Institut Universitaire des Sciences (IUS)

Faculté des Sciences et Technologies

(FST)

RAPPORT

SUR LE TRAVAIL DE LABORATOIRE № 7

Cours : Reseau 2

Soumis au Chargé de cours : **Ismael SAINT AMOUR**

Niveau L3

Préparé par : **Robaldo BADIO**

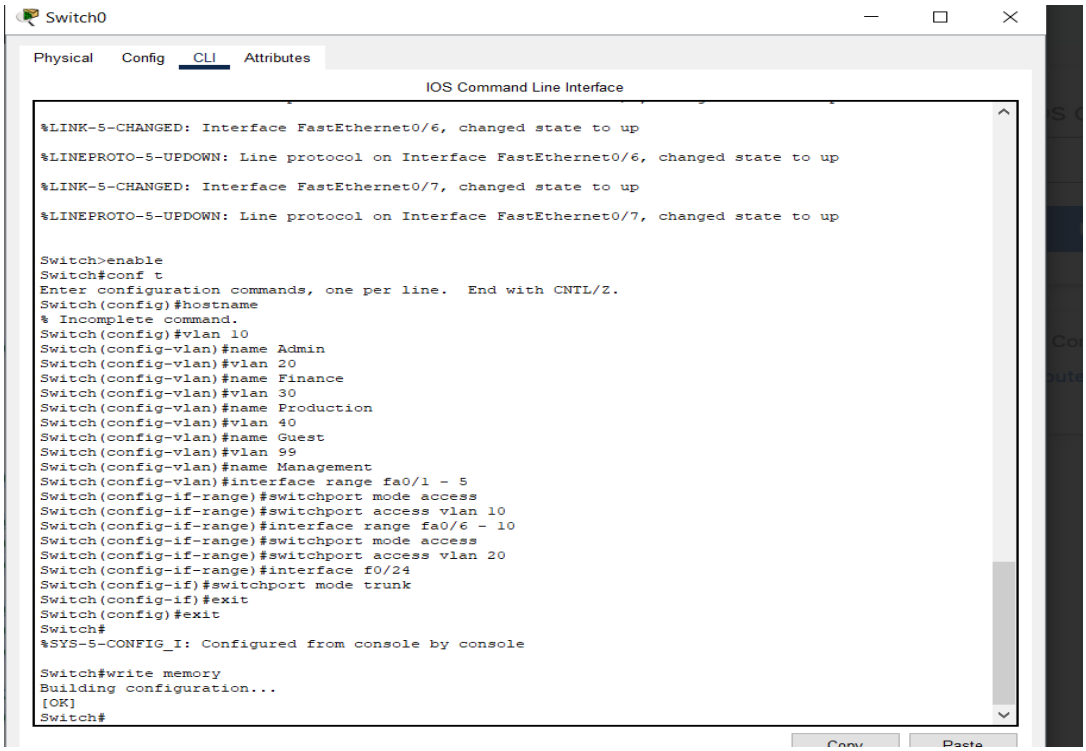
Date : Le 10 / 06 / 2025

Exécution du TD

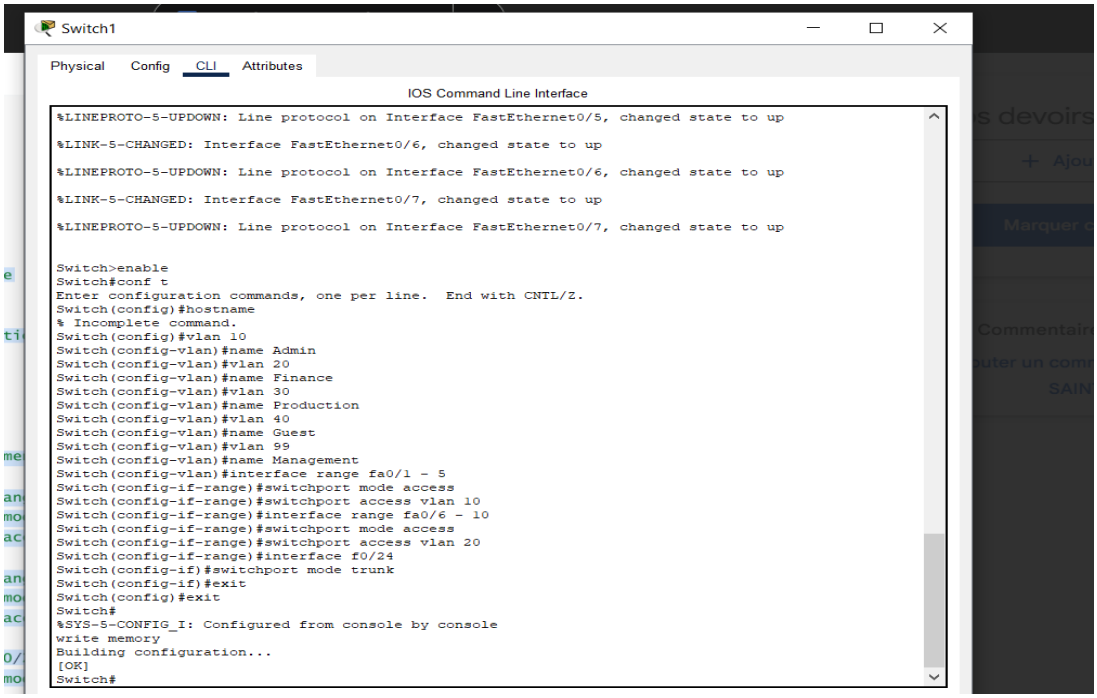
1. Installation d'une Infrastructure Réseau pour PME avec DNS, DHCP et Capteurs IoT

