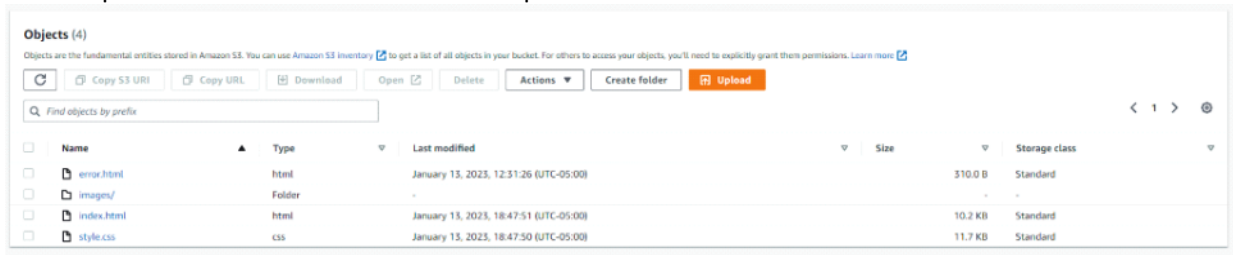


KEY

Monday, February 20, 2023 8:39 PM

Important Headings are Underlined and Bold:

- A bullet point indicates a note and NOT a step



The screenshot shows the Amazon S3 'Objects' console. At the top, there's a header 'Objects (4)' and a sub-header 'Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 Inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)'. Below this are several action buttons: 'Copy S3 URI', 'Copy URL', 'Download', 'Open', 'Delete', 'Actions', 'Create folder', and 'Upload'. A search bar 'Find objects by prefix' is also present. The main part of the console is a table with columns: 'Name', 'Type', 'Last modified', 'Size', and 'Storage class'. The table contains four rows of data:

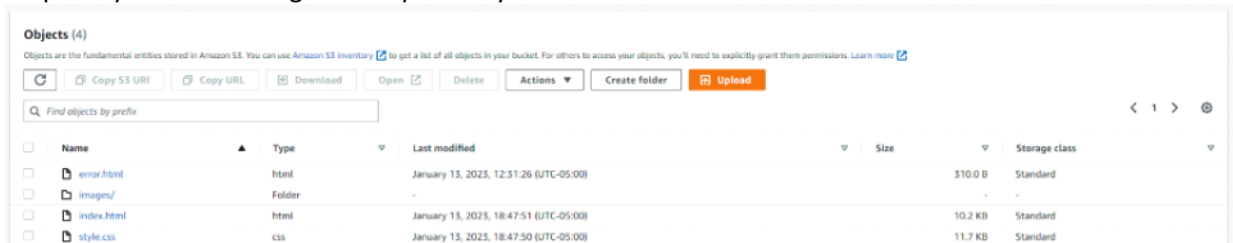
Name	Type	Last modified	Size	Storage class
error.html	html	January 13, 2023, 12:31:26 (UTC-05:00)	310.0 B	Standard
images/	Folder	-	-	-
index.html	html	January 13, 2023, 18:47:51 (UTC-05:00)	10.2 KB	Standard
style.css	css	January 13, 2023, 18:47:50 (UTC-05:00)	11.7 KB	Standard

- Bullet points may have images along with them to help visually
 - Bullet points may also have sub-bullet points for a more in-depth explanation

Headings in Bold Also Indicate Important Steps:

1. Steps are numbered, every new page starts with Step 1 and so on
 - a. Steps may have sub-steps to add more information

2. Steps may also have images to help visually



This is a duplicate of the screenshot above, showing the Amazon S3 'Objects' console with a table of objects: error.html, images/, index.html, and style.css.

3. **bold** word in steps indicate a button
4. *Italicized* words in steps indicate input fields or options
5. Keyboard Input in Courier New Font
6. Underlined words indicate files
7. Menu navigation is indicated by the pipe symbol and italic words: *Start / Programs / MS Word*
8. Numbers referencing other steps will be in red(1...2...3)
9. Code will be in a textbox in COURIER NEW font

```
#include <stdio.h>

int main(void)
{
    printf("Hello World in C:");
    return 0;
}
```

Installed Printer on a WIN10 Client

Tuesday, February 28, 2023 1:51 PM

- Method will vary for a printer that DOESN'T need a network connection to function
- In this demonstration, the HP LaserJet M209dwe will be used as the network-wide printer
 - This printer ONLY functions when it's connected to a network
- Prerequisites:
 - The HP Smart app(on PC or mobile) is needed because of printer model number
 - App is also needed to add printer to the network
 - Make sure printer is on and is connected to the network

1. Verified that the printer was connected to the network and is ready to print by checking the app

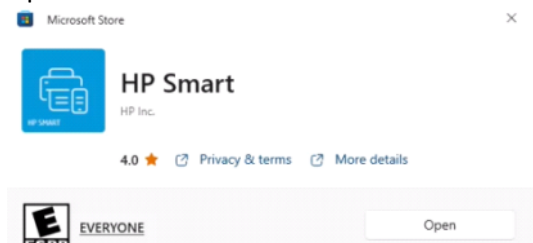


2. Found the IP Address for the printer

- a. Can be done by printing a status page from the printer OR
- b. Can also be done by opening PowerShell and running `wmic printer list brief` If printer was setup on a PC

3. Once IP address for the printer was found, copied the address and logged into Client4(PC-WIN10-2) with an admin account

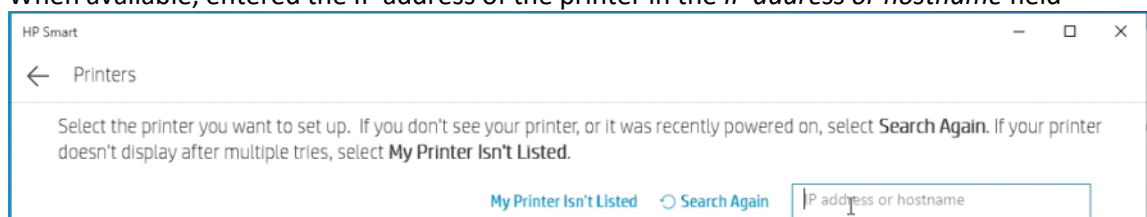
4. Opened the Microsoft Store and downloaded the HP Smart application



5. Opened the HP Smart app and clicked on **Set Up a New Printer**

6. Network Printer set up

- a. In the app clicked on **Set Up a New Printer**
- b. When available, entered the IP address of the printer in the *IP address or hostname* field



- c. When HP printer appeared, clicked on the printer to open set up



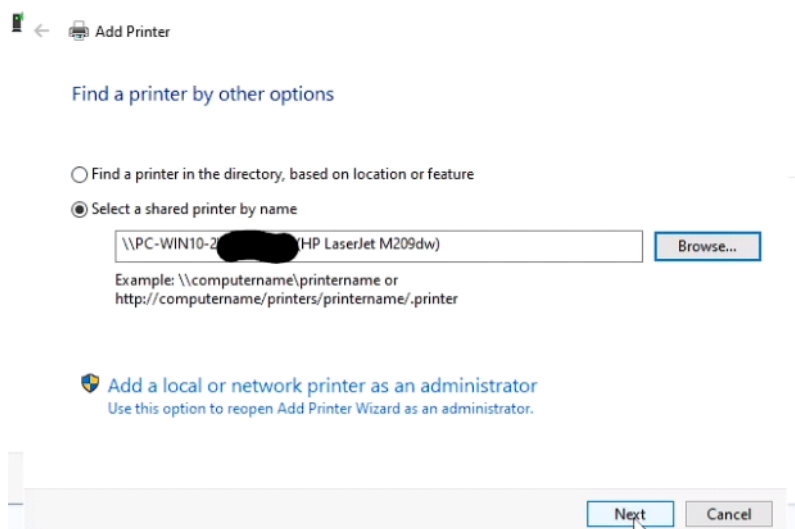
- d. In the next window, let HP install the printer's drivers on the client and clicked **Continue**
- e. Printer is now ready to be deployed on the network

Installed and Configured Print Server

Tuesday, February 28, 2023 8:24 PM

Installed Print Management and Printer:

