



System and Network Administration

init

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Summary: Introduction subject to System and Network Administration

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Chapter I

Foreword

Believe it or not, this project originated from a heavy drinking night. Yes, that's right, when we decided to launch these subjects and this initiation, we were totally wasted.

In the **Slash16** HQ, the [Yellow Mad Monkey](#), after all in the team drank many bottles, among which three Grey Goose, one Absolut, two Jägers and one 7-years-old Havana Club (that one is worth mentioning), we had the beautiful idea to create some initiation subjects about system and network administration.

So, of course, we didn't write the subjects over there, even if, actually we could have, or even hold our conferences there but everyone would have ended up drunk, so bad idea..

Anyways, after so much work around a hookah, fresh mojitos, and a good [Trace Urban VocalTeknix](#) playlist to put us in the mood, here is - finally - the result!

So we hope you'll enjoy it, and don't forget, that's only the beginning!

Kisses and chocolates,

The **Slash16** team.



Chapter II

Introduction

Slash16 is a network of people who are passionate about system and network administration and/or operations development (DevOps).

Our goal is also to enable a flow of knowledge across our members by setting up common projects, conferences or via any others type of activity that makes it possible to share both knowledge and professional experience.

That's why we decided to treat you with two subjects:

- An initiation subject (This one).
- A complete infrastructure creation subject, `roger-skyline-2`.

With that, you will have access, on your e-learning platform, to a bunch of videos that will help you understand the essential notions you're going to need.

Chapter III

Goals

This first project, `init`, will give you the opportunity to discover system and network basic commands, many of the services used on a server machine, as well as a few ideas of scripts that can be useful for SysAdmins on a daily basis.

Chapter IV

General instructions

You must use terminal commands only to solve all the exercises in this subject.

There are three types of questions in this project. You can identify the type of answer expected thanks to a color code:

In blue : a command

In green : a command output

In red : a deduction, written in your own words

- Create a folder for each part of this subject at the root of your repository. These folders should be named **network**, **system** and **scripts**. Write your answers in a file named after the number of the question, over two digits. For instance : The answer to the question 01 of the **network** part should be in the **network/01** file.
- Hand in your scripts as executable.



The part 1 "Network" must be done on school's Macs. The part 2 and 3, "System" and "Scripting" must be done on a Debian virtual machine (Think about live CD debian).

Chapter V

Mandatory part

V.1 Let's be friends

Follow Slash16 on [Facebook](#), [Twitter](#) and [Linkedin](#).

V.2 Network

1. Get the list of the network interfaces of the machine without displaying any detail for these interfaces. Only the list of names.
2. Identify and display the Ethernet interface characteristics:
 - (a) Identify broadcast address
 - (b) Identify all IP addresses which are part of the same subnet
3. Identify the MAC address of the Wi-Fi card
4. Identify the default gateway in the routing table
5. Identify the IP address of the DNS that responds to the following url: [slash16.org](#)
6. Get the complete path of the file that contains the IP address of the DNS server you're using
7. Query an external DNS server on the [slash16.org](#) domain name (ie. : [google 8.8.8.8](#))

8. Find the provider of slash16.org
9. Find the external IP of 42.fr
10. Identify the network devices between your computer and the slash16.org domain
11. Use the output of the previous command to find the name and IP address of the device that makes the link between you (local network) and the outside world
12. Find the IP that was assigned to you by dhcp server
13. Thanks to the previous question and the reverse DNS find the name of your host
14. What file contains the local DNS entries?
15. Make the intra.42.fr address reroute to 46.19.122.85

V.3 System

1. In what file can you find the installed version of your Debian?
2. What command can you use to rename your system?
3. What file has to be modified to make it permanent?
4. What command gives you the time since your system was last booted?
5. Name the command that determines the state of the SSH service.
6. Name the command that reboots the SSH service.
7. Figure out the PID of the SSHD service.

8. What file contains the RSA keys of systems that are authorized to connect via SSH?
9. What command lets you know who is connected to the System?
10. Name the command that lists the partition tables of drives?
11. Name the command that displays the available space left and used on the system in a humanly understandable way
12. Figure out the exact size of each folder of /var in a humanly understandable way followed by the path of it.
13. Name the command that find, in real time, currently running processes
14. Run the 'tail -f /var/log/syslog' command in background
15. Find the command that kills the background command's process
16. Find the service which makes it possible to run specific tasks following a regular schedule
17. Find the command that allows you to connect via ssh on the VM.(In parallel with the graphic session)
18. Find the command that kills ssh service
19. List all services which are started at boot time and name this kind of services
20. List all existing users on the VM
21. List all real users on the VM
22. Find the command that add a new local user

23. Explain how connect yourself as new user. (With graphic session and ssh session)
24. Find the command that list all packages

V.4 Scripting

1. Write a script which displays only the login, UID and Path of each entry of the `/etc/passwd` file.
2. Write a script which delete an **ACTIVE** user on the VM.
3. Three's a Charm. Write a script of you choice.

Chapter VI

Bonus part

No bonuses for this subject, just get it done quickly to get on to even better projects.

Chapter VII

Turn-in and peer-evaluation

Turn in your work using your `Git` repository, as usual. Only the work that's in your repository will be graded during the evaluation. Do remember to pay attention to the names of the files and folders you hand in.