Configurations des Switch

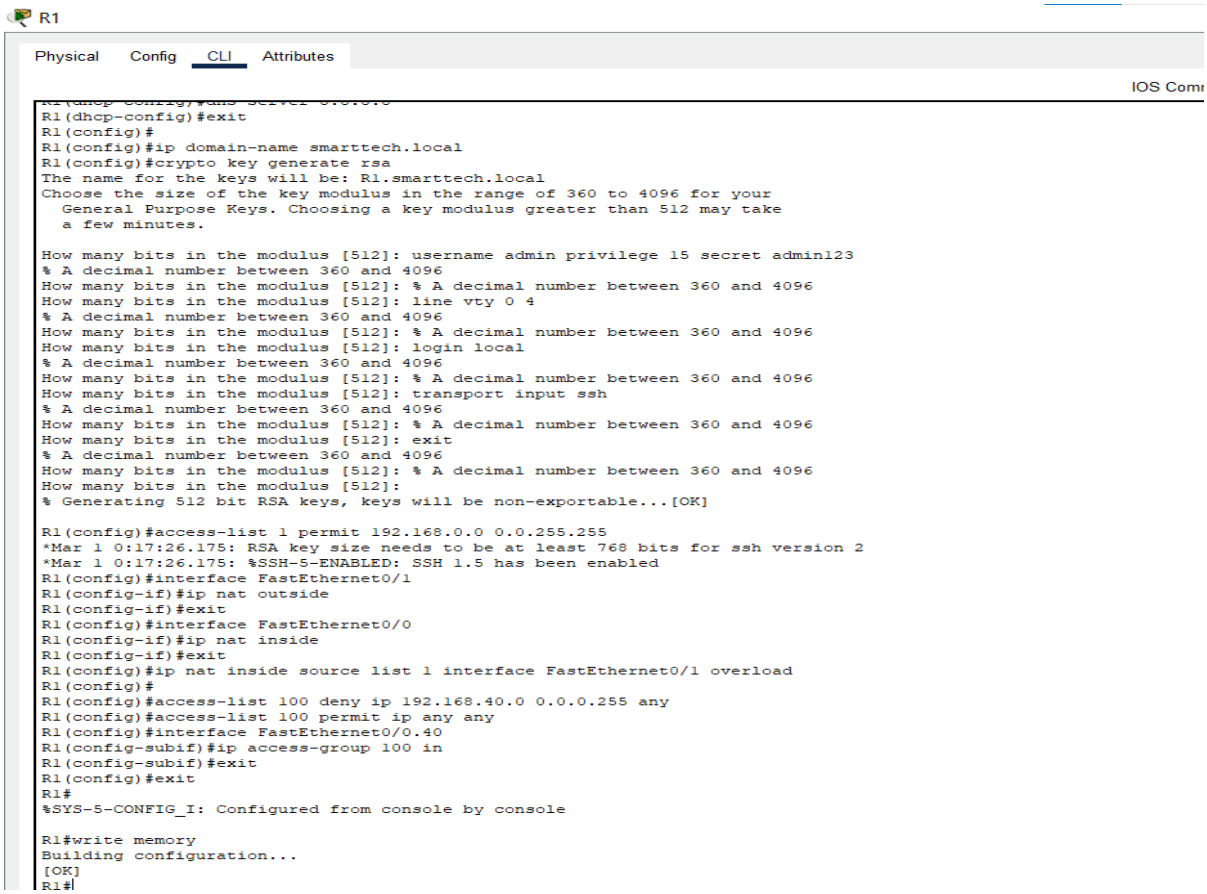
S0



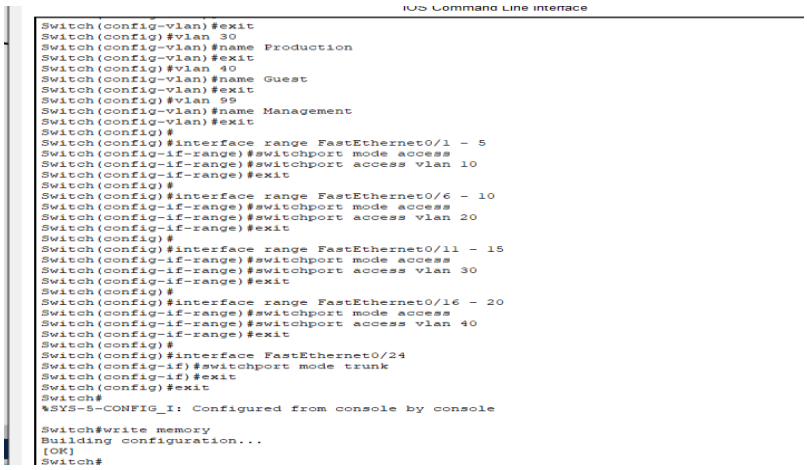
S1


Switch1
Physical
Config
CLI
Attributes
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to up
Switch>enable
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname
% Incomplete command.
Switch(config)#vlan 10
Switch(config-vlan)#name Admin
Switch(config-vlan)#vlan 20
Switch(config-vlan)#name Finance
Switch(config-vlan)#vlan 30
Switch(config-vlan)#name Production
Switch(config-vlan)#vlan 40
Switch(config-vlan)#name Guest
Switch(config-vlan)#vlan 99
Switch(config-vlan)#name Management
Switch(config-vlan)#interface range fa0/1 - 5
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#interface range fa0/6 - 10
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#interface f0/24
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
write memory
Building configuration...
[OK]
Switch#