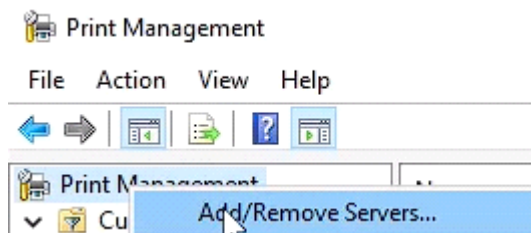
1. Installed Print Management in Windows Server
 - a. In Server Manager, clicked on *Add Roles and Features*
 - b. In the wizard, clicked on **Next** until the *Server Roles* sub-menu on the left-hand side
 - c. Checked the *Print and Document Services* box and selected **Add Features**
 - d. Clicked **Next** until the *Confirmation* sub-menu
 - e. Confirmed selections and clicked on **Install** and then **Close**
2. Added printer to Windows Server
 - a. Opened *Devices and Printers* and clicked on *Add a printer*
 - b. When available, clicked on *The printer that I want isn't listed*
 - c. In the Find a printer by other options window, selected the *Select a shared printer by name* option
 - d. Clicked on browse and navigated to the *Network* folder and opened *PC-WIN10-2*
 - e. Selected *HP LaserJet M209dw* and clicked on **Next**



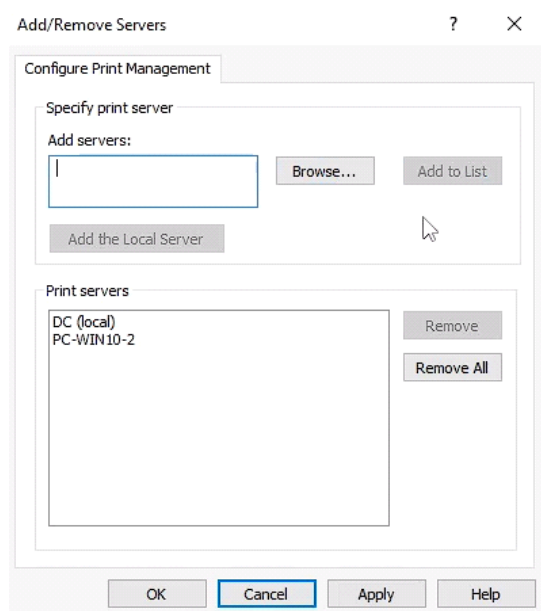
- e.
 - f. In the *Successfully added printer* page selected **Next** and then **Finish**

Configured Print Server

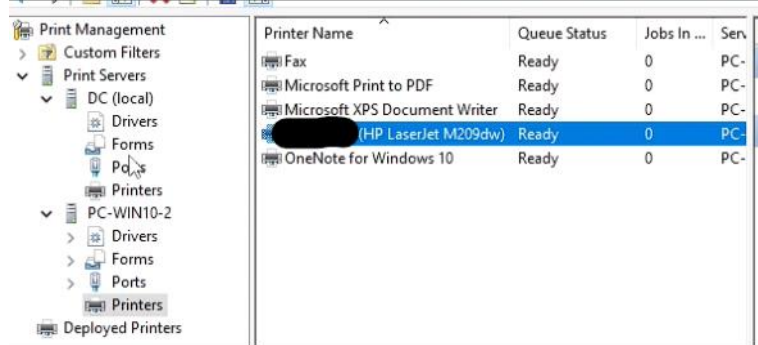
1. Set up print server in Print Management
 - a. In Server Manager, Navigated to *Tools* and opened *Print Management*
 - b. Right-clicked Print Management and selected *Add/Remove Servers...*



- c. In new window, selected **Browse** and navigated to Network folder
 - d. Selected the *PC-WIN10-2* client and clicked **Select Server**
 - e. Clicked on **Add to List** to add the server to the print servers list
 - f. Clicked on **Apply** and then **OK**



2. Back in Print Management, expanded the *PC-WIN10-2* drop down menu
3. Clicked on *Printers* and verified printer was present in print server

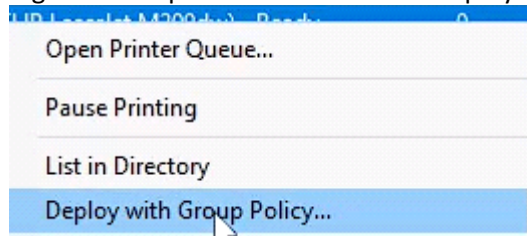


Deployed Printer with Group Policy

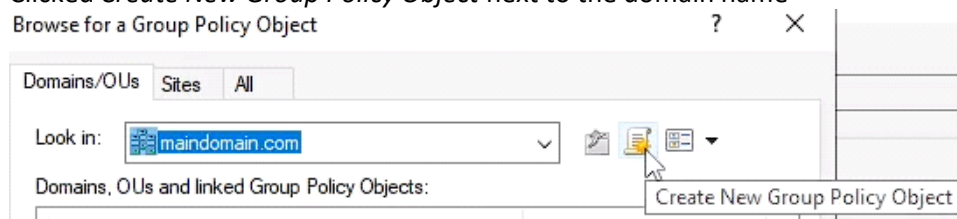
Tuesday, February 28, 2023 9:08 PM

Deployed Printer:

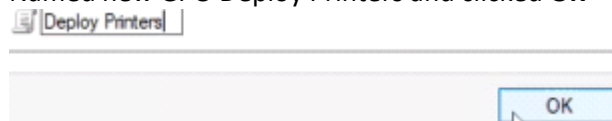
1. In Server Manager, Navigated to *Tools* and opened *Print Management*
2. Expanded the *PC-WIN10-2* drop down menu and clicked on *Printers*
3. Right-clicked printer that was to be deployed and selected *Deploy with Group Policy*



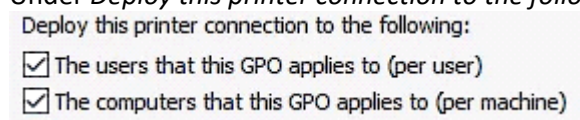
4. In the Deploy with Group Policy window, selected **Browse**
5. Clicked *Create New Group Policy Object* next to the domain name



6. Named new GPO *Deploy Printers* and clicked **OK**

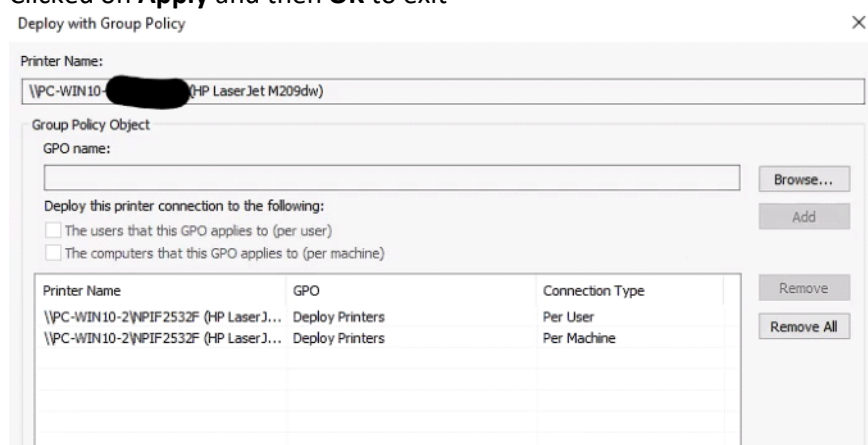


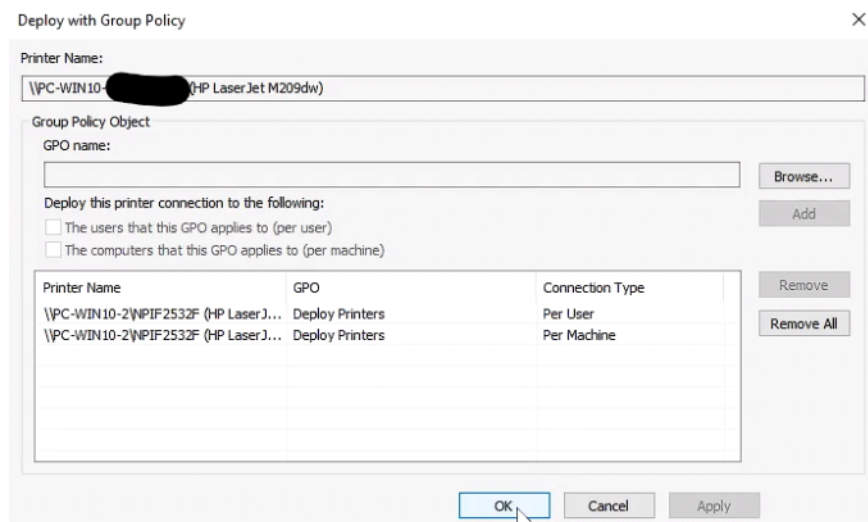
7. Under *Deploy this printer connection to the following*: checked both boxes



