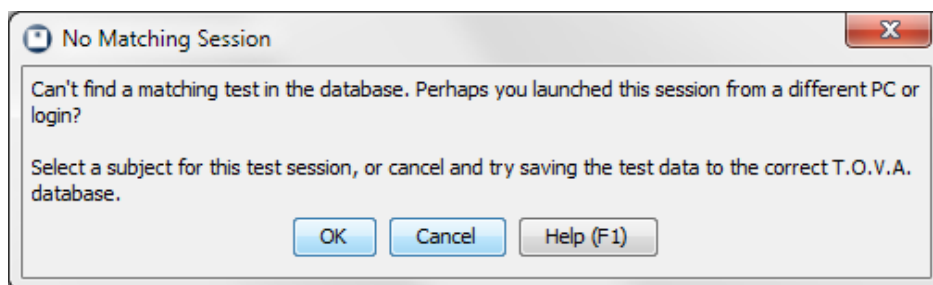


Figure 127: Find subject

If you encounter a message like this saving a session to your database, it can be confusing. It usually indicates that you are trying to save a session to a different database than launched it. This can happen if you are running the T.O.V.A. on multiple PCs or from different logins on the same PC. If you can, exit the T.O.V.A. application and try to save the test data on the original PC and login.

If you cannot, click ‘**OK**’, and you will be prompted to either match the session to the same subject in this database or to create a new subject with the name, birthdate, and gender from the test data on the device. Any additional information you entered in the New Test Session window (Treatments, Tester, Comments, etc.) will need to be re-entered, but the critical information and test data will be saved.

36.10 Resolving duplicate subjects

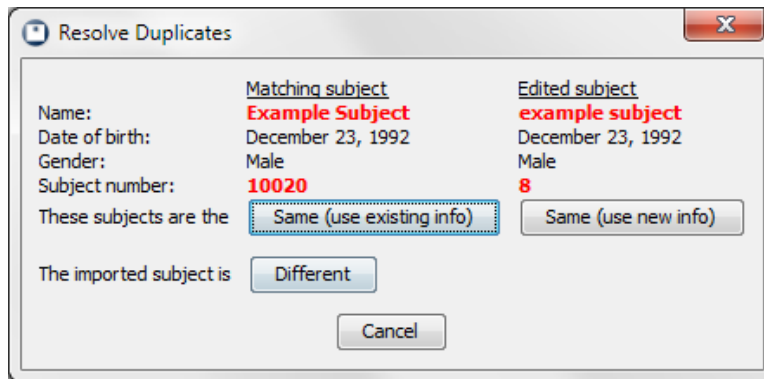


Figure 128: Are these actually the same subject?

If the T.O.V.A. finds that a new or edited subject looks similar, but not identical, to another subject in the database, it will ask you to resolve the situation. Often this can happen if a subject has been entered as “John” and “Jack” or the name was just misspelled.

You are asked to decide if the two subjects are actually different people or not. If they are the same subject, choose either the new subject information or the existing information from the similar subject.

37 Frequently Asked Questions (FAQ)

This is where we try to anticipate and answer questions you might have about the T.O.V.A.

37.1 General Questions

How long is the T.O.V.A. test? The T.O.V.A. test is 21.6 minutes long. A shorter 10.8-minute T.O.V.A. test is automatically administered to subjects ages 4 to 5.5 instead.

What does this term or that acronym mean? See section [38](#) on page [159](#).

How do I add my custom fields to the main window? You can change which fields appear from the Preferences. See section [25.3](#) on page [64](#).

Why can't I connect to the PTE service? See section [36.7.3](#) on page [155](#).

Why can't the T.O.V.A. detect my USB device? See section [29.1.3](#) on page [91](#).

I hear a little static or high-pitched noise coming from my speakers. What is that? Can I stop it? See section [29.8.1](#) on page [108](#).

What do I do if the automatic update fails? You can try again or try manually updating the T.O.V.A. See section [34.3](#) on page [134](#) for details.

The T.O.V.A. is doing something weird. How can I send you a screenshot? See section [27.5](#) on page [82](#).

Why is the T.O.V.A. not compatible with Windows 8 or 10? See section [36.1](#) on page [150](#).

37.2 Testing

Where's the calibration screen? If you're testing without rebooting, what we call External A/V (EAV) testing, you must connect your monitor to the 'video out' port of the T.O.V.A. USB device. If you haven't done this correctly, you may first notice this when you try to calibrate your display and the calibration image doesn't appear. Please check your connections and make sure the monitor is plugged into the correct video port. See section [13.2](#) on page [22](#) for more details.

My display calibration failed. What does that error message mean? See section [29.5](#) on page [102](#).

