



Mahasarakham University

มหาวิทยาลัยมหาสารคาม

*Heart of
the Northeast*

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Secure Shell

SSH



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the Northeast

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โดย อาจารย์ไอฟาริก สุรินทร์๊ะ

Feb 22, 2017



Agenda

- Secure Shell (SSH)
- Users and Groups
- User Management
- Utils: Linux ascii art



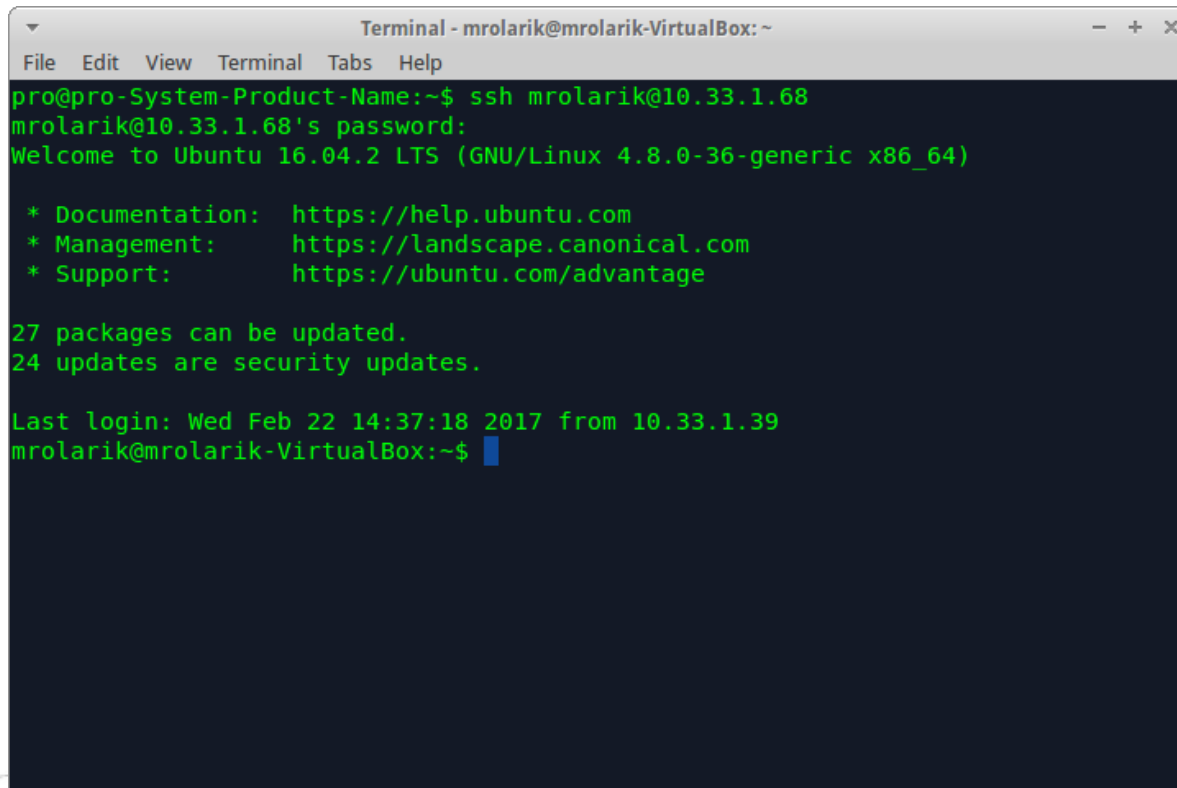
Secure Shell (SSH)

- SSH is a cryptographic network protocol for operating network services securely over an unsecured network.
- SSH provides a secure channel over an unsecured network in a client-server architecture, connecting an SSH client application with an SSH server.

