WELCOME TO SS-E AFNOG - 2017 NAIROBI, KENYA

Scalable Services – English

What is SS-E?

- **Scalable Services – English is a track that teaches advanced topics on designing, configuring and managing large scale Internet Services run on UNIX/Linux servers**
- It builds on Track Zero which covered introductory topics on UNIX/Linux and Internet Services
- **What sort of services?**
  - DNS, Web, Email
  - Monitoring, Authentication
  - Many Others
- **Basically any service that can be offered on a Linux/UNIX server over the Internet**

Your instructors

- Ayitey A. Bulley - Ghana
- Frank Kuse – Ghana
- Isabella Odida – Uganda
- Joe Abley – Canada
- Kevin Chege – Kenya
- Michuki Mwangi – from Kenya

How about you….?

Introduce yourself:

- **Name**

- **Country**

- **Work**

- **Hobbies** ☺

- **How did you fly to get to Nairobi?**

Course teaching style

- Theory explained first then followed by a practical session

- Each of you has been assigned a Virtual Machine running Debian 8.8 (Jessie) that **you will access from your laptop**

- **Feel free to ask questions anytime**

- If you need help during the practical labs, **raise your hand** so the instructors can assist

- **Kindly mute your phones** during classes ☺

- Please pay during theory sessions ☺

Timetable – please keep time ☺

- Breakfast at the hotel starts at 6am*
- **First Session 09:00 to 11:00**
  - Tea break 11:00 to 11:00
- **Second Session from 11:30 to 13:00**
  - Lunch from 13:00 to 14:00
- **Third Session- from 14:00 to 16:00**
  - Tea break – 16:00 to 16:30
- **Fourth Session – 16:30 to 18:00**
  - Dinner
- **Evening sessions – 20:00 – 22:00**

Breakfast: **At the Boma Hotel or Boma Inn**

Lunch and dinner: **On the ground floor of the conference facility**

Tea break: **In the corridor outside the lecture rooms**

Washrooms: **To the right when you exit from KIFARU (close to the secretariat)**

Inventory

You should have received:

- Name badges
- Folder with notepad, pen, information pack

Keep your name badge with you

At the end of the week you will receive:

- A USB stick with some O'Reilly eBooks

Please share with your colleagues back at home.

Connectivity

- **Use your own laptops for:**
  - Web browsing
  - Control your virtual machines
  - Virtualization exercises
- **Wireless Internet**
  - Use the **AIS** or you course network SSID
  - Password for both is "**success!**"
- **Hotel wifi is available in your rooms**

Access Your Virtual Machines

- **Virtual servers (named pc1 – pc35)**
  - DNS names are **pc1.sse.ws.afnog.org** (etc)
  - PC Assignment exercise
- **Debian 8.8 OS installed**
- **Use SSH to access your server (e.g. Putty for Windows)**
- **Login with afnog/afnog**
- **Use sudo to execute commands as root**
- **Don't change passwords**
- **Don't "close security holes"**
- **Don't shutdown your server (there's no power button!)**
- **Your servers are accessible over the Internet**

Windows Users

- **Install putty from**: http://www.ws.afnog.org/afnog2016/unix-intro/downloads/

