Network Configuration SOP (pfSense):

Purpose:

Process to implement pfSense to configure organizations network topology.

Scope:

Pfsense will be used to create subnets, DHCP ranges, and to assign roles and IP addresses for all important devices within the organization's network infrastructure.

Responsibilities:

Information Technology (IT) department has sole responsibility for configuring the organization's network. IT Department is required to create and update subnets, DHCP ranges, and IP addresses for important shared resources.

Prerequisites:

pfSense - world's most trusted open source network security solution.

pfSense GUI should be run as an administrator for full functionality.

Procedure:

PFSENSE NETWORK CONFIGURATION FLOW CHART
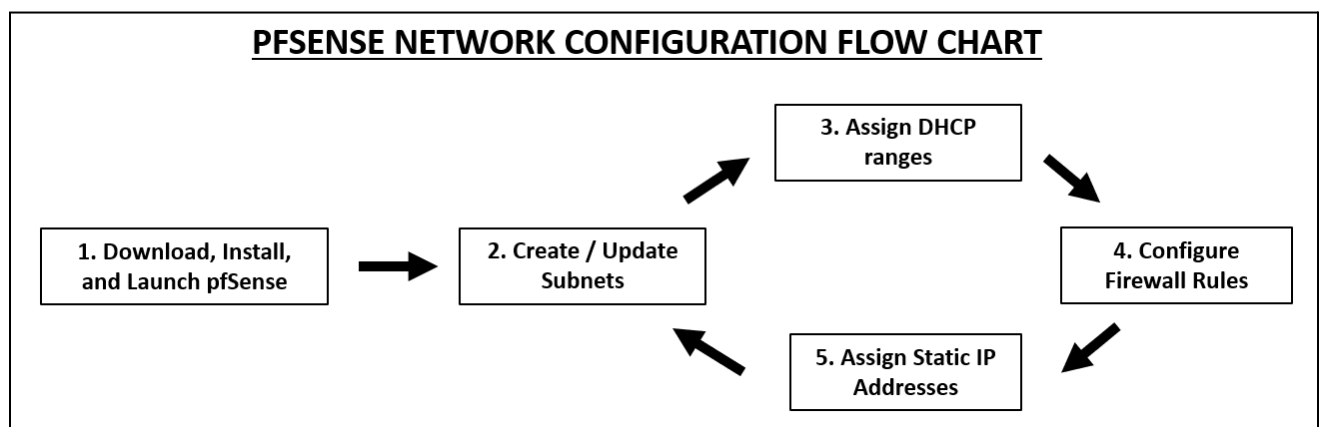
- **1. Download, Install, and Launch pfSense GUI**

  - Download pfSense from official website ([pfSense](#))
    - Ensure you select the correct install file for your Operating System (OS)
    - Select all defaults during installation wizard
  - To launch pfSense GUI ensure your computer is connected to the LAN interface of the connected device
    - Open a web browser and navigate to the default pfSense IP address (192.168.1.1).
    - You will likely be provided with a warning similar to the one below, accept the risk to continue to the pfSense GUI
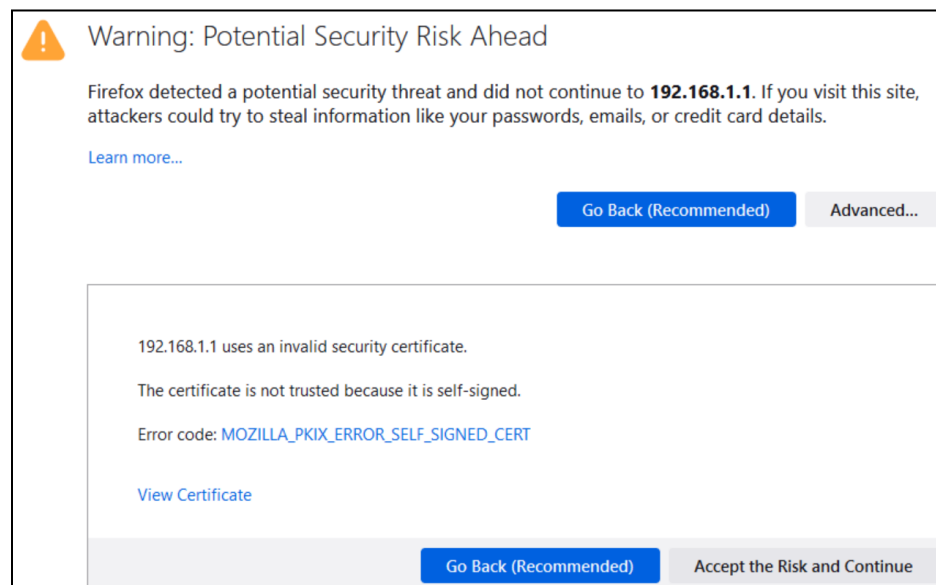
  - Login to the pfSense GUI with the default username and password
    - User: admin
    - Password: pfsense

- **2. Create / Update Subnets** (Repeat steps 2 & 3 to create additional subnets)

  - Navigate to Interfaces > LAN > Configure interface IP and subnet mask
    - **IPv4 Configuration Type:** Static IPv4

    - **IPv4 Address:** Enter first IP of subnet you want to create / update and the appropriate subnet mask

- **3. Assign DHCP ranges**

  ● Navigate to Services > DHCP Server > Select the subnet you created
    ○ Check the "Enable DHCP server on LAN interface"
    ○ **Range:** Enter the range of IP addresses for the subnet DHCP pool

Range	192.168.x.x	192.168.x.x
	From	To

- **4. Configure Firewall Rules**

  ● Navigate to Firewall > Rules > Select tab for created subnet > Add
    ○ Create rule to allow traffic between subnets
      ■ **Action:** Pass

Action	Pass ▾

      ■ **Interface:** Subnet_1 name

Interface	LAN ▾
	Choose the interface from which packets must come to match this rule.

      ■ **Address** Family: IPv4

Address Family	IPv4 ▾
	Select the Internet Protocol version this rule applies to.

      ■ **Protocol:** Any

Protocol	Any ▾
	Choose which IP protocol this rule should match.

      ■ **Source:** Subnet_2 name

Source	☐ Invert match	LAN address ▾

      ■ **Destination**: Any

Destination	☐ Invert match	any ▾

    ○ Save and select Apply Changes

· **5. Assign Static IP Addresses**

- Navigate to Services > DHCP Server > Select the tab of the interface where the device you would like to statically map resides
  - At bottom of page under "DCHP" Static Mappings for this Interface"
  - Select Add

  - Configure the following:
    - **MAC Address:** MAC of device

    - **IP Address:** IP of device

    - **Description:** Description of device (ex. office_printer)

  - Save and Apply Changes

References:

- [So, You Want to Write an SOP?](#)
- [37 Best Standard Operating Procedure (SOP) Templates](#)
- [Protect home network using subnets with pfSense](#)
- [ChatGPT](#)
- [What is a subnet? | How subnetting works](#)
- [Dynamic Host Configuration Protocol (DHCP)](#)
- [What is a Firewall?](#)
- [Static IP address](#)

Definitions:

- **Subnet -** smaller network inside a large network
- **DHCP -** client/server protocol, automatically provides IP)host with its IP and other related configuration information such as subnet mask and default gateway
- **Firewall -** network security device, monitors and filters incoming and outgoing network traffic based on an organization's previously established security policies
- **Static IP -** unique identifier for a device that connects to the internet

Revision History:

4/4/2022 -- "Network Configuration SOP" created by Rob Gregor