SSH: Connect

user server

```
$ ssh mrolarik@10.33.1.68
```



```
Terminal - mrolarik@mrolarik-VirtualBox: ~
File Edit View Terminal Tabs Help
pro@pro-System-Product-Name:~$ ssh mrolarik@10.33.1.68
mrolarik@10.33.1.68's password:
Welcome to Ubuntu 16.04.2 LTS (GNU/Linux 4.8.0-36-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

27 packages can be updated.
24 updates are security updates.

Last login: Wed Feb 22 14:37:18 2017 from 10.33.1.39
mrolarik@mrolarik-VirtualBox:~$
```



SSH: Exit

\$ exit

Connection to 10.33.1.68 closed.

```
Terminal - pro@pro-System-Product-Name: ~
File Edit View Terminal Tabs Help

27 packages can be updated.
24 updates are security updates.

Last login: Wed Feb 22 14:37:18 2017 from 10.33.1.39
mrolarik@mrolarik-VirtualBox:~$ exit
logout
Connection to 10.33.1.68 closed.
pro@pro-System-Product-Name:~$ ssh -X mrolarik@10.33.1.68
mrolarik@10.33.1.68's password:
Welcome to Ubuntu 16.04.2 LTS (GNU/Linux 4.8.0-36-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

27 packages can be updated.
24 updates are security updates.

Last login: Wed Feb 22 14:52:34 2017 from 10.33.1.39
mrolarik@mrolarik-VirtualBox:~$ exit
logout
Connection to 10.33.1.68 closed.
pro@pro-System-Product-Name:~$
```





SSH: Install

Install OpenSSH Server

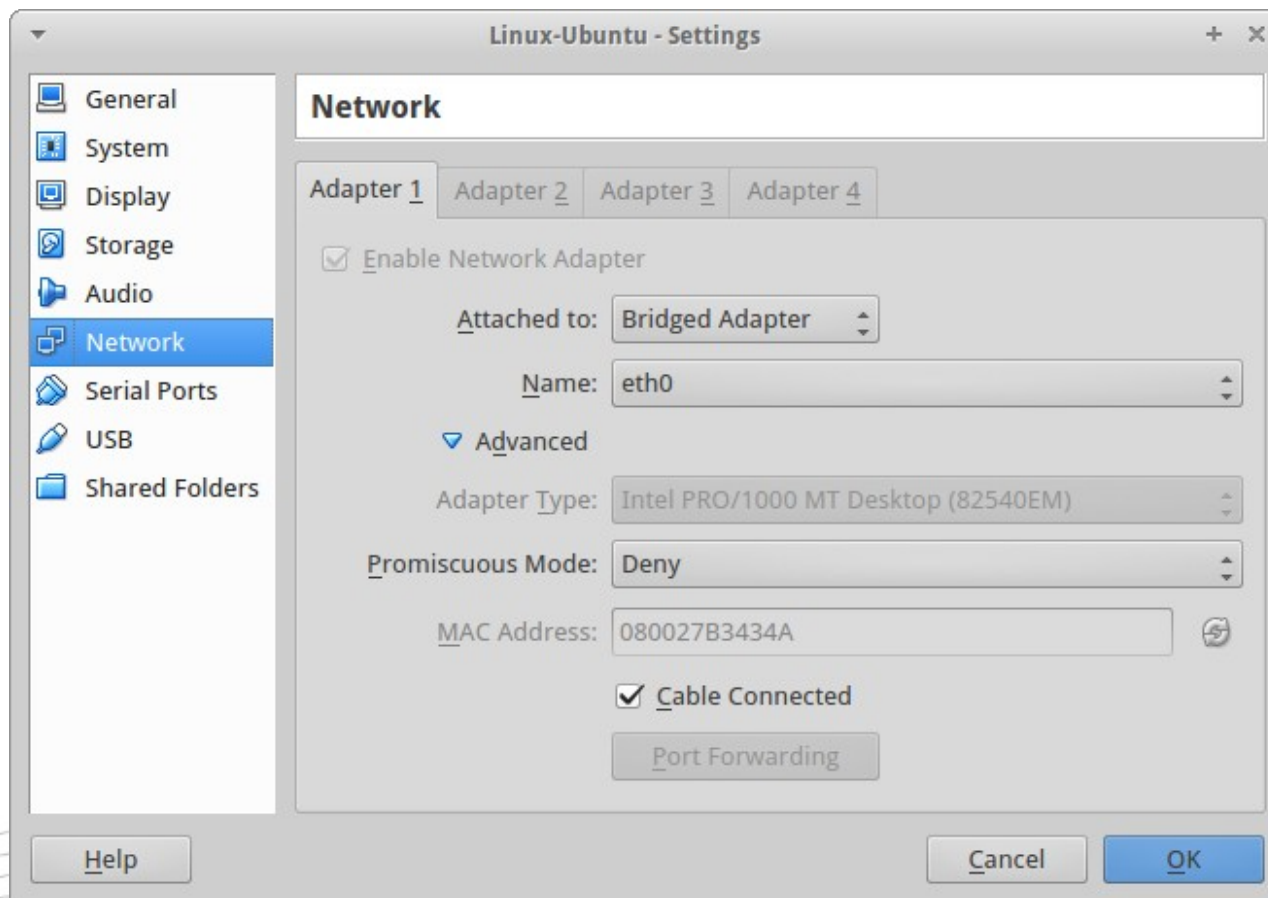
(<https://help.ubuntu.com/12.04/serverguide/openssh-server.html>)

```
$ sudo apt-get install openssh-server
```



