WELCOME TO SS-E
AFNOG - 2019
KAMPALA, UGANDA

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

- 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

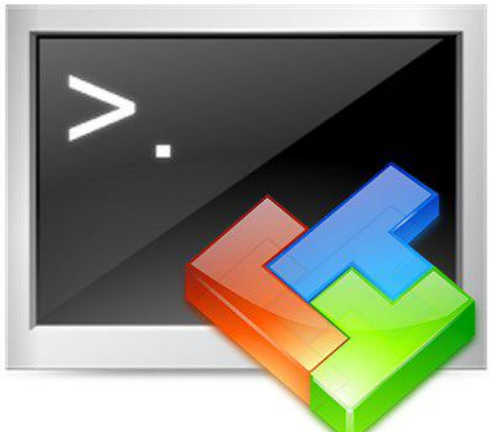
- **Use your own laptops for:**
  - Web browsing
  - Control your virtual machines
  - Virtualization exercises
- **Wireless Internet**
  - Use the **AIS** or you course network SSID
  - Password for both is "**success!**”
- **Hotel wifi is available in your rooms and anywhere else at the hotel**

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

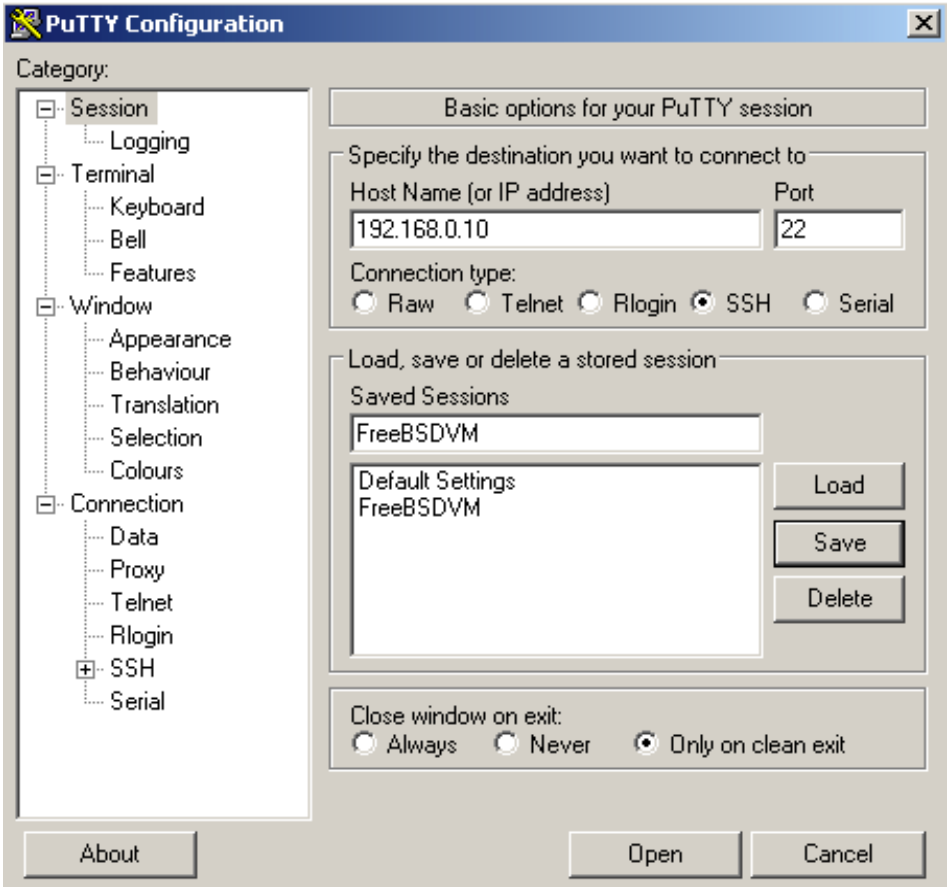
- Install putty or MobaXterm from: http://www.ws.afnog.org/afnog2019/sse/Downloads/



