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

- Isabel Odida - Uganda
- Kevin Chege - Kenya
- Manhal Mohammed - Sudan
- Vitus Aborogu
- Michuki Mwangi - from Kenya
Let’s Play a Game
How about you....?

Introduce yourself:
- Name
- Country
- Work
- Hobbies 😊
- How did you fly to get to Uganda?
Course teaching style

- Theory explained first then followed by a practical session
- Each of you has been assigned a Virtual Machine running Debian 9 (Openstack) 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 18:30
  - Dinner

Breakfast: At the hotel
Lunch and dinner: At the Paradise restaurant
Tea break: In the corridor outside the lecture rooms
Washrooms: On first floor right before the Victoria room or Between Ground floor and First floor
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 your course network SSID
  - Password for both is "success!"

- Hotel wifi is available in your rooms and anywhere else at the hotel
Access Your Virtual Machines

- Virtual servers (named pc1 - pc27)
  - DNS names are pc1.sse.ws.afnog.org (etc)
  - PC Assignment exercise
- Debian 9 Openstack 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 or MobaXterm from: http://www.ws.afnog.org/afnog2019/sse/Downloads/

After downloading you will see the above icons. Double click on the one of your choice and you should see a window similar to the ones below
SSH Clients

- Putty
**SSH Client**

- **MobaXterm**

  Go to Sessions and then SSH, add your credentials as below
Secure Shell (SSH) session
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


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

- **Ansible**
  - Automation tools

- **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)

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

- **Wednesday:**
  - First and Second Session: Postfix
  - Third and Fourth Session: Open LDAP Directory
Rough agenda for the week …

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

- **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
  ```bash
  #!/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://ftp.uk.debian.org/debian/ stretch main
   deb http://security.debian.org/debian-security stretch/updates main

   Add “contrib” and “non-free” repositories to look as follows (use tab key):

   deb http://ftp.uk.debian.org/debian/ stretch main contrib non-free
   deb http://security.debian.org/debian-security stretch/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. 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
   ▪  *Find the line*
   ▪  PermitRootLogin prohibit-password
   ▪  Change to →  PermitRootLogin no
   ▪  Save and Exit
   afnog@debian8:~$ sudo service sshd restart

7. Configure NTP Server
   afnog@debian9:~$ sudo apt-get install ntp
   ▪  (optional but necessary) Edit ntp servers and put local ones
   afnog@debian9:~$ sudo nano /etc/ntp.conf
       ▪  Comment “server” sections or replace server with a local/internal one
   afnog@debian9:~$ sudo service ntp start
   afnog@debian9:~$ ntpdc -pn
   afnog@debian9:~$ ntpq -pn

More here:
Thank you!

Questions?