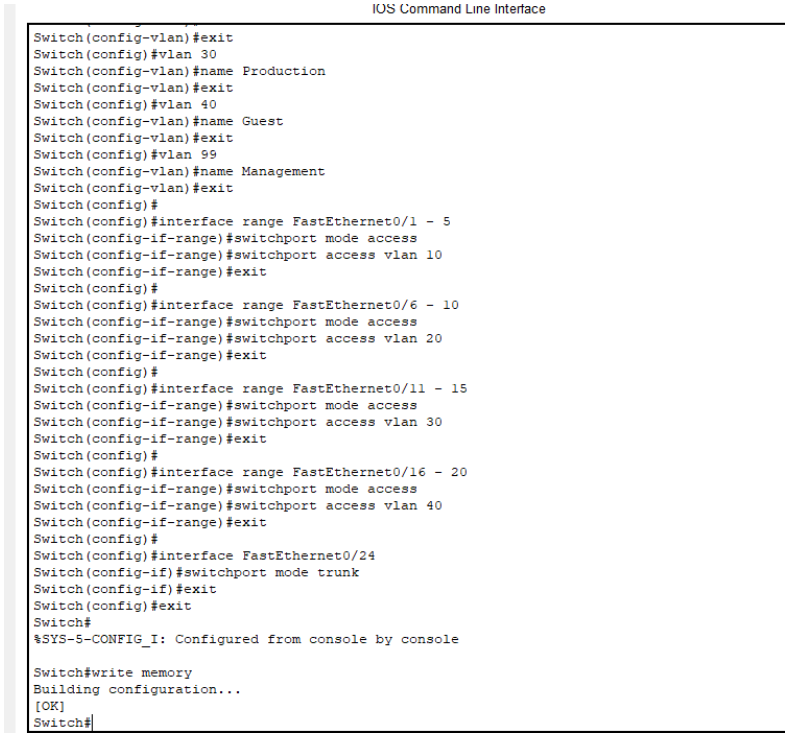
Router


R1
Physical
Config
CLI
Attributes
IOS Comm
R1(dhcp-config)#exit
R1(config)#
R1(config)#ip domain-name smarttech.local
R1(config)#crypto key generate rsa
The name for the keys will be: R1.smarttech.local
Choose the size of the key modulus in the range of 360 to 4096 for your
General Purpose Keys. Choosing a key modulus greater than 512 may take
a few minutes.
How many bits in the modulus [512]: username admin privilege 15 secret admin123
% A decimal number between 360 and 4096
How many bits in the modulus [512]: % A decimal number between 360 and 4096
How many bits in the modulus [512]: line vty 0 4
% A decimal number between 360 and 4096
How many bits in the modulus [512]: % A decimal number between 360 and 4096
How many bits in the modulus [512]: login local
% A decimal number between 360 and 4096
How many bits in the modulus [512]: % A decimal number between 360 and 4096
How many bits in the modulus [512]: transport input ssh
% A decimal number between 360 and 4096
How many bits in the modulus [512]: % A decimal number between 360 and 4096
How many bits in the modulus [512]: exit
% A decimal number between 360 and 4096
How many bits in the modulus [512]: % A decimal number between 360 and 4096
How many bits in the modulus [512]:
% Generating 512 bit RSA keys, keys will be non-exportable...[OK]
R1(config)#access-list 1 permit 192.168.0.0 0.0.255.255
*Mar 1 0:17:26.175: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:17:26.175: %SSH-5-ENABLED: SSH 1.5 has been enabled
R1(config)#interface FastEthernet0/1
R1(config-if)#ip nat outside
R1(config-if)#exit
R1(config)#interface FastEthernet0/0
R1(config-if)#ip nat inside
R1(config-if)#exit
R1(config)#ip nat inside source list 1 interface FastEthernet0/1 overload
R1(config)#
R1(config)#access-list 100 deny ip 192.168.40.0 0.0.0.255 any
R1(config)#access-list 100 permit ip any any
R1(config)#interface FastEthernet0/0.40
R1(config-subif)#ip access-group 100 in
R1(config-subif)#exit
R1(config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console
R1#write memory
Building configuration...
[OK]
R1#

