The classroom network

Contents

1 Build the local area network

1.1 Connect your network devices

Each group has a kit that includes an 8 port switch (Netgear GS108Tv2) and a dual-band WiFi access point (Netgear n600). You'll need to connect the access

point and the MacMini with the 8 port switch to allow your students to access the virtual teaching environment and the Internet.

The switch and access point are pre-configured for this workshop to save classroom time. All the switch ports are equivalent, so it's not important which ports on the switch you connect the devices to.

Connect the access point and the MacMini to the switch. When you connect the MacMini to the switch, you'll use the built-in ethernet port (eth0). When you connect the access point, you'll use one of the four black ethernet ports. Don't use the yellow ethernet port on the access point.

Power on the switch and access point. When the power light on the access point turns green it's ready. This takes a couple minutes; some patience is required.

You may now connect to you classroom LAN with your laptop.

1.2   Connect your laptop

Each group has an access point with SSIDs of the form KITx-2.4 and KITx-5 (e.g. for group one, **KIT1-2.4** and **KIT1-5**). Connect your laptop to your group's access point using either one of these SSIDs .

Because we don't have a DHCP server on our network, you'll need to configure your laptop's network interface manually.

  IP address: 10.10.0.9
  Netmask: 255.255.255.0
  DNS: 10.10.0.241

Next ping the access point (.251), switch (.253) and the MacMini (.241) to make sure you can talk to your network devices.

You should now be able to ssh to your MacMini. Because we enable DNS on the MacMini in the next session, you'll need to use the IP address to connect to the devices on your network.

```
ssh nsrc@10.10.0.241
```

Log in with the instructor password.

2   Verify network device configuration

Both of the network devices use web interfaces for administration. The access point and switch have already been configured for you, but in the next section you'll verify the settings so you are familiar with the minimum configuration that's needed to run a workshop.

2.1 Access point

Connect to the access point with a web browser:

`http://10.10.0.251/`

2.1.1 Check SSID

- "Advanced" -> "Setup" -> "Wireless Setup"
- "Wireless Network(2.4GHz b/g/n)"
  - **Enable SSID Broadcast** is checked
  - **Name (SSID)** = KITx-2.4 (where x=1-6)
  - **Security Options** = WPA2-PSK [AES]
  - **Passphrase** = 8888888888 (the numeral "8" repeated 10 times)
- "Wireless Network (5GHz a/n)"
  - **Enable SSID Broadcast** is checked
  - **Name (SSID)** = KITx-5 (where x=1-6)
  - **Security Options** = WPA2-PSK [AES]
  - **Passphrase** = 8888888888 (the numeral "8" repeated 10 times)

2.1.2 Check Access Point mode (bridge mode)

- "Advanced" -> "Advanced Setup" -> "Wireless AP"
  - **Enable Access Point Mode** is checked
  - **Use fixed IP address (not recommended)** is selected
    * **IP Address** = 10.10.0.251
    * **IP Subnet Mask** = 255.255.255.0
    * **Gateway IP Address** = 10.10.0.254
    * **Primary DNS** = 10.10.0.241

2.2 Switch

Connect to the switch with a web browser:

`http://10.10.0.253/`

2.2.1 Check System Info

- "System" -> "Management" -> "System Information"
  - **System Name** = kitX-sw
  - **System Location** (you can set this if you like)
  - **System Contact** = nsrc@nsrc.org

2.2.2 Check IP Configuration

- "System" -> "Management" -> "IP Configuration"
  - **Static IP address** is selected
    * **IP Address** = 10.10.0.253
    * **Subnet Mask** = 255.255.255.0
    * **Default Gateway** = 10.10.0.254

2.2.3 Check Time

- "System" -> "Management" -> "Time"
  - "SNTP Global Configuration"
    * "Time Configuration"
      · **Clock source** = SNTP
    * "SNTP Server Configuration"
      · **Server Type** = IPV4
      · **Address** = 10.10.0.241
      · **Port** = 123
      · **Priority** = 1
      · **Version** = 4

2.2.4 Check DNS

- "System" -> "Management" -> "DNS"
  - "DNS Configuration"
    * "DNS Configuration"
      · **DNS Status** is enabled
  - "DNS Server Configuration"
    * **DNS Server** = 10.10.0.241

2.2.5 Check SNMP

- "System" -> "SNMP" -> "SNMP V1/V2"
    - "Community Configuration"
        * **Management Station IP** = 10.10.0.0
        * **Management Station IP Mask** = 255.0.0.0
        * **Community String** = NetManage
        * **Access Mode** = ReadOnly
        * **Status** = Enable

2.2.6 Check Password

- "Security" -> "Management Security" -> "User Configuration"
    - "Change password"

3 Wide area network access

Each group has an ethernet cable that will provide your connection to the Internet.

Connect your network drop to the MacMini's USB ethernet dongle (eth1)