How do I pause, go back, skip forward, turn the sound off, or skip the instructions entirely? See section [33](#) on page [126](#).

What if I can't hear the audio? See section [29.6](#) on page [105](#).

My system keeps booting the PTE and won't boot back to Windows! Remove your T.O.V.A. CD or flash drive, and click 'Done' or reboot your PC. If the CD or flash drive has boot priority, it will keep booting until it is removed or another device is given priority. See section [31.5.1](#) on page [114](#) for more information.

37.3 Managing T.O.V.A. data

How do I back up my T.O.V.A. data? See section [21](#) on page [54](#).

Some or all of my subjects and sessions are gone. Where did they go? See section [36.4](#) on page [152](#).

I just imported a bunch of T.O.V.A. data files. How do I find those sessions now? See section [35.2.4](#) on page [143](#).

What if I administered a test for the wrong subject? See section [34.6](#) on page [137](#).

How do I move my database? See section [34.4](#) on page [135](#).

37.4 Report

How do I add my custom fields to the report? See section [19.1](#) on page [45](#).

How do I add pages to / remove pages from the report? See section [19.1](#) on page [45](#).

How do I convert copied table data from a T.O.V.A. report page back into a table? See section [19.4](#) on page [48](#).

How do I view a comparison report? See section [19.3](#) on page [47](#).

37.5 Ordering credits

Why do I see “Ordering test credits has been disabled on this T.O.V.A. USB Device”? Your T.O.V.A. USB device is not enabled for ordering unless or until we have billing information for your account. If you encounter this error, you should contact T.O.V.A. customer service, and they will be happy to help you resolve the problem.

38 Glossary of Terms

In this manual, we use numerous acronyms, abbreviations, and technical terms, so we've tried to define all of our proprietary terms and acronyms here.

Note: If you don't find it here, you can easily search the electronic .PDF version of this manual.

boot CD - A CD used instead of your normal OS to boot your system. See **T.O.V.A. CD**.

T.O.V.A. flash drive - A USB flash drive included with your T.O.V.A. kit that you can use to install the T.O.V.A. and boot the PTE.

EAV - An **External Audio/Video**—sometimes called External A/V—session is a test session you can administer without rebooting your system. The timing is managed by the T.O.V.A. USB device, but this test requires an external monitor and speakers. See section [32](#) on page [124](#) for more details.

external monitor/display - This is a display that is not part of the rest of the computer. Some systems, such as laptops or “All-in-One” computers, have a screen that is a part of the rest of the computer. To administer an External A/V test (section [32](#) on page [124](#)), you must also have a *separate* CRT or

LCD display with a VGA connection to the 'video out' port of the T.O.V.A. USB device. Otherwise, you may choose to administer a PTE test (section 31 on page 110) instead.

In other words, you can use most laptops or notebooks to administer an External A/V test *if* you also have a separate display you can attach to the T.O.V.A. USB device.

external speakers - Most laptops or notebooks have speakers that are built into the computer. You cannot use these to administer an Auditory EAV test (section 32 on page 124, though you can probably still administer a PTE test (section 31 on page 110) instead.

In other words, you can administer an EAV Auditory test on a laptop or notebook *if* you have a separate display and speakers you can attach to the T.O.V.A. USB device.

Note: Some monitors have built-in speakers. You can use these displays to administer an External A/V test provided they have separate video and audio plugs you can attach to the T.O.V.A. USB device.

install CD - See **T.O.V.A. CD**.

OS - Your **Operating System** may be Windows 7, 8, 10, or Mac OS X. It's the layer between the programs you run and all your computer's hardware.

PTE - Our **Precision Test Environment** requires you to reboot your system, but it allows you to administer T.O.V.A. tests on a laptop without an external monitor or speakers. See section 31 on page 110 for more details.

subject - Someone taking the T.O.V.A. test. You might call them a patient, client, student, or customer.

test mode - This is the EAV or PTE, where you can view instructions, run practice tests, etc.

T.O.V.A. CD - The CD that comes with the T.O.V.A. It contains the Windows and Mac installers, as well as the T.O.V.A. documentation. It can also be used as a **boot CD** to boot the PTE (section 31.5 on page 114). It is not included with your T.O.V.A. kit, but is available upon request.

test credits - A test credit is used each time you save a session from the T.O.V.A. USB device. You **must** have test credits to administer T.O.V.A. tests. See section 20 on page 51 for more information on test credits.

T.O.V.A. USB device - The T.O.V.A. USB device is our black box that is required for running the T.O.V.A. 9.0. See section 29.1 on page 89 for more details.

user - If you are reading this manual, you are a T.O.V.A. user. We use the term "user" to refer to the clinicians and other testers who provide the T.O.V.A. test to subjects.