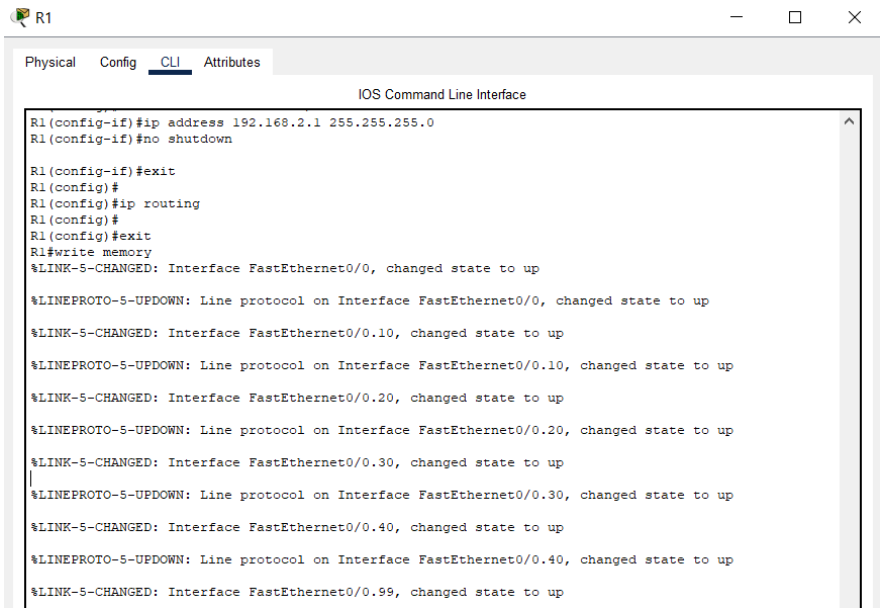
S0


IOS Command Line Interface
Switch(config-vlan)#exit
Switch(config)#vlan 30
Switch(config-vlan)#name Production
Switch(config-vlan)#exit
Switch(config)#vlan 40
Switch(config-vlan)#name Guest
Switch(config-vlan)#exit
Switch(config)#vlan 99
Switch(config-vlan)#name Management
Switch(config-vlan)#exit
Switch(config)#
Switch(config)#interface range FastEthernet0/1 - 5
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#exit
Switch(config)#
Switch(config)#interface range FastEthernet0/6 - 10
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#exit
Switch(config)#
Switch(config)#interface range FastEthernet0/11 - 15
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 30
Switch(config-if-range)#exit
Switch(config)#
Switch(config)#interface range FastEthernet0/16 - 20
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 40
Switch(config-if-range)#exit
Switch(config)#
Switch(config)#interface FastEthernet0/24
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#write memory
Building configuration...
[OK]
Switch#

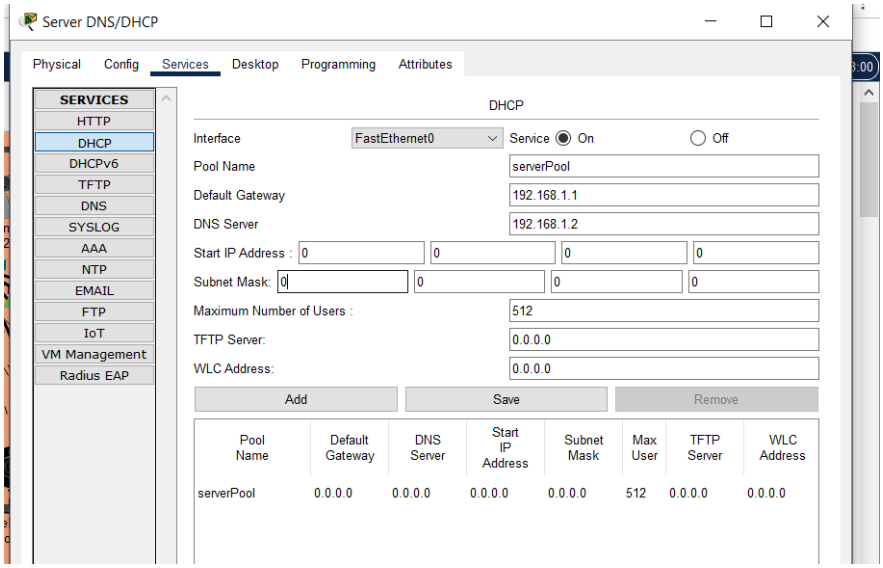
S1

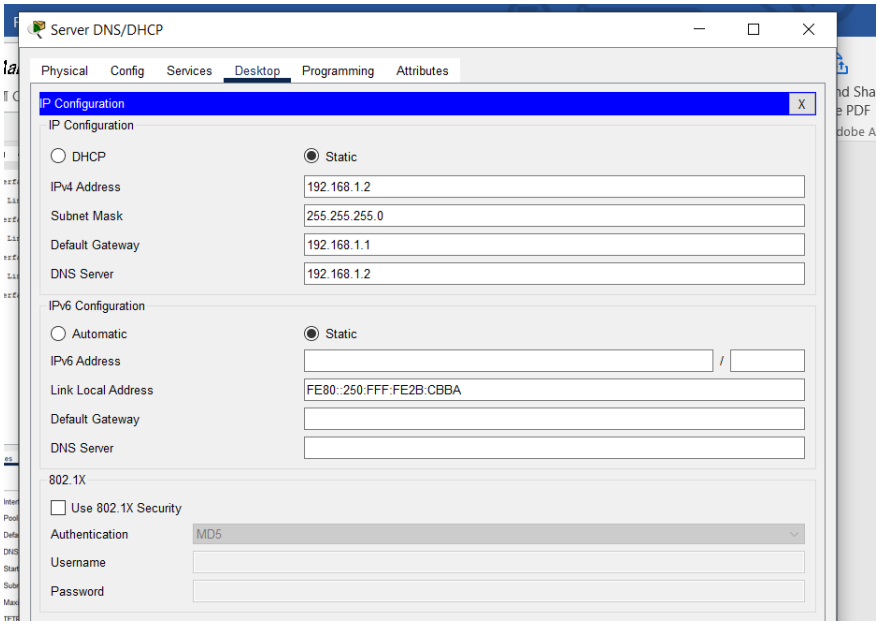

IOS Command Line Interface
Switch(config-vlan)#exit
Switch(config)#vlan 30
Switch(config-vlan)#name Production
Switch(config-vlan)#exit
Switch(config)#vlan 40
Switch(config-vlan)#name Guest
Switch(config-vlan)#exit
Switch(config)#vlan 99
Switch(config-vlan)#name Management
Switch(config-vlan)#exit
Switch(config)#
Switch(config)#interface range FastEthernet0/1 - 5
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#exit
Switch(config)#
Switch(config)#interface range FastEthernet0/6 - 10
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#exit
Switch(config)#
Switch(config)#interface range FastEthernet0/11 - 15
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 30
Switch(config-if-range)#exit
Switch(config)#
Switch(config)#interface range FastEthernet0/16 - 20
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 40
Switch(config-if-range)#exit
Switch(config)#
Switch(config)#interface FastEthernet0/24
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#write memory
Building configuration...
[OK]
Switch#

