

Autoprint Documentation and Guide for School Districts¹

In this tutorial we will look at 2 primary segments by which the autoprint functionality will be deployed. The first segment will be the backend process and the second will be the frontend process. The former will control roughly 80% of auto printing's major operations while the latter will comprise around 20%. The backend process uses written bash scripts and services that control the file directory's performance at boot time whereas the frontend process simply ensures that the file is downloaded to the correct directory for printing.

I. Backend

A. ChromeOS Developer Mode

1. The Warning

- a) *Enabling (and Disabling) Developer Mode Will Wipe Your Chromebook:* As part of the process of enabling Developer Mode, your Chromebook will be "powerwashed." All the user accounts and their files will be removed from your Chromebook. Of course, most of your data should be stored online, and you're free to log into the Chromebook with the same Google account afterward.
- a) *Google Doesn't Offer Support For Developer Mode:* Google doesn't officially support this feature. It's intended for developers (and power users). Google won't provide support for this stuff. The usual "This may void your warranty" warnings apply -- in other words, if you experience a hardware failure in developer mode, just disable developer mode before getting warranty support.

The Process

- b) Press and hold the Esc + Refresh keys, then push the power button.
- c) When you see the Chrome OS is missing or damaged message, press Ctrl + D.
- d) Some Chromebooks may require you to turn OS verification off. Press Enter (if required).
- e) Wait for the device to restart and go through the Chromebook setup process.
- f) You'll get an odd screen saying that OS verification is off. Keep in mind this screen will show every time you boot up.

¹ This is currently being tested on an Acer Chromebook 14. The respective steps involved for each process may look a little different depending on what model chromebook you have. However, the overall structure will be generally the same.

g) Press Ctrl + D to restart. This can take as long as 15 minutes.

B. Installing (enabling) Linux

1. On your Chromebook, at the bottom right, select the time.

Select Settings  > Advanced > Developers.

Next to "Linux development environment," select Turn On.

Use the recommended storage and follow the on-screen instructions. Setup can take 10 minutes or more.

A terminal window opens. You have a Debian 11 (Bullseye) environment. You can run Linux commands, install more tools using the APT package manager, and customize your shell.

In the event that the installation gets an error, you can retry and see if it completes. If it still continues to fail, right click the terminal shortcut on the docking tray and select "Shut down Linux." If this doesn't fix the problem, you can remove the Linux development environment altogether by selecting "remove" next to the "Remove Linux development environment" in settings. Lastly, if this doesn't work, you may have to increase the mounted storage and then resize after the environment has been successfully mounted. You can then reinitialize the container.

C. Installing Services and Applications

1. You will need to run the *installation.sh* bash script in order to install all of the various services. To do this you need to simply run *sudo bash installation.sh* within the terminal. That will execute the script and initialize the respective services. You will eventually be prompted to enter the name of your printer. The script is designed to scan your network using CUPS (Computer Unix Printing System) in order to determine which printers are compatible and export the appended list as a text file named *printerlist.txt* located within the Linux Files directory. Pick a printer that you would like to use, copy and paste it into the terminal, then press Enter.²

II. Frontend

A. Automa

1. Install the Automa extension found at the Chrome Web Store here:

<https://chrome.google.com/webstore/detail/automa/infppgnoaenmfagbfknfkancpbljcca?hl=en-US>

² You may get a message saying that the operation failed, client-error-not-found, or printer does not exist. This is safe to ignore.

This extension is used for automating workflows within the chromium browser. Once installed, it should automatically bring up a welcome page. If not, you can locate it by going to Settings > Extensions within the Chrome web browser. In the left pane, select workflows (alt + w) and select the down arrow under new workflow. Select Import workflow with the *autodownload.json* file. You will be prompted to allow Automa to grant workflow permissions along with allowing it to manage your downloads. Select “Grant permission” and “Allow” on the respective dialogue boxes. You now have a new workflow created called “print.” This workflow is enabled by default, but you can disable it at any time. You may also choose to pin it for the sake of visibility and allow it to work in incognito by going into the details of the extension.

B. Downloads

1. You will need to go to Settings on the Chrome web browser and select Downloads. Once in Downloads, change the location from My files › Downloads to the print folder that you created earlier within the Linux subdirectory.³ It should now read My files › print.

C. Chrome Startup Tabs

1. The Crostini Linux container **must** run in order for the aforementioned scripts to handle all of the backend processes. Essentially, at each boot iteration it rebuilds the print server ensuring that it prints successfully each time. This is done easiest by deploying the container in a web browser instead of using the shell application. Therefore, you can use the URL referenced in the *chromestartuptabs.txt*. Just go to Settings > On startup and under “Open a specific page or set of pages” just paste in the web address.⁴

³ This will force every downloaded file to drop into this folder in order for the auto printing functionality to work as designed. If you need to download a file that **you do not want printed**, you will need to change the setting in downloads “Ask where to save each file before downloading” to on.

⁴ It is imperative that *chrome-untrusted://terminal/html/terminal.html* runs so that you can ensure the script finishes before proceeding. If the print server is not fully loaded at boot time, then the autoprint functionality will not work.