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

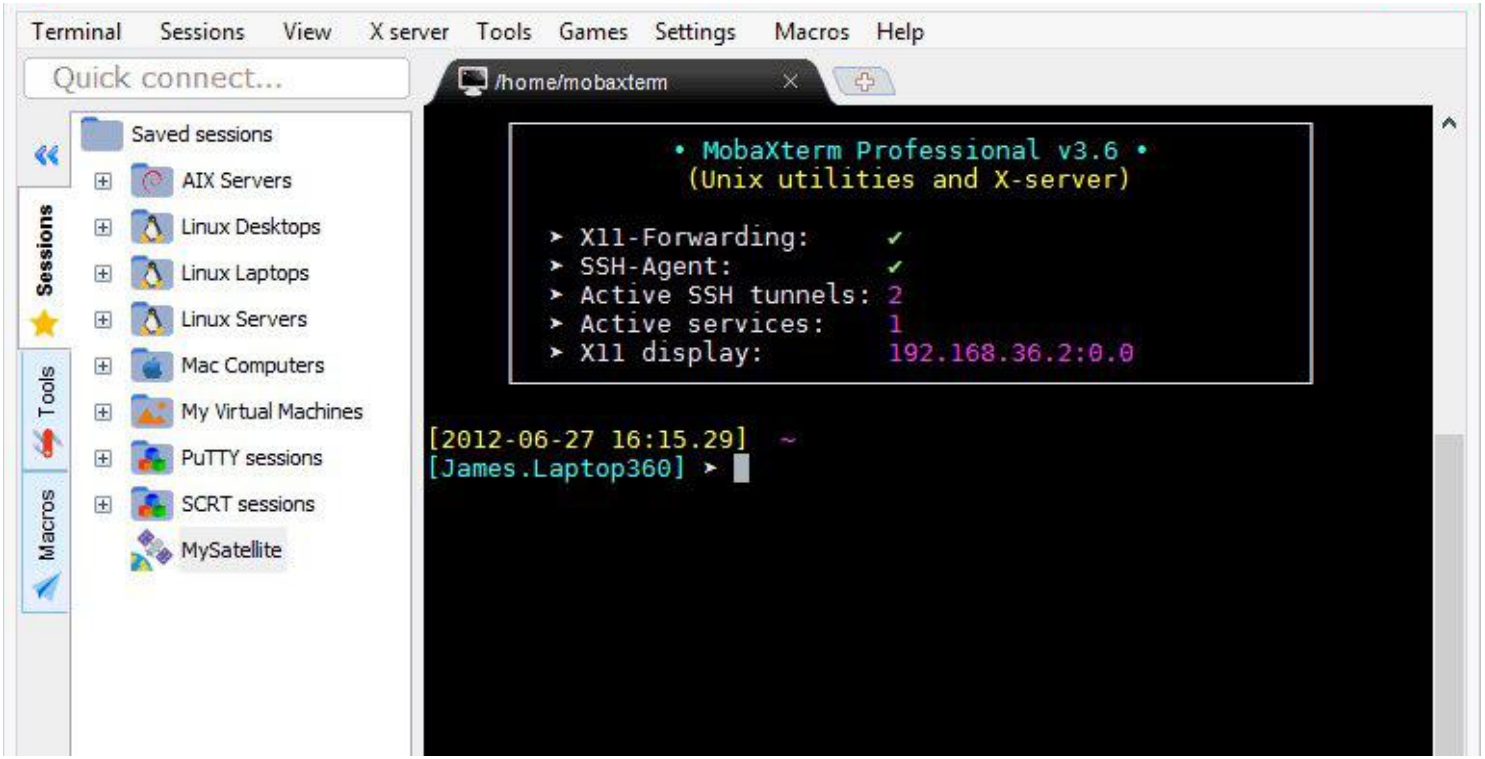
SSH Clients

- Putty

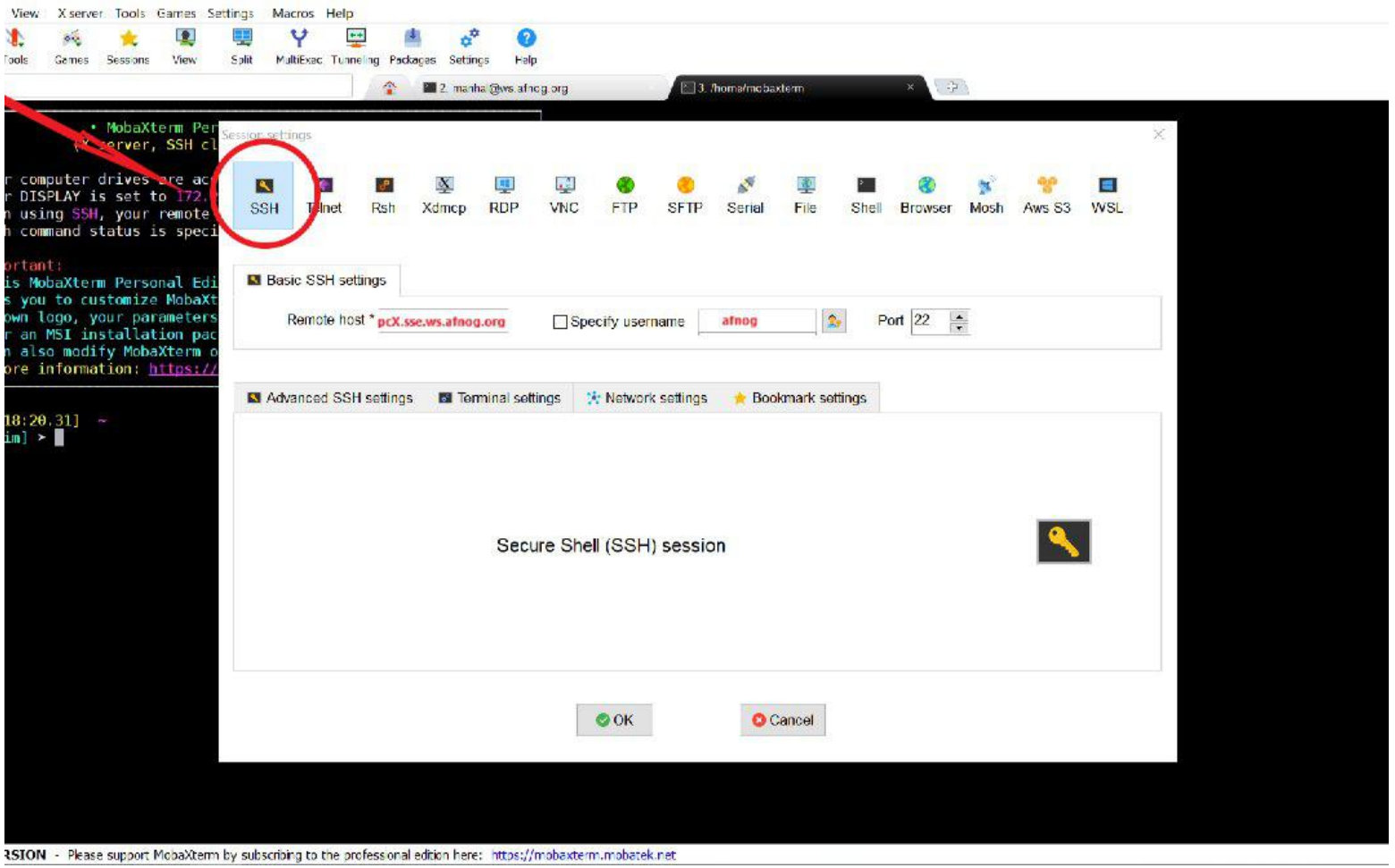


SSH Client

- MobaXterm



- Go to Sessions and then SSH, add your credentials as below


View X server Tools Games Settings Macros Help
Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
2. manha@ws.afnog.org
3. /home/mobaxterm
Session settings
SSH Telnet Rsh Xdmcp RDP VNC FTP SFTP Serial File Shell Browser Mosh Aws S3 WSL
Basic SSH settings
Remote host * pcX.sse.ws.afnog.org
Specify username
afnog
Port 22
Advanced SSH settings
Terminal settings
Network settings
Bookmark settings