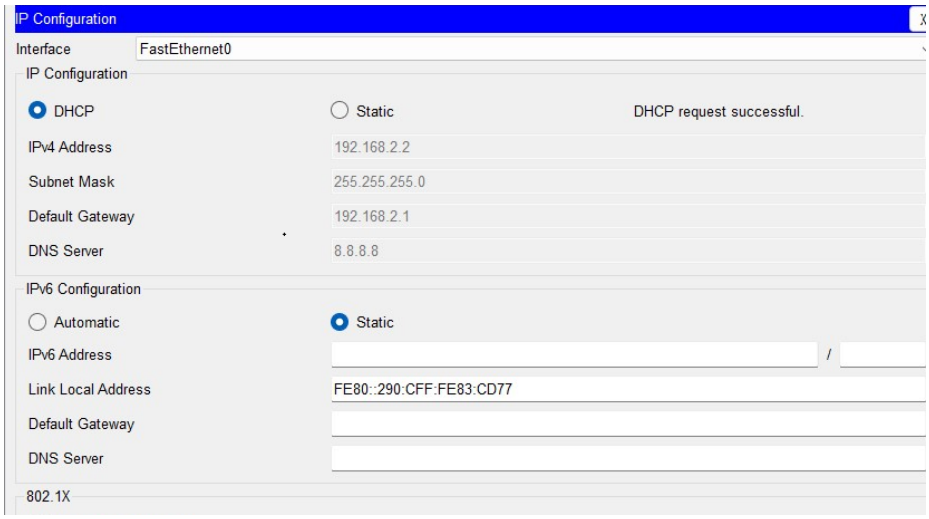
R1

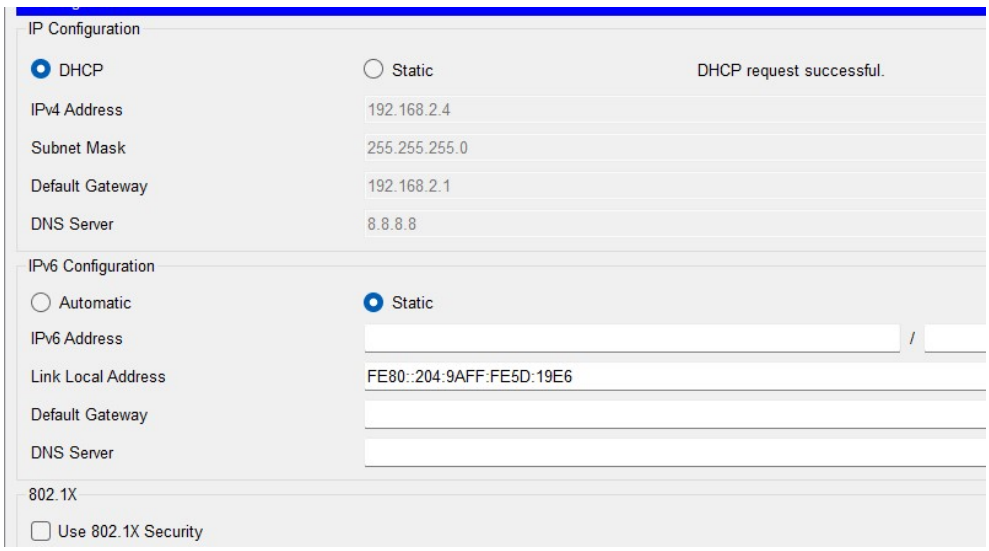

R1
Physical
Config
CLI
Attributes
IOS Command Line Interface
R1(config-if)#ip address 192.168.2.1 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#
R1(config)#ip routing
R1(config)#
R1(config)#exit
R1#write memory
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/0.10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.10, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/0.20, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.20, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/0.30, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.30, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/0.40, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.40, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/0.99, changed state to up

