Use of AT-WEB in the Post Adobe Flash Era
The Problem and A Proposed Solution

The Problem

Beginning in January 2021, linking to AT-WEB in the Sunrise Telecom/VeEX AT2500RQv3/4 series spectrum analyzer using a web browser was no longer possible. This is because the AT-WEB option in the analyzers firmware was developed with code that relies on Adobe Flash Player (and ActionScript 3) for graphics display on a PC web browser. Adobe has been issuing warnings for years about security concerns with Flash and plans to discontinue the player. As far back as around 2012, Steven Jobs at Apple announced their platform would no longer support Flash due to increasing security concerns. In January 2021 Adobe 'shut down' use of Flash on the Internet. This includes their ability to disable Flash plug-ins on your web browser should you attempt to use it. Some AT-WEB users saw this coming and set aside an old laptop or PC where Adobe Flash still functioned, and then blocked any Internet access going forward. I know of some operators that still use this method, and with a few 'tweaks and tricks' it remains working for them and is one alternative. I have, however, continued to feel there must be a *better* solution, and by *better* I mean a solution that can be
 a) installed at any time and   b) repeated across multiple laptops/PC's if need be.

A Better Solution

First, I should note this dialog presumes you have some experience with installing and using a Linux (Debian based) operating system. The steps in my instructions are fairly concise. This is not intended as a primer for how to use the Linux OS. However, don't be 'put off' if you have no Linux experience. I've been using Linux for around 15+ years, and these community based, open source operating systems just keep improving with each new release. Modern distro's (distributions) are easy to install and use, and are incredibly versatile and safe! If you need help, ask around, as someone you know is likely familiar with Linux. Or your companies IT department should be able to provide assistance.

In late December 2021 I began experimenting with a different approach to solving this problem; one that is 'moderately' simple to implement and leaves the user with a more functional laptop (or desktop) when not using AT-WEB. I've spent an estimated 50 plus hours researching Adobe Flash along with alternate Flash players/emulators (especially PepperFlash, a Google developed alternative), combining different Linux distro's with older Chrome packages (only to discover they did not have full ActionScript 3 functionality), but always learning more with each iteration, and then finally finding and developing what I believe is a viable solution. Depending on your level of 'software literacy', however, you may need to enlist help as stated earlier.

In summary, you'll choose a laptop (old or new) with some version of Windows already installed, and then create free space on the HDD/SSD for a Linux install. Since the Linux side will only be used for control of AT-WEB, the space needed for this can be small – 15 to 20 Gbytes should be ample. The creation of the required HDD/SSD free space can be accomplished from Windows (before the install), during the Linux installation using the Debian-Linux tool GPARTED, or by using a 3rd party program. You'll then install an older version of Linux along with an older version of Google Chrome -- side by side with Windows in a dual-boot configuration. Both the Linux 'distro' (Linux Mint 18) and the Chrome v42 installation package were developed in the 2015 - 2016 time-frame. It was ultimately necessary for me to go back this far to find versions where (almost) all support packages are included in the initial installation process, in order to keep this as simple as possible, and *to keep required time on the Internet during installation to an absolute minimum*.

I should also note there are viable alternatives to the dual-boot approach. For example, you could install an emulation program such as Oracle Virtualbox on Windows, then install Mint 18 running under Vbox emulation, and finally install the old version of Chrome to achieve (in theory, I've not tried this) the same results[1]. I've stayed away from this approach for now, as configuring ports, shared drives, etc. in an emulator can seem complicated. However, the emulator approach should work and offers advantages. The dual-boot method allows you to retain full functionality on the Windows side; however when you want to move from one OS to the other you have to 'boot out of one system and into the other. Under an emulator it is **much** easier to move back and forth. There is also a potential disadvantage in that operating systems tend to run slower under emulation. If you choose this approach, it may require a more powerful laptop.