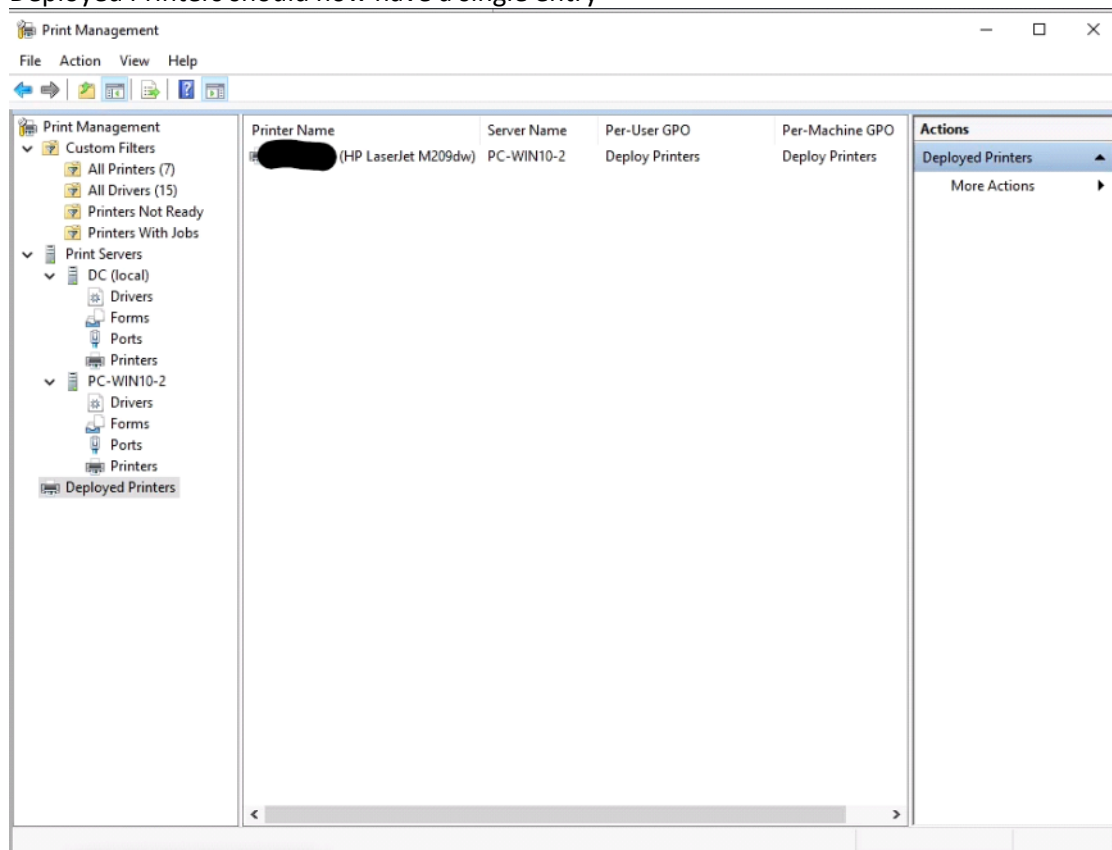
8. On the right side, clicked **Add** to add GPO to Users and Machines

9. Clicked on **Apply** and then **OK** to exit



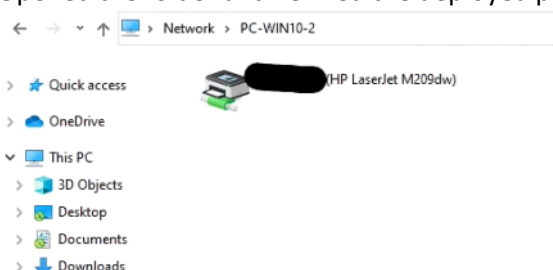


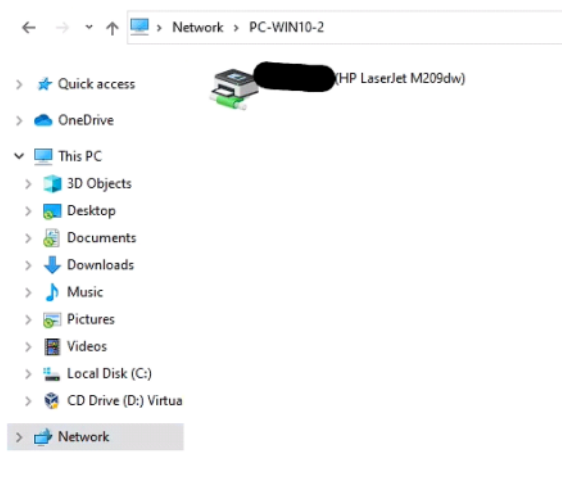
10. Deployed Printers should now have a single entry



