Jordan VALERE BTS SIO SISR

Documentation Activité - Mise en place d'une infrastructure réseau switch, VLAN, interconnexion de deux réseaux locaux à l'aide de routeurs Cisco

1. Présentation de l'activité

Cette activité consiste à configurer une infrastructure réseau composée de switchs Dell et de routeurs Cisco afin de permettre la communication entre deux sites distincts à l'aide de VLANs et de routage statique.

2. Objectifs pédagogiques

- Configurer un switch Dell
- Créer et configurer des VLANs
- Configurer des routeurs Cisco
- Mettre en place du routage statique
- Tester la connectivité inter-sites
- Mise en place d'un lecteur réseau
- Faire un transfert de fichiers

3. Environnement technique

- Switch Dell N2048
- Routeurs Cisco 1921
- Postes clients Windows
- PuTTY (connexion console)
- Câbles RJ45 et console

4. Connexion console et remise à zéro des équipements

Une connexion console est réalisée afin de remettre les équipements à zéro et repartir sur une configuration propre.


26AWG
CSA

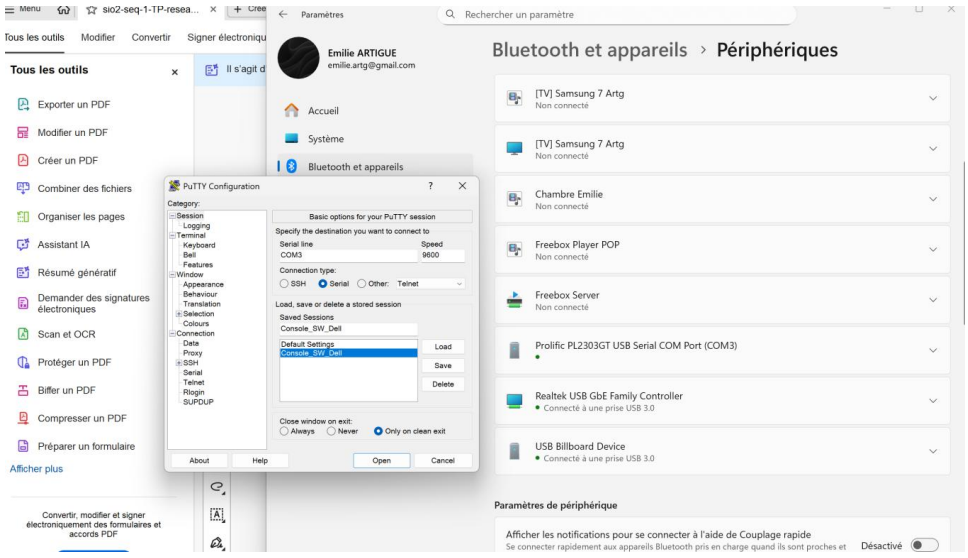

cisco

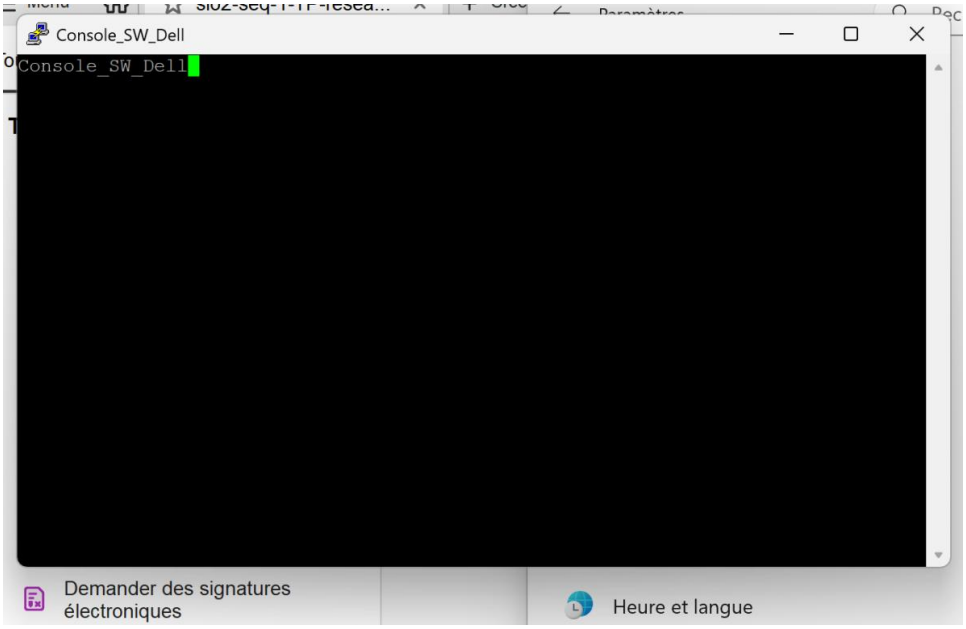

cