



WELCOME TO SS-E AFNOG - 2016 BOTSWANA

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
- Chris Wilson – UK
- Emmanuel Odoom - Ghana
- Frank Kuse – Ghana
- 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 Botswana?**

Course teaching style

- Theory explained first then followed by a practical session
- Each of you has been assigned a Virtual Machine running Debian 8.0.0 (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 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 Metcourt Hotel**

Lunch and dinner: **At the Marquee (on left side of the exit from GICC)**

Tea break: **At the foyer area next to the main entrance**

Washrooms: **At the right of foyer area and 2nd further along the corridor**

**EXIT: USE DOOR ON RIGHT SIDE OF ROOM VIA SI-E CLASS BEAR IN MIND THAT
THE OTHER TRACKS WILL BE IN SESSION**

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** network if possible, otherwise **AIS-bgn**
 - 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 8.0.0 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**

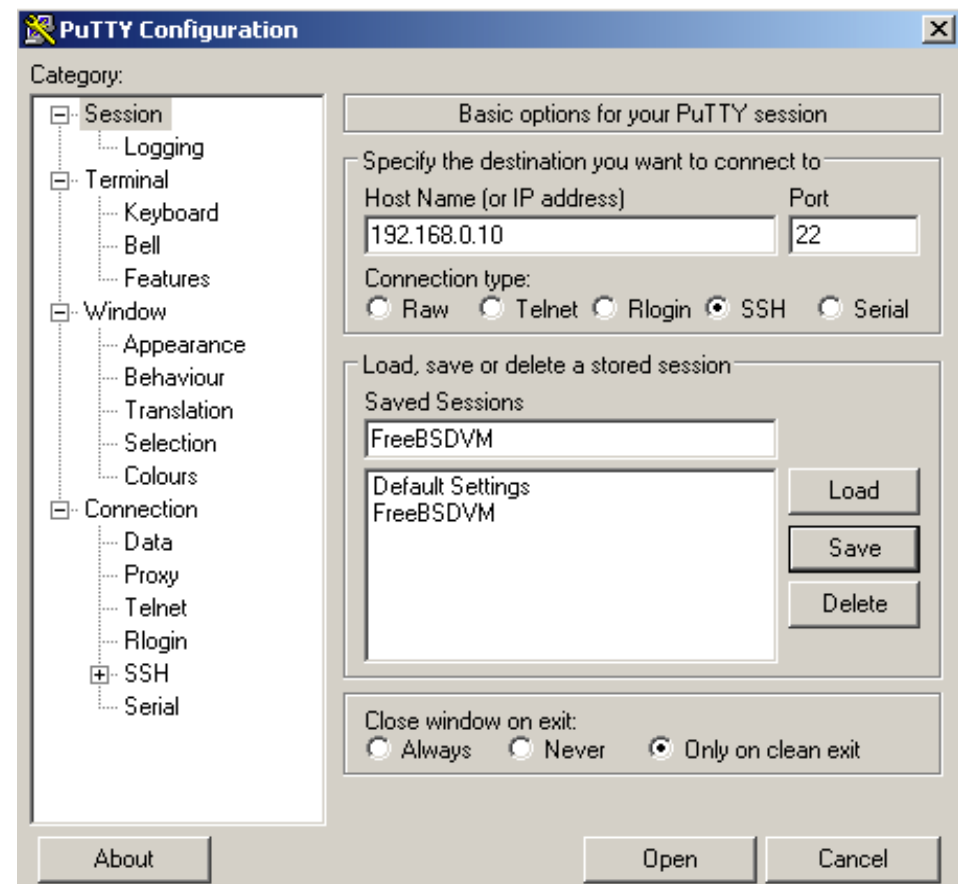
Windows Users

- 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](ssh:afnog@pcX.sse.ws.afnog.org) where X is the pc number.

Online Resources

Web site: <http://www.ws.afnog.org/afnog2016/>

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@debian8:~$sudo apt-get install nano`
- For nano you can open a file by:

`afnog@debian8:~$nano /path/to/filename`

OR `afnog@debian8:~$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@debian8:~\$ **cd /home/afnog**
- Open a file:
afnog@debian8:~\$ **nano test-script.sh**
- Type the following 4 lines in the file
#!/bin/bash
SSE Test Script
echo "Welcome \$HOSTNAME to AfNOG SSE 2016!"
echo "AfNOG!, Success!"
- Then Save and Exit
Ctrl X and Then answer **y**. **Maintain the same filename (press enter)**
- Change the files permissions
afnog@debian8:~\$ **chmod +x test-script.sh**
- Run the file
afnog@debian8:~\$ **./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@debian8:~$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@debian8:~\$**sudo apt-get update**

afnog@debian8:~\$**sudo apt-get upgrade**

- 3. Install SSH (If it was not installed during system installation)

afnog@debian8:~\$**sudo apt-get install openssh-server**

- 4. Disable unwanted Services

afnog@debian8:~\$**sudo service - - status-all**

afnog@debian8:~\$**sudo service exim4 stop**

- 5. Check Listening Network Ports

afnog@debian8:~\$**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:~\$**ntpd -pn**

afnog@debian8:~\$**ntpq -pn**

- More here:

<https://www.debian.org/doc/manuals/securing-debian-howto/>



Thank you!

Questions?