Verified Clients Have Access to Printer:

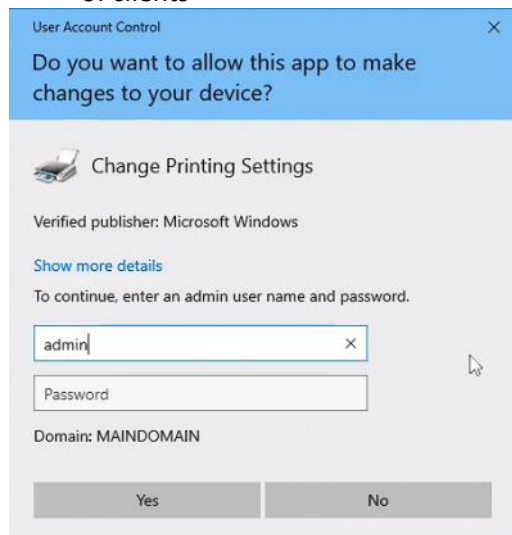
1. Logged into Client1(WIN10) with a domain account
2. Navigated to the *Network* folder and verified if Client4(PC-WIN10-2) print server was present
 - a. Opened the folder and verified the deployed printer was present

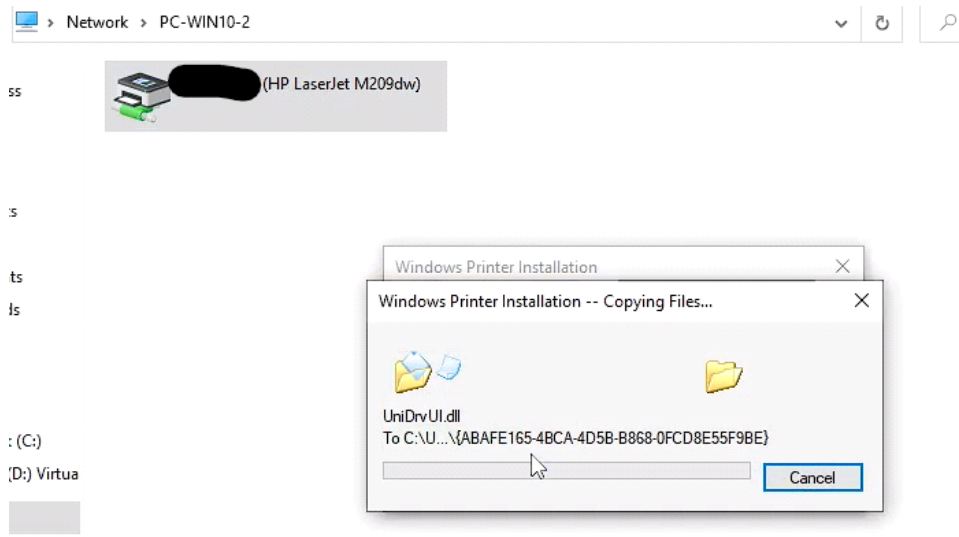




Printer Driver Problem:

1. In order to print as a domain user, the printer's drivers will need to be installed by the user by simply double-clicking the printer in the *Network* folder but there is a problem...
 - a. Windows now requires admin credentials to install these drivers, this wasn't usually the case before the PrintNightmare vulnerability
 - b. Small businesses are usually fine and anytime these prompts arise, the sys admin can install the print drivers themselves
 - c. But this can be hectic for administrators in a large organization with hundreds or thousands of clients





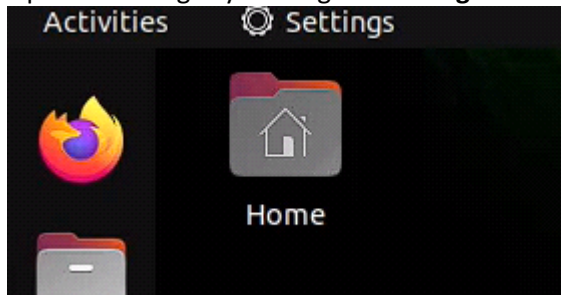
2. Print Nightmare Vulnerability
 - a. In 2021, this vulnerability was discovered and it affected Windows Spooler Service
 - b. The vulnerability allowed an attacker to remotely execute code on the Windows system as a local system user which is serious
 - c. Microsoft released a security update in September 2021 and now installing printer drivers requires admin privileges
3. There are ways around this problem like using Type 4 (printer in this lab used Type 3 drivers) printer drivers, locally installing older printers, using third party tools like [PrintLogic](#), or some of [these](#) solutions offered by Mr. Fontanez
4. At the end of the day, the solution one chooses to go with is entirely dependent on the organization and what is mostly feasible for them