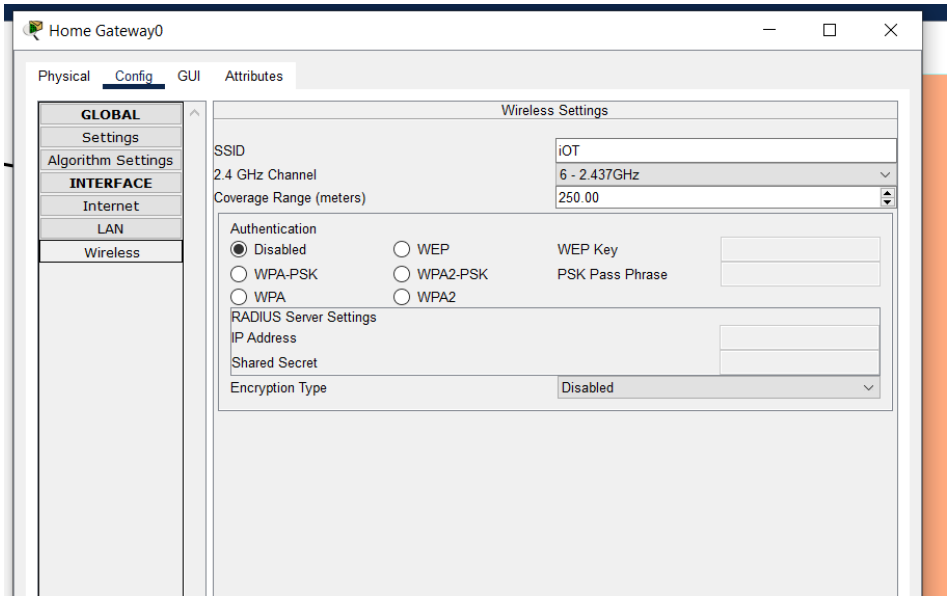
DNS/DHCP

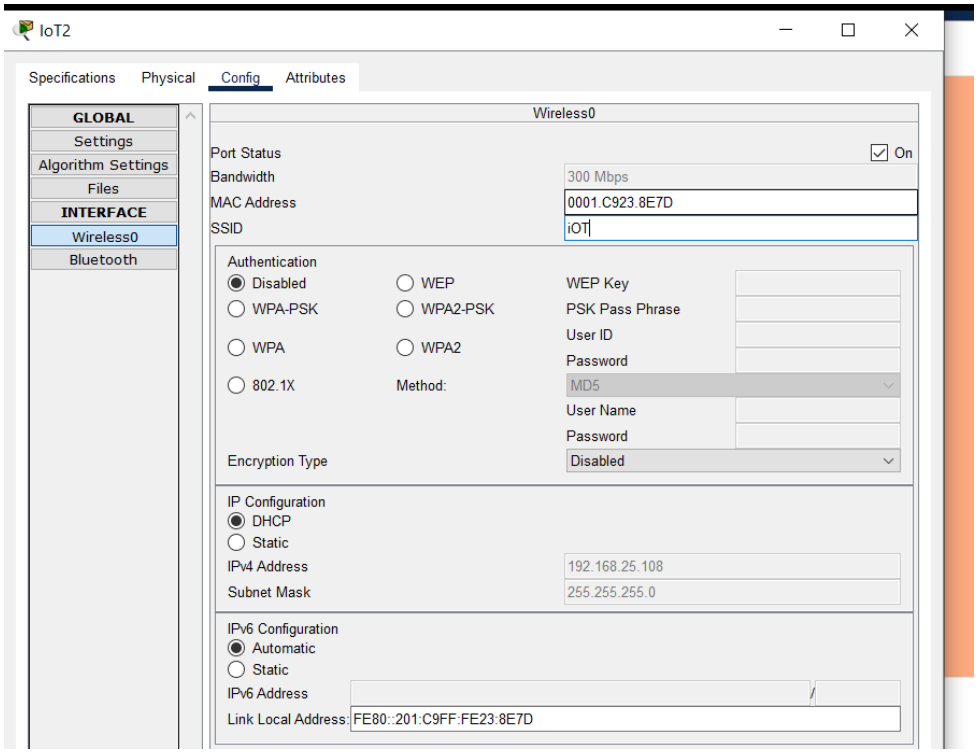

Server DNS/DHCP
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
DHCP
Interface
FastEthernet0
Service
On
Off
Pool Name
serverPool
Default Gateway
192.168.1.1
DNS Server
192.168.1.2
Start IP Address :
Subnet Mask:
Maximum Number of Users :
512
TFTP Server:
0.0.0.0
WLC Address:
0.0.0.0
Add
Save
Remove
Pool Name
Default Gateway
DNS Server
Start IP Address
Subnet Mask
Max User
TFTP Server
WLC Address
serverPool
0.0.0.0
0.0.0.0
0.0.0.0
0.0.0.0
512
0.0.0.0
0.0.0.0

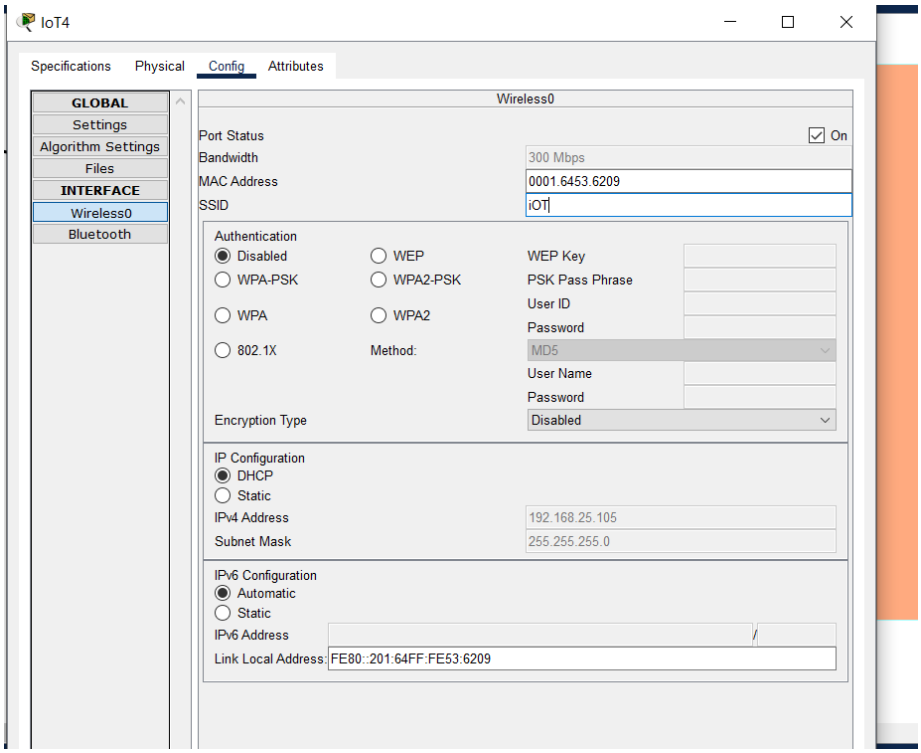

Server DNS/DHCP
Physical
Config
Services
Desktop
Programming
Attributes
IP Configuration
X
IP Configuration
DHCP
Static
IPv4 Address
192.168.1.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.1.1
DNS Server
192.168.1.2
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::250:FFF:FE2B:CBBA
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password


IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.2.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.2.1
DNS Server
8.8.8.8
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::290:CFF:FE83:CD77
Default Gateway
DNS Server
802.1X

