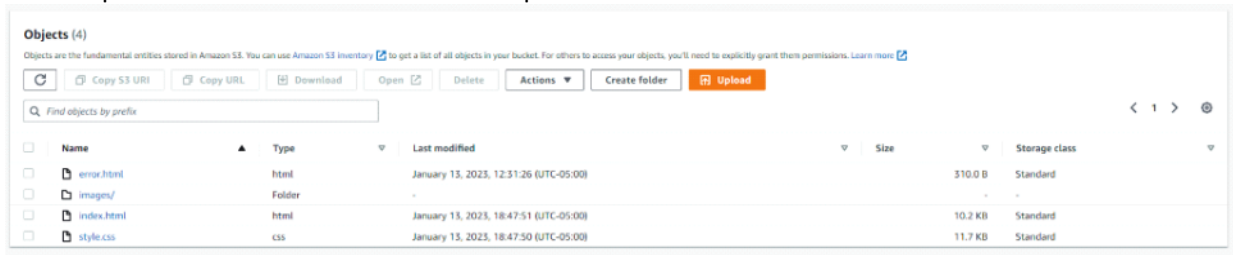


# KEY

Monday, February 20, 2023 8:39 PM

## Important Headings are Underlined and Bold:

- A bullet point indicates a note and NOT a step



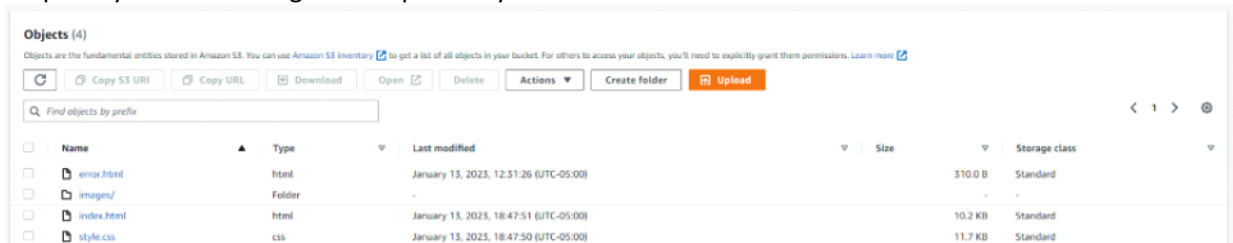
The screenshot shows the Amazon S3 'Objects' console. At the top, there's a header 'Objects (4)' and a description: 'Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 Inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more'. Below this is a toolbar with 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 area is a table with columns: 'Name', 'Type', 'Last modified', 'Size', and 'Storage class'. The table contains four rows: 'error.html' (html, 310.0 B, Standard), 'images/' (Folder, -, Standard), 'index.html' (html, 10.2 KB, Standard), and 'style.css' (css, 11.7 KB, Standard).

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	-	-	Standard
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

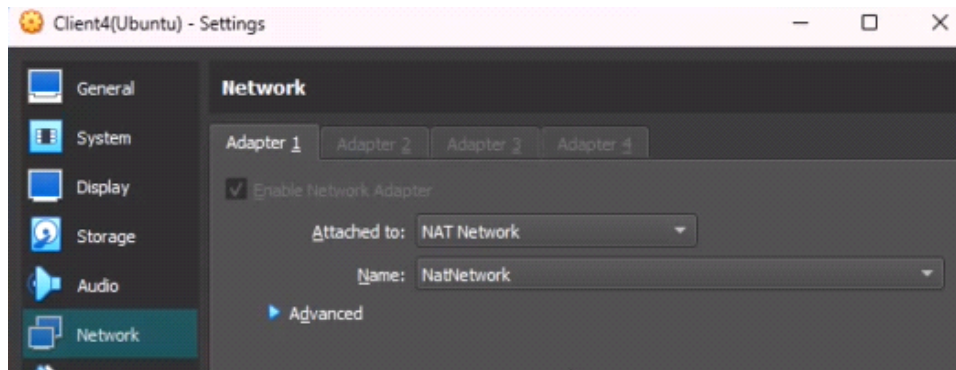
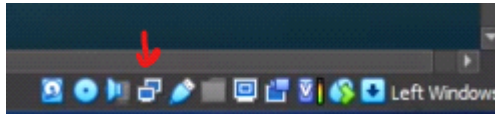
```
#include <stdio.h>

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

# Verify Connectivity

Wednesday, February 22, 2023 11:11 PM

- These steps are likely to work for most Debian-based distros
- Logged in with a local admin account for now
- Verified that the Ubuntu client can reach the Windows Server
  - Used VirtualBox's Network Settings in the lower right-hand corner to verify that the client was attached to the *NAT Network* adapter(internet from home network)
  - This is needed for the initial installation of the required packages



- By pinging the domain's name or address, connectivity was able to be verified
  - The domain's name or address may not be reachable while connected to the NAT adapter
  - In this case, only the name(domain) was reachable, the address could not be reached until the network adapter was switched to the internal one