After downloading you will see the above icon. Double click on it and you should see a window similar to the one on the right
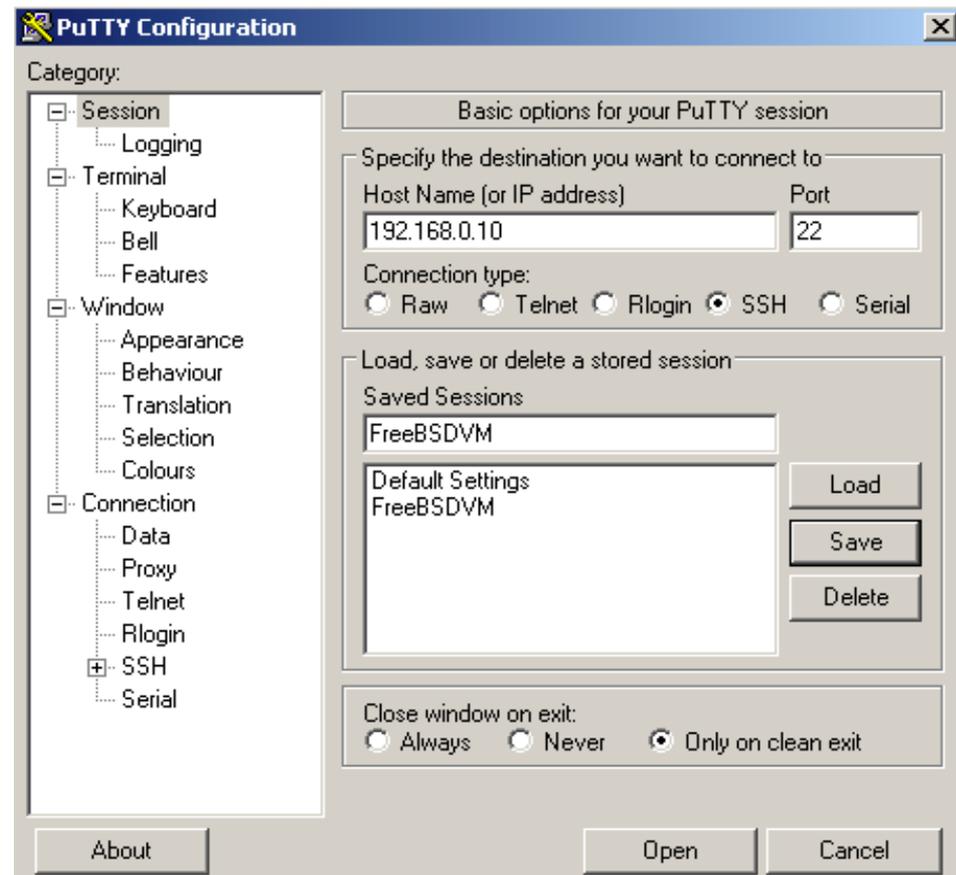
Unix, Linux and OS X Users

- A default Secure Shell (SSH) client is already installed in Unix, Linux and OS X

- To access the default SSH

  - Open: Terminal application

  - From Terminal prompt type the following;

  - ssh afnog@pcX.sse.ws.afnog.org where X is the pc number.

Online Resources

Web site: http://www.ws.afnog.org/afnog2017/

AfNOG Mailing List:

- Q&A on Internet operational and technical issues.

- No foul language or disrespect for other participants.

- No blatant product marketing.

- No political postings.

Please subscribe while at the Workshop:

- So we can help you if you have problems subscribing.

Please raise any questions related to the workshop content.

Safety

Please be careful in class:

- trip on power cords

- pull cables out of sockets

- knock equipment off tables

- fall from leaning back too far in your chair

Core topics to be covered this week

- **DNS**
  - Resolver
  - Authoritative DNS
- **Firewalls and Network Security**
  - Host security using IPtables
- **Mail Services**
  - How to setup mail services
- **Hosting Web services**
  - Web server using Apache
- **RADIUS & LDAP**
  - For centralizing authentication
- **Virtualization**
  - How to build virtual servers

Rough agenda for the week

- **Monday**:
  - First Session: intro, nano bootcamp, Post-installation Best Practices
  - Second Session: DNS (Intro)
  - Third Session: Firewalls and Network Security
  - Fourth Session: DNS (Resolver)
    - *Evening Session: General*

- **Tuesday**:
  - First Session: Security (Public Key, SSL, PGP, Crypto)
  - Second : DNS (Authoritative)
  - Third Session: Apache + PHP
  - Fourth Session: Postfix
    - *Evening Session: DNSSEC*

- **Wednesday**:
  - First and Second Session: Postfix
  - Third and Fourth Session: Open LDAP Directory
    - *Evening Session: Ansible*

Rough agenda for the week …

- **Thursday**:
  - First and Second Session: RADIUS
  - Third Session: Dovecot IMAP
  - Fourth Session: Squirrelmail

- **Friday**:
  - First and Session: Load Balancing
  - Third and Fourth : Virtualization
  - Closing Survey

Any questions?