Deployed Printer to Linux Clients

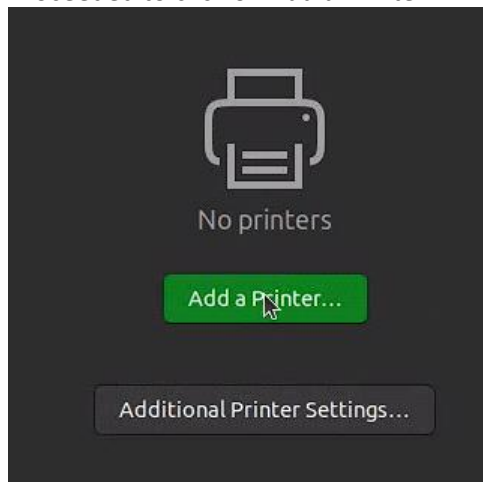
Tuesday, February 28, 2023 10:49 PM

- These steps are likely to work for most Debian-based distros

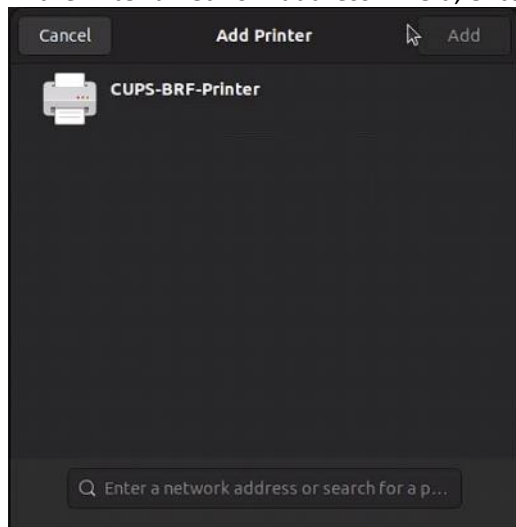
1. Logged into the Ubuntu client with admin credentials
2. Opened settings by clicking the **Settings** button in the upper left corner



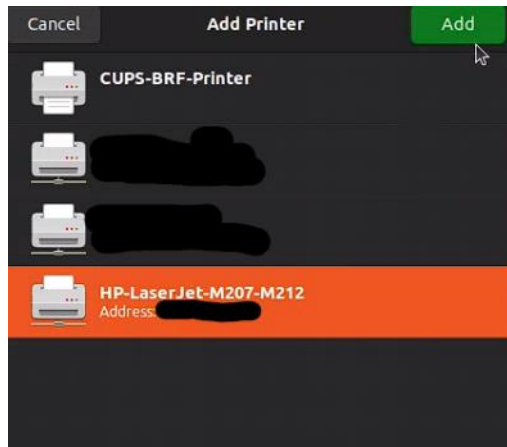
3. Added network printer
 - a. Scrolled down settings and clicked on *Printers*
 - b. Proceeded to click on *Add a Printer...*



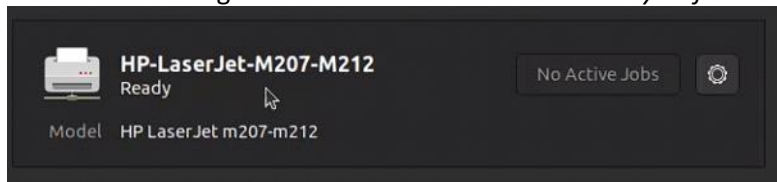
- c. In the *Enter a network address...* field, entered the printer's IP address



- d. Selected *HP-LaserJet-M207-M212* printer and clicked **Add** to add printer to Ubuntu



4. Verified printer was added by checking status on the printer within *Printers* settings
 - a. Clicked the gear icon and checked *Use Printer by Default* before continuing



5. Printer was ready and was successfully setup for printing