```
root@ubuntu:~# ping maindomain.com
PING maindomain.com (3.33.152.147) 56(84) bytes of data.
64 bytes from a4ec4c6ea1c92e2e6.awsglobalaccelerator.com (3.33.152.147): icmp_seq=1 ttl=117 time=36.2 ms
64 bytes from a4ec4c6ea1c92e2e6.awsglobalaccelerator.com (3.33.152.147): icmp_seq=2 ttl=117 time=86.5 ms
64 bytes from a4ec4c6ea1c92e2e6.awsglobalaccelerator.com (3.33.152.147): icmp_seq=3 ttl=117 time=35.8 ms
64 bytes from a4ec4c6ea1c92e2e6.awsglobalaccelerator.com (3.33.152.147): icmp_seq=4 ttl=117 time=36.0 ms
^C
--- maindomain.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3024ms
rtt min/avg/max/mdev = 35.781/48.610/86.495/21.873 ms
root@ubuntu:~#
```

```
PING 172.16.0.1 (172.16.0.1) 56(84) bytes of data.
64 bytes from 172.16.0.1: icmp_seq=1 ttl=128 time=0.156 ms
64 bytes from 172.16.0.1: icmp_seq=2 ttl=128 time=0.207 ms
64 bytes from 172.16.0.1: icmp_seq=3 ttl=128 time=0.172 ms
64 bytes from 172.16.0.1: icmp_seq=4 ttl=128 time=0.207 ms
^C
--- 172.16.0.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3067ms
```

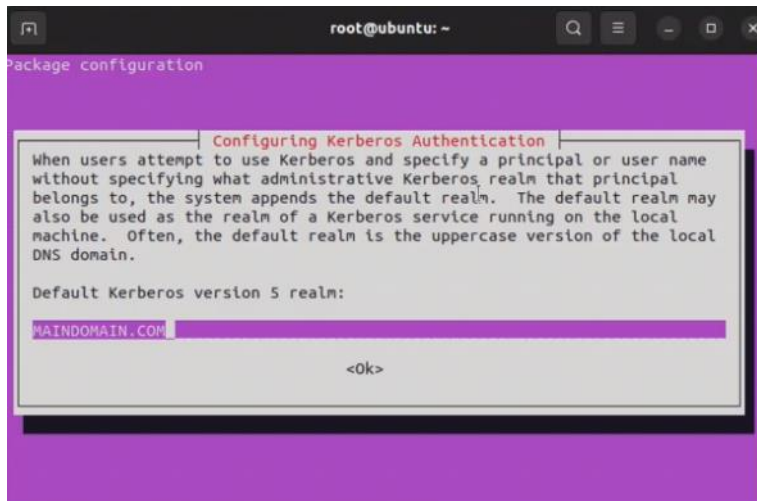
# Installing Required Packages

Thursday, February 23, 2023 5:38 PM

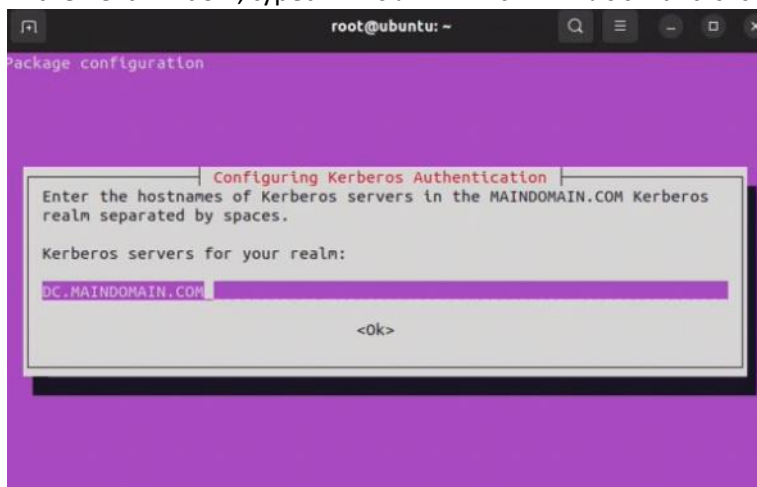
1. Opened a terminal, used `sudo -I` to switch to root user
2. Entered `sudo apt update` to update packages
3. If packages weren't up to date, used `sudo apt upgrade` to install the updates
4. Once all packages were up to date, typed in `apt-get -y install realmd sssd sssd-tools samba-common krb5-user packagekit samba-common-bin samba-libs adcli ntp` to install the required tools