> **You try this routine at your own risk! Before you begin back up important data on the laptop, or better yet clone the HDD/SSD so you can fully recover if you encounter problems!**

Instructions

1. Select a laptop to use. Older ones have an advantage in that they often have a **physical** Ethernet port, which is often easier to manually configure than a *USB-Ethernet adapter*. Linux will support and run very fast on most older laptops. I have this solution running on a 10+ year old Samsung laptop plus a newer Toshiba touch screen and it runs perfectly on both.

2. Download the Linux Mint 18 .iso image from their web site: https://www.linuxmint.com/edition.php?id=217

3. Burn the .iso image to your selected media to create a **bootable** DVD or USB thumb drive. This process will likely require the use of a separate program such as ImageBurn (https://www.imgburn.com/) for DVD's or Rufus (https://rufus.ie/en/) for USB thumb drives. If the laptop BIOS supports booting from a USB thumb drive, I recommend using it as the installation will proceed much faster.

4. As a separate step, in case you want to use Windows tools or a separate 3rd party program, you can at this point 'shrink' the Windows partition on the HDD/SSD to create room for Linux plus some required 'swap space'. As stated earlier, the space required is minimal - 15 to 20 Gbytes should be ample. You can also wait and shrink the Windows partition during the Linux install, but it requires some familiarity with the Linux program GPARTED.

5. Set BIOS in the PC so that the boot sequence will first look for the media you've created i.e., the laptop will look for bootable media in the DVD drive or a USB port. Then reboot with your media inserted.

6. Boot into the 'live image' and check to make sure critical laptop hardware is supported by Linux Mint 18. If it's an older laptop it should be fine; however if it's a newer laptop you could encounter driver issues. The 'live image' mode allows you to test Mint on your laptop **before** installing it. Make sure your video, sound and network adapters are all working properly, as you'll need the network (Ethernet) port for controlling the AT2500 and you'll *briefly* need to activate Wi-Fi during the Chrome package install.

7. Assuming there are no hardware problems, proceed on to the installation of Mint 18. Double-click the Install Icon on the desktop of the Live Image DVD/USB. Make appropriate choices during the install, and be sure to choose "Install Multi Media CODECs During Installation" when asked. I recommend you perform this process with Internet access disabled. If you've chosen the 'dual-boot approach', this process will also install a program called GRUB (grand unified boot loader) which will allow you to choose which OS you want to run each time you boot (reboot) the computer.

8. Reboot your laptop when the install is complete (when prompted) and choose Mint OS from the GRUB menu. Once you are logged in, **do not perform any software updates** if prompted. With Linux Mint 18 this message should not appear. Rather, you should get a message stating **this version is no longer supported (maintained).** This is good! The fact that their support has expired is part of the reason we

can solve the Flash problem. Check to make sure the laptop does not have Internet access, unless you are ready to install the Chrome v42 package.

9. When you are ready, install Chrome 42 **(2)**. The Debian package for Chrome 42 can be downloaded from my website: www.cablesoftengineering.com/downloads from any computer, then move the file to a USB thumb drive and plug the drive into your laptop while running Mint 18. You will have to briefly activate Internet access for this install, as the Chrome 42 installation needs to download several *'dependency' packages*. You can install Chrome by right-clicking on the file and use the top choice (package manager) to install. ***Once installation of Chrome 42 is complete, immediately disable Internet access.***

10. Now setup a local static IP addressing scheme on the laptop Ethernet port and the spectrum analyzer. I use the following, but any private IP address range should work. *See pictures on page 4*.
    i. Gateway: 192.168.233.1   Subnet 255.255.255.0
    ii. Laptop Ethernet Port: 192.168.233.2   {the same}
    iii. SRT AT2500 Setup: 192.168.233.10   {the same}

11. Connect a standard RJ45 Ethernet cable between the PC and the analyzer.

12. Start your AT2500RQv3/4, check your network settings, and then place the analyzer in *'remote mode'* from the MENU icons. (bottom row, usually next to the MENU icon.