Nano bootcamp

- We will use an editor called "nano" on the Debian machines
- However, you should learn "vi" as it has way more features than most editors
- Install nano: afnog@pcX :~$**sudo apt-get install nano**
- For nano you can open a file by:

      afnog@pcX :~$**nano /path/to/filename**

OR   afnog@pcX :~$**nano filename**

Save the changes by:

      ctrl X

      answer "y"

Search the file for a specific word:

      ctrl W <then the search term>

Short nano exercise

- Go to your home directory
  afnog@pcX :~$**cd /home/afnog**
- Open a file:
  afnog@pcX :~$**nano test-script.sh**

- Type the following 4 lines in the file
  #!/bin/bash
  # SSE Test Script
  echo "Welcome $HOSTNAME to AfNOG SSE 2017!"
  echo "AfNOG!, Success!"

- Then Save and Exit
  Ctrl X and Then answer **y. Maintain the same filename (press enter)**

- Change the files permissions
  afnog@pcX :~$ **chmod +x test-script.sh**

- Run the file
  afnog@pcX :~$ **./test-script.sh**

More commands

- Ctrl y – previous Page

- Ctrl v – next page

Nano provides a menu at the bottom:

```
                    [ Read 28 lines ]
^G Get Help   ^O WriteOut   ^R Read File  ^Y Prev Page  ^K Cut Text   ^C Cur Pos
^X Exit       ^J Justify    ^W Where Is   ^V Next Page  ^U UnCut Text ^T To Spell
```

POST-INSTALL BEST PRACTICES

Things to do post-install

- 1. Update the System

  afnog@pcX :~$**sudo nano /etc/apt/sources.list**

  Find

  deb http://httpredir.debian.org/debian   jessie   main

  deb http://security.debian.org/ jessie/updates main

  Add "contrib" and "non-free" repositories to look as follows (use tab key);

  deb http://httpredir.debian.org/debian jessie   main contrib non-free

  deb http://security.debian.org/ jessie/updates main contrib non-free

  Save the file and exit

Things to do post-install

- 2. Update the System
  afnog@pcX:~$**sudo apt-get update**
  afnog@pcX:~$**sudo apt-get upgrade**

- 3. Install SSH (If it was not installed during system installation)
  afnog@pcX:~$**sudo apt-get install openssh-server**

- 4. Disable unwanted Services
  afnog@pcX :~$**sudo service - - status-all**
  afnog@pcX :~$**sudo service exim4 stop**

- 5. Check Listening Network Ports
  afnog@pcX :~$**sudo netstat –tulpn**

Things to do post-install

- 6. Disable Remote SSH Root User Login
  afnog@debian8:~$**sudo nano /etc/ssh/sshd_config**
    - *Change line or if missing Add the line (use*
    - PermitRootLogin without-password → PermitRootLogin no
  afnog@debian8:~$**sudo service sshd restart**

- 7. Configure NTP Server
  afnog@debian8:~$**sudo apt-get install ntp**
    - (optional but necessary) Edit ntp servers and put local ones
  afnog@debian8:~$**sudo nano /etc/ntp.conf**
      - Comment "server" sections or replace server with a local/internal one
  afnog@debian8:~$**sudo service ntp start**
  afnog@debian8:~$**ntpdc –pn**
  afnog@debian8:~$**ntpq –pn**

- **More here:**
https://www.debian.org/doc/manuals/securing-debian-howto/

Thank you!

Questions?