```
root@ubuntu:~# apt-get -y install realmd sssd sssd-tools samba-common krb5-user packagekit samba-common-bin samba-libs adcli ntp
```

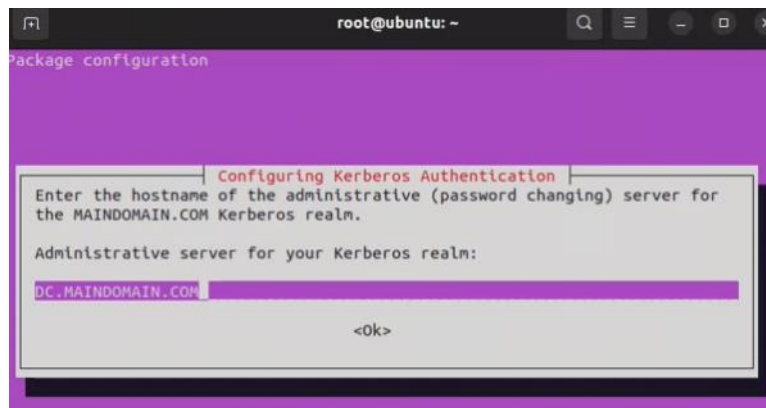
5. When the Configuring Kerberos Authentication pop-up appeared typed in `MAINDOMAIN.COM` and selected **OK**



6. In the next window, typed in `DC.MAINDOMAIN.COM` and clicked **OK**



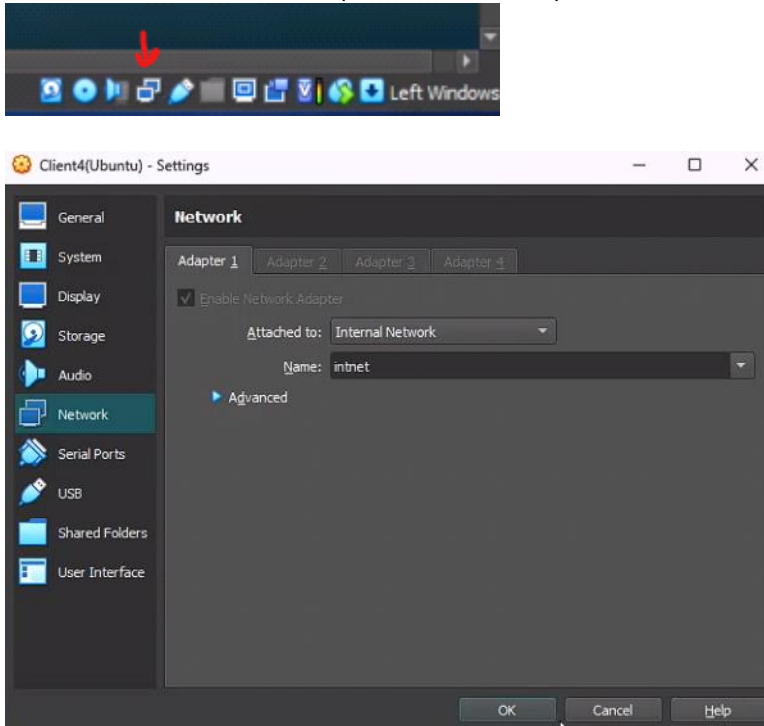
7. In the final window, typed in `DC.MAINDOMAIN.COM` and clicked **OK**



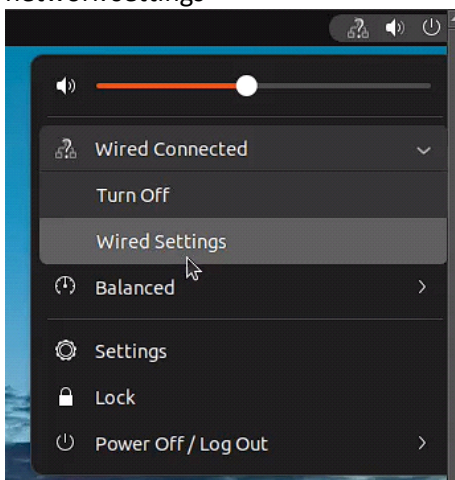
# Discovering and Joining the Domain

Thursday, February 23, 2023 6:28 PM

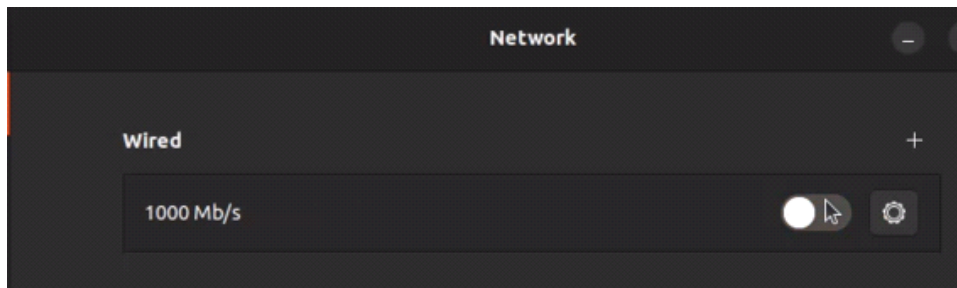
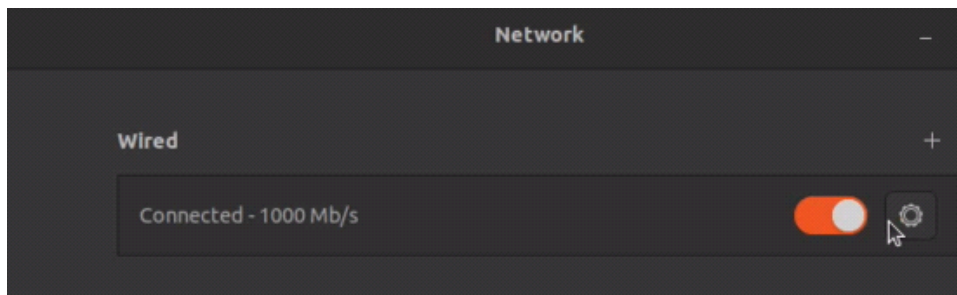
1. Used VirtualBox's Network Settings in the lower right-hand corner to switch the network adapter from *NAT Network* to *intnet*(internal network) and clicked **OK**



1. In the upper right-hand corner, navigated too *Wired Connected* / *Wired Settings* to access the network settings



2. Disabled the *wired* network adapter by clicking the switch
  - a. This reset the network adapters
  - b. Turn on the adapter again to obtain network connectivity again



3. Opened a terminal and typed in `sudo realm join maindomain.com -U 'admin@MAINDOMAIN.COM' -v` to discover the domain

- a. When prompted, entered the admin account's password