SSH: Install

- Configuration the VirtualBox / VM Ware





SSH: Install

- เมื่อเปลี่ยน Network Adapter เป็น Bridged Adapter ให้ restart ตัว VM แล้วเช็คดู ip ด้วยคำสั่ง `ifconfig`



SSH: Install

\$ ifconfig

```
mrolarik@mrolarik-VirtualBox: ~  
  
mrolarik@mrolarik-VirtualBox:~$ exit  
logout  
Connection to 10.33.1.68 closed.  
mrolarik@mrolarik-VirtualBox:~$ ifconfig  
enp0s3    Link encap:Ethernet  HWaddr 08:00:27:b3:43:4a  
          inet addr:10.33.1.68  Bcast:10.33.1.255  Mask:255.255.255.0  
          inet6 addr: fe80::3734:1a12:6ddd:c5b4/64  Scope:Link  
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1  
          RX packets:20064 errors:0 dropped:0 overruns:0 frame:0  
          TX packets:5474 errors:0 dropped:0 overruns:0 carrier:0  
          collisions:0 txqueuelen:1000  
          RX bytes:10880849 (10.8 MB)  TX bytes:602472 (602.4 KB)  
  
lo        Link encap:Local Loopback  
          inet addr:127.0.0.1  Mask:255.0.0.0  
          inet6 addr: ::1/128  Scope:Host  
          UP LOOPBACK RUNNING  MTU:65536  Metric:1  
          RX packets:844 errors:0 dropped:0 overruns:0 frame:0  
          TX packets:844 errors:0 dropped:0 overruns:0 carrier:0  
          collisions:0 txqueuelen:1  
          RX bytes:131352 (131.3 KB)  TX bytes:131352 (131.3 KB)  
  
mrolarik@mrolarik-VirtualBox:~$
```



SSH: Testing

- ตรวจสอบ User ในเครื่อง Server
\$ users
- จากนั้นใช้คำสั่ง ssh เพื่อเชื่อมต่อไป Server

```
$ ssh mrolarik@10.33.1.68
```



Users and Groups

- ตรวจสอบ Users

\$ users

- Output who is currently logged in according to FILE

- ตรวจสอบ Groups

\$ groups

- Print group memberships for each USERNAME





Users and Groups

\$ users

mrolarik

\$ groups

mrolarik adm cdrom sudo dip plugdev lpadmin sambashare

\$ groups mrolarik

mrolarik : mrolarik adm cdrom sudo dip plugdev lpadmin
sambashare

\$ groups | wc -w

8





Users and Groups

```
groups command demo - nixCraft
```



Understanding Users and Their Properties

- These properties are stored in the /etc/passwd and /etc/shadow files.
- When creating a user, you need to provide a value for the following properties.
 - Username
 - Password
 - User ID (UID)
 - ID of the primary group of the user
 - Comment field
 - Home directory
 - Default shell



UID

- The UID is another major piece of information when creating a user.
- This is the only way to identify a user; usernames are just a convenience for humans.
- In general, all users need a unique UID.
- Most Linux distributions start generating UIDs for local users at 1000.
- The UID 0 is a special one: the user with it has complete administrative permissions to the computer.
- **UID 0** is typically reserved for the user root.



Group Membership

- On Linux, all users must be a member of at least one group.
- This is referred to as the primary group assignment.
- The primary group setting is stored in the `/etc/passwd` file, and secondary groups are in the `/etc/group` file.



