History of UNIX (1)

Developed by AT&T Bell Labs, starting 1969

- Ken Thompson (sitting) and Dennis Ritchie – on a PDP-11
History of UNIX (2)

In their own words:

Original from YouTube:
https://www.youtube.com/watch?v=JoVQTPbD6UY
Install UNIX tool on your laptop

Windows
• MobaXterm (http://mobaxterm.mobatek.net)

Mac OSX
• Terminal (pre-installed in /Applications/Utilities)
• XQuartz (http://www.xquartz.org)

Linux
• You are already well equipped!
Remote Login (SSH) to SURFsara

Authentication on (some) SURFsara systems

*Lisa & Cartesius*
- username/password
- key pair

*HPC Cloud*
- key pair (only!)

*Grid*
- username/password (local clusters)
- Grid certificate (for other national and international clusters)
Terminal – Windows (with MobaXterm)
Login to Lisa – with username (2)
Login to Lisa – with username (3)

```
Last login: Wed Jan 6 01:16:21 on ttys001
MLT0073:~ jeroene$ ssh jeroene@lisa.surfsara.nl
  SURFsara

Welcome to Lisa

This is a private computer facility. Access for any reason must be specifically authorized by the owner. Unless you are so authorized, your continued access and any other use may expose you to criminal and/or civil proceedings.

Information: http://www.surfsara.nl/systems/lisa/news

jeroene@lisa.surfsara.nl's password: *
```
Login to Lisa – with username (4)

The LISA team wishes you all a computational 2016!

Questions and remarks to helpdesk@surfsara.nl or call 020-8001400

Filesystem Quota Used Avail Use% Server
/home/jeroene 200.0 GB 21.53 GB 178.47 GB 10% fs5
jeroene@login2:$
Asymmetric Encryption – key pair (1)
Asymmetric Encryption – key pair (2)

Asymmetric key cryptography

Sender

Using public key

Public key

Encryption

Klingons attack Vulcan

Cyphertext

%$hg34 Skg8! Zo71#

Decryption

Klingons attack Vulcan

Receiver

Public key

Public key & Secret key computation

Secret key

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Introduction to UNIX
Create key pair – OSX (1)

MLT0073:~ jeroene$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/Users/jeroene/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /Users/jeroene/.ssh/id_rsa.
Your public key has been saved in /Users/jeroene/.ssh/id_rsa.pub.
The key fingerprint is:
The key's randomart image is:

+---[ RSA 2048]-----+
| 0 = 0 0 0 |
| 0 = 0 + . |
| + + = . E |
| 0 + |
+-------------------+

MLT0073:~ jeroene$
Create key pair – OSX (2)

```
MLT0073:~ jeroene$ cat .ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABAQDSv1M7xzITKJ4VAt0pDjupzDXPhqzE3w3J1GB5t63H0PJXTytPHlfsqvdmJnv4J1SayDMsWq7oJCdP06UacLbNaRYjShIOERJ23md6FTwryBWHoZiRpnfKo4QbaL/0d1WwVyovo+W8/oJ7toiUr93WQfFeQB3eGDPxjxFkvqFeIAIgSwYJZjMLgVLPCL/6GB/m/ojvT4+G3Jc+YI3g0fxDqsGRfGg4kXBDt8OH91E6Tscz76VBwvHULh33KrkY1Z4cClxiqIrhD1nK30+cDdD6xjPk4ijwoKZy6M5TW5B4WhM9BLDvNV0hJ670Pa4zjyTixgmi7zL2VQR5MPcEv jeroene@MLT0073.local

MLT0073:~ jeroene$
```
Create key pair – Windows (1)
Create key pair – Windows (2)