Preparing a Computer for Occultation Recording

This set of suggestions is based on how I prepare small computers and tablets to use as occultation recording machines in place of camcorders for remote occultation capture using a NTSC or PAL camera. The computers are set up with IOTA Video Capture, the SVID2USB23 driver, and lagarith compression. Everything else, as much as Windows allows, is removed. They operate unattended and automatically from remote and often unprotected sites.

Most of our occultation recording machines are small, Win10 computers used for nothing other than recording occultations. We have a mix of computers including iView stick, small Lenovo laptops, an RCA laptop, and a few tablets. All these computers have small SSD drives, 32 or 64 GB. These computers were bought from Newegg and Amazon, and cost from $80 to slightly more than $200 each.

This process takes several hours, possibly because these machines have very small memories.

1. Windows 10 automated setup first wants to connect to a Microsoft account, verify the legitimacy of the Windows 10 OS, and apply whatever updates are in the queue. We have an account which is only used for these computers. Let the setup do its thing, but try to avoid as much as possible all the extra stuff. Doing the updates and solving the issues raised can take hours! And every computer setup is different. The goal is to get to the point where Updates displays a green checkmark and the message “your system is up to date”.
2. Reduce how much assistance Cortana provides, only allow saving files anywhere on the machine, turn off all the ads, apps, diagnostics as requests are presented during the initialization process.
3. Once the updates are done, disconnect the PC from the internet by setting the WiFi to airplane mode and never connect again.
4. Turn off any of the manufacturers sharing, using, updating.
    a. Settings>Accounts>Sync your settings. Set them to off
    b. Settings>System>Shared Experiences. Set those to off.
5. Every piece of software that will not be used for occultation recording – MS Office stubb, games, Xbox, MS Cloud and its supports, is removed. Not everything can be removed, but it can be turned off.
6. Set the time zone to UTC, and the automatic time update from external sources to never.
    a. Control panel > Date and time >change date and time, >Change time zone, and >internet time
    b. Or via Settings>Time and language to turn off set time automatically and also to display seconds. Note that manually setting the time to the second is only available via the Control Panel’s Date and Time option.
7. Install IOTA Video Capture, Lagarith compression, and the SVID2USB2 driver. Virtual Dub might also be useful. Since the machine is not connected to the internet, get the software installation files and the up to date driver with another machine connected to the internet, and copy them to a portable drive or thumb drive.
    a. Connect a SVID2USB device ad let the computer install it.
    b. After installing everything, start up IOTA Video Capture with the SVID2USB attached and check that it is seen by the program. Under Input Device, it should show as USB 2861 Device.

8. For laptops, we prefer the computer set to desktop only, never going to tablet mode.
9. Set the computers to bring up Windows without requiring login when turned on.
    a. Cortana > command prompt
    b. <dir> >netplwiz (<dir) is the logged in user's name
    c. In the netplwiz menu, check that the user is highlighted, then turn uncheck the "login with password" at the top of the menu and click apply
    d. A request to enter the user password twice will appear. Enter and click OK.
    NOTE THAT YOU MUST UNDO THIS IF YOU CHANGE THE NAME OF THE PC. Undo it, change the name, reboot once to make sure everything is OK, then apply the change to start without requiring a login again.
10. Set IOTA Video Capture to start up at computer boot.
    a. First, make sure the user can see hidden folders. (Got me why this particular one is hidden, but it was on the machines I use.) To do this, go to control panel > file explorer options > view and click "show hidden files and folders" then apply. A fast way to get there is to enter "show hidden files and folders" in Cortana
    b. Then move a copy of the IOTA Video Capture icon to the following directory:

Users\<name>\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\Startup

<name> is the logged in user's name and user directory.

Moving can be accomplished by right clicking on the IOTA Video Capture icon, dragging it to the Startup folder, and selecting "copy" there. **Whenever a new version of IOTA Video Capture is installed, the old copy needs to be deleted from this folder and the new one copied here.**

11. To keep a laptop running with the lid closed, type lid into Cortana. That will take you to the control panel power options for deciding how to respond when lid is closed. If "do nothing" is selected, the screen goes dark when closed but the machine keeps running. The lid needs to be closed and the screen off for remote operation. The occultation recording can continue with the lid closed, the laptop is less detectible with no screen, and the battery life is longer.
12. Set the background in Settings>Personalization, or type Background into Cortana. We suggest using a very dark photo or image to make the computer easier to use when observing.
13. A tablet may only have one USB port, to serve for both power and data. A USB port expansion that has a power input will allow the tablet to access external power and a data source at the same time.
14. To check to be sure a small PC or table can capture 30 FPS video, record 10 minutes of IOTA VTI or KIWI output with IOTA Video Capture and look at the IOTA VidCap text file to see if there are dropped frames. VidCap has the option to turn off the video display during capture, and that may be necessary to reduce the dropped frames.
15. Test the battery life of the setup. One way would be to schedule 10 seconds of video capture every hour over an 8-hour span and see how many captures are made before the battery dies. When deploying, though, remember that low temperatures can reduce the battery's useful span.