Home Directory

- Most users have a home directory.
- This directory, which typically resides in /home, is where users can store files.
-





Commands for User Management

- If you want to add users from the command line, `useradd` is just the ticket.
- You can use this command to add user and all of the properties mentioned previously.





Commands for User Management

- Following is an overview of all commands available to manage user accounts:
 - **useradd**: Adds users to the local authentication system
 - **usermod**: Modifies properties for users
 - **userdel**: Deletes users from a system
 - **passwd**: Modifies passwords for users.



useradd

- Using `useradd` is simple. It just takes the name of a user as its argument; thus `useradd olarik` creates a user called `olarik` to the system.
- Most Linux distributions will create a home directory for the user in `/home`.
- If you want to ensure that Linux will create a home directory for the user, use the option `-m` with `useradd`.





User Management: lab1

- เพิ่ม user โดยใช้คำสั่ง `useradd -m #user`
`$ sudo useradd -m linux1`

- กำหนด password ให้กับ `#user`
`$ sudo passwd linux1`

Enter new UNIX password:

Retype new Unix password:

Passwd: password updated successfully





User Management: lab1

- ตรวจสอบว่ามีการสร้าง directory ของ user นั้นหรือไม่

```
$ ls /home/
```

```
linux1 mrolarik
```





User Management: lab1

- หากต้องการระบุ home directory สามารถทำได้โดย

```
$ sudo useradd -m -d  
/home/mrolarik/linux2 linux2
```

```
$ ls /home/mrolarik
```

```
Desktop Downloads linux2 Pictures ....
```





User Management: lab1

- หากต้องการลบ user linux2 ให้ใช้คำสั่ง
userdel

```
$ sudo userdel -r linux2
```

```
userdel: linux2 mail spool  
(/var/mail/linux2) notfound
```



SSH to Server

```
$ ssh linux1@10.33.1.68
```

```
linux1@10.33.1.68's password:
```

```
Welcome to Ubuntu 16.04.2 LTS (GNU/Linux 4.8.0-36-generic x86_64)
```

- * Documentation: <https://help.ubuntu.com>
- * Management: <https://landscape.canonical.com>
- * Support: <https://ubuntu.com/advantage>

```
27 packages can be updated.
```

```
24 updates are security updates.
```

```
Last login: Wed Feb 22 16:27:48 2017 from 10.33.1.39
```

```
$
```





Utils: Linux ascii art

```
$ sudo apt-get install fortune
$ sudo apt-get install fortune
$ exec /usr/games/fortune | /usr/games/cowsay -n
```

```
_____
/ You tread upon my patience.      \
|                                     |
\ -- William Shakespeare, "Henry IV" /
-----
```

```
 \   ^__^
  (oo)\_______
      (__)\       )\/\
         ||----w |
         ||     ||
```





Utils: Linux ascii art

```
$ sudo nano /etc/profile.d/motd.sh
```

```
/usr/games/fortune | /usr/games/cowsay
```

```
Echo "\nWelcome to Linux Command  
and Shell Scripting\n"
```





\$ ssh linux1@10.33.1.68

linux1@10.33.1.68's password:

Welcome to Ubuntu 16.04.2 LTS (GNU/Linux 4.8.0-36-generic x86_64)

...

Last login: Wed Feb 22 16:51:09 2017 from 10.33.1.39

```

/ You tread upon my patience.      \
|                                  |
\ -- William Shakespeare, "Henry IV" /

```

```

\   ^__^
\  (oo)\_______
    (__)\       )\/\
        ||----w |
        ||     ||

```

Welcome to Linux Command and Shell Scripting

\$



References:

- https://en.wikipedia.org/wiki/Secure_Shell
- <http://www.ytechie.com/2008/05/set-up-a-windows-ssh-tunnel-in-10-minutes-or-less/>
- <https://help.ubuntu.com/12.04/serverguide/openssh-server.html>
- <https://www.cyberciti.biz/faq/unix-linux-groups-command-examples-syntax-usage/>
- <http://th.stealthsettings.com/cum-stabilim-conexiune-ssh-la-un-server-virtual-centos-instalat-pe-virtualbox.html>
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