13. Open Chrome and type in the IP address assigned to the spectrum analyzer (example: 192.168.233.10). Then hit **Enter**.

14. This should open the web page contained in the instrument firmware and you should see the AT-WEB interface.

15. From the AT-WEB top menu bar select Connect, then select Connect. You should now see the analyzer controls and signals on your laptop.

16. Automated testing runs can be built using the SysEditor software on a Windows PC., and Reveal WinCom and System Editor can be downloaded from my web site Downloads Page along with the User's Manual for AT2500RQv3/4 version hardware.

Footnotes:

*(1) I may develop a 2nd set of instructions using Oracle VirtualBox at a later time.*

*(2) Pepper Flash was Google's proprietary Flash Player and it fully supports ActionScript 3 which the AT2500 firmware requires during execution. However, beginning with Chrome version **54** PepperFlash support was removed, which is why we are installing an older Chrome version.*

As a cautionary note, going forward you should stay off the Internet using this Mint-Chrome software arrangement for a variety of reasons – but primarily security issues. The Mint operating system will have security holes since we've not updated any of the programs, and Chrome v. 42 will most assuredly have security issues since it was issued in 2015. When you need Internet access simply reboot to the Windows OS. Other programs installed by Mint 18, and there are hundreds, should be fully functional and safe to use.
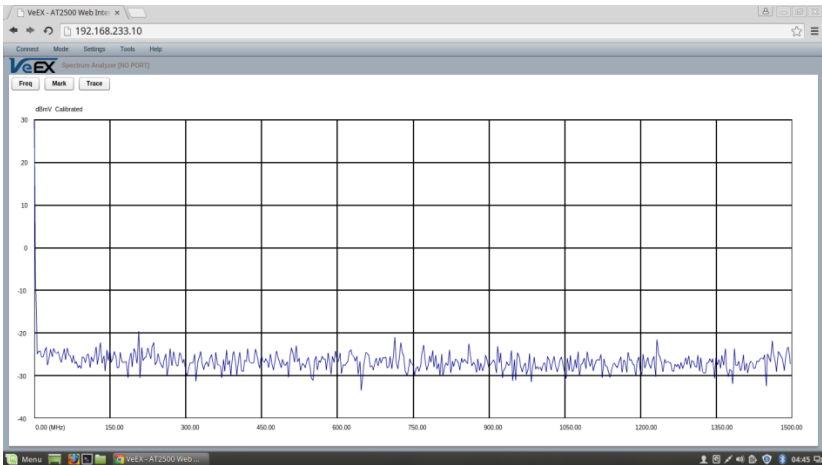

Just stay off the Internet!!

Typical Network Setup in Menu/Setup/Remote Setup
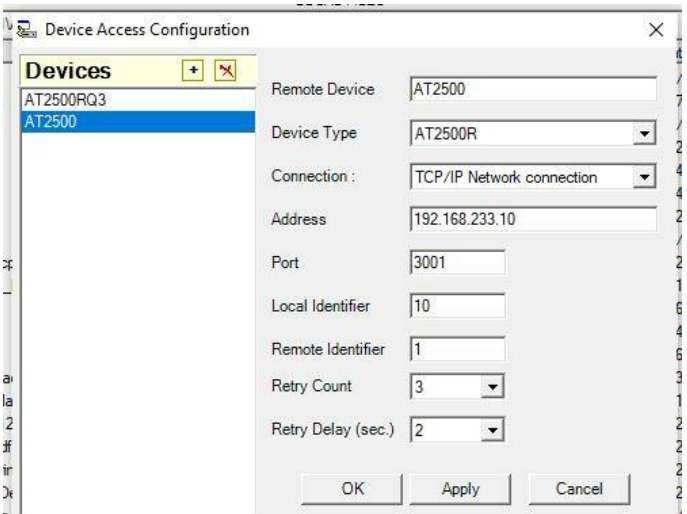
Comm Settings in RevealWinCom

AT-WEB Running Under Linux Mint 18 in Chrome v42 Web Browser