Secure Shell (SSH) session
OK
Cancel
RSION - Please support MobaXterm by subscribing to the professional edition here: https://mobaxterm.mobatek.net

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/afnog2019/sse/index.html

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
  #!/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)**

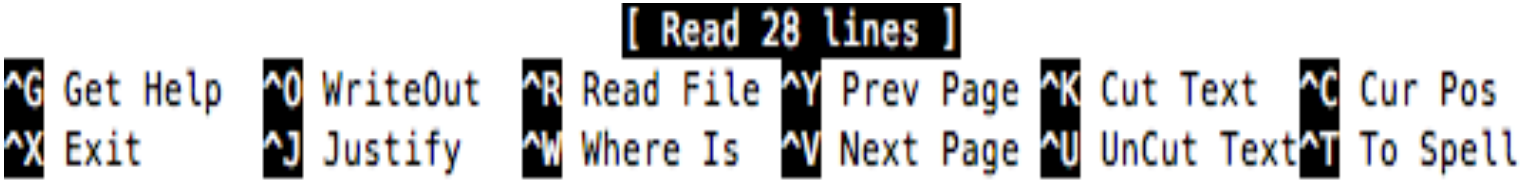
- Change the files permissions
  afnog@pcX :~$ **chmod +x test-script.sh**

- 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:



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:**

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

Thank you!

Questions?