```
root@ubuntu:~# realm join maindomain.com -U 'admin@MAINDOMAIN.COM' -v
* Resolving: _ldap._tcp.maindomain.com
* Performing LDAP DSE lookup on: 172.16.0.1
* Successfully discovered: maindomain.com
Password for admin@MAINDOMAIN.COM: 
```

4. Verified machine was successfully enrolled in the realm by waiting for final output

```
* Successfully enrolled machine in realm
root@ubuntu:~# 
```

5. Edited the `realmd.conf` file by entering `sudo vi /etc/realmd.conf`

- a. This is needed to be able to join the domain
  - b. Used ESC key and `wq!` to overwrite the file
  - c. The following are the contents of the file:

```
[users]
default-home = /home/%D/%U
default-shell = /bin/bash

[active-directory]
default-client = sssd
os-name = ubuntu
os-version = 22.04

[service]
automatic-install = no

[maindomain.com]
fully-qualified-names = no
```

```
automatic-id-mapping = yes  
user-principal = yes  
manage-system = no
```

6. Joined the Ubuntu machine to the domain by entering `sudo kinit admin@MAINDOMAIN.COM`

- a. Entered admin password when prompted

```
root@ubuntu:~# kinit admin@MAINDOMAIN.COM  
Password for admin@MAINDOMAIN.COM:
```



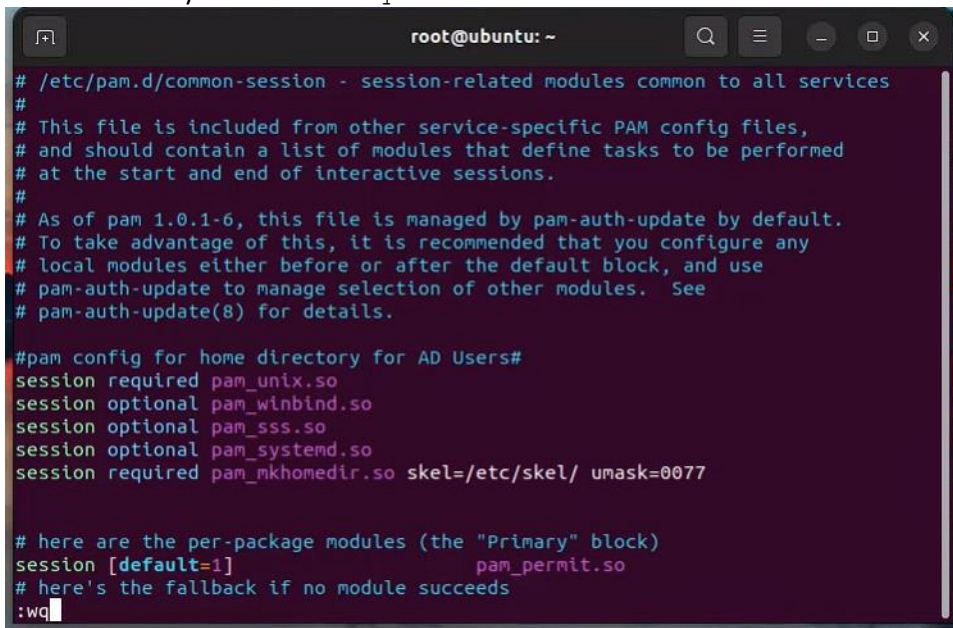
# Setting Up Home Directory Auto-Creation for Users

Thursday, February 23, 2023 7:12 PM

1. In a terminal, edited the pam.d file
  - a. Entered `sudo vi /etc/pam.d/common-session` to edit the file
  - b. Added the following contents to the file:

```
session required pam_unix.so
session optional pam_winbind.so
session optional pam_sss.so
session optional pam_systemd.so
session required pam_mkhomedir.so skel=/etc/skel/ umask=0077
```

2. Pressed ESC key and entered `wq!` to force save the file



```
root@ubuntu: ~
# /etc/pam.d/common-session - session-related modules common to all services
#
# This file is included from other service-specific PAM config files,
# and should contain a list of modules that define tasks to be performed
# at the start and end of interactive sessions.
#
# As of pam 1.0.1-6, this file is managed by pam-auth-update by default.
# To take advantage of this, it is recommended that you configure any
# local modules either before or after the default block, and use
# pam-auth-update to manage selection of other modules. See
# pam-auth-update(8) for details.

#pam config for home directory for AD Users#
session required pam_unix.so
session optional pam_winbind.so
session optional pam_sss.so
session optional pam_systemd.so
session required pam_mkhomedir.so skel=/etc/skel/ umask=0077

# here are the per-package modules (the "Primary" block)
session [default=1] pam_permit.so
# here's the fallback if no module succeeds
:wq!
```



# Logging in as a Domain User

Thursday, February 23, 2023 7:58 PM

1. Logged out of the current account and in the login screen, selected the *Not Listed?* option



2. To login initially, entered `MAINDOMAIN.COM\admin` in the username field
  - a. Entered password when prompted
  - b. This only needs to be done once, account should be saved in subsequent logins