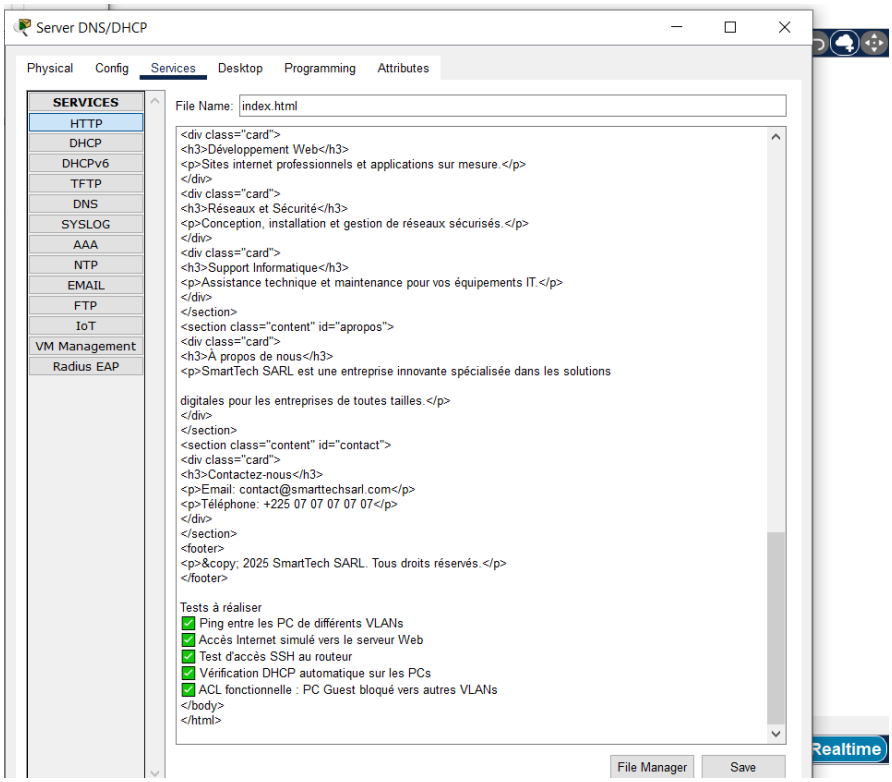

IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.2.4
Subnet Mask
255.255.255.0
Default Gateway
192.168.2.1
DNS Server
8.8.8.8
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::204:9AFF:FE5D:19E6
Default Gateway
DNS Server
802.1X
Use 802.1X Security


Home Gateway0
Physical
Config
GUI
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
Internet
LAN
Wireless
Wireless Settings
SSID
iOT
2.4 GHz Channel
6 - 2.437GHz
Coverage Range (meters)
250.00
Authentication
Disabled
WEP
WEP Key
WPA-PSK
WPA2-PSK
PSK Pass Phrase
WPA
WPA2
RADIUS Server Settings
IP Address
Shared Secret
Encryption Type
Disabled





Configuration du serveur Web


Server DNS/DHCP
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
File Name: index.html

<h3>Développement Web</h3>
Sites internet professionnels et applications sur mesure.

<h3>Réseaux et Sécurité</h3>
Conception, installation et gestion de réseaux sécurisés.

<h3>Support Informatique</h3>
Assistance technique et maintenance pour vos équipements IT.

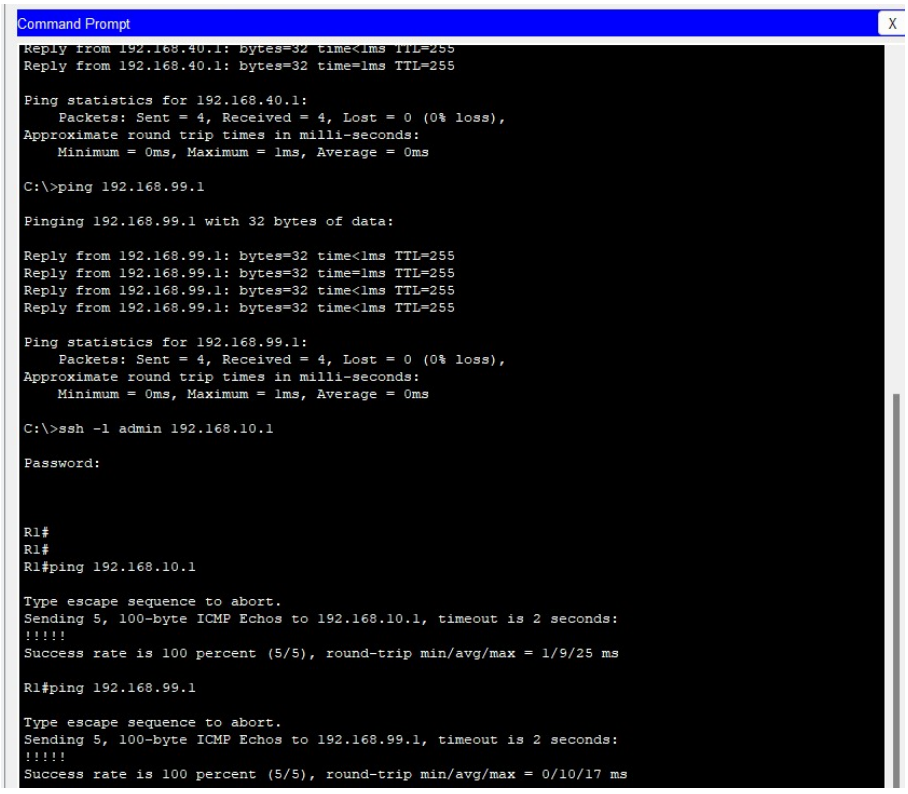
</section>
<section class="content" id="apropos">

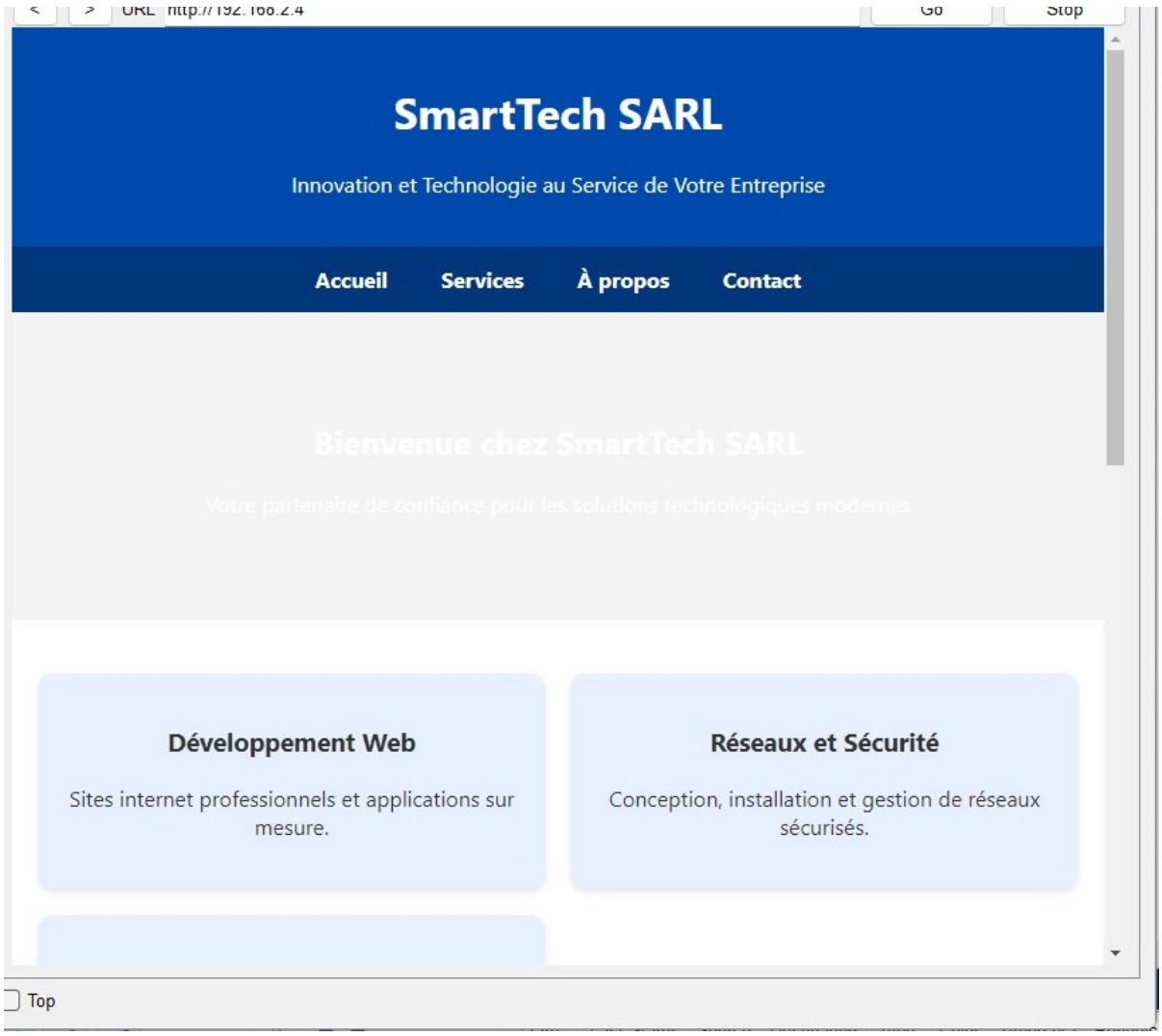
<h3>À propos de nous</h3>
SmartTech SARL est une entreprise innovante spécialisée dans les solutions
digitales pour les entreprises de toutes tailles.

</section>
<section class="content" id="contact">

<h3>Contactez-nous</h3>
Email: contact@smarttechsarl.com
Téléphone: +225 07 07 07 07 07

</section>
<footer>
© 2025 SmartTech SARL. Tous droits réservés.
</footer>
Tests à réaliser
Ping entre les PC de différents VLANs
Accès Internet simulé vers le serveur Web
Test d'accès SSH au routeur
Vérification DHCP automatique sur les PCs
ACL fonctionnelle : PC Guest bloqué vers autres VLANs
</body>
</html>
File Manager
Save
Realtime


Command Prompt
Reply from 192.168.40.1: bytes=32 time<1ms TTL=255
Reply from 192.168.40.1: bytes=32 time=1ms TTL=255
Ping statistics for 192.168.40.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
C:\>ping 192.168.99.1
Pinging 192.168.99.1 with 32 bytes of data:
Reply from 192.168.99.1: bytes=32 time<1ms TTL=255
Reply from 192.168.99.1: bytes=32 time=1ms TTL=255
Reply from 192.168.99.1: bytes=32 time<1ms TTL=255
Reply from 192.168.99.1: bytes=32 time<1ms TTL=255
Ping statistics for 192.168.99.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
C:\>ssh -l admin 192.168.10.1
Password:
R1#
R1#
R1#ping 192.168.10.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.10.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/9/25 ms
R1#ping 192.168.99.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.99.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/10/17 ms



Ce TD m'a permis de concevoir un réseau sécurisé et fonctionnel grâce à la segmentation VLAN, au routage inter-VLAN, et aux services DHCP et NAT. L'ajout de mesures de sécurité comme SSH et ACLs garantit une infrastructure évolutive et fiable. Cette base ouvre la voie à des améliorations futures, telles que la haute disponibilité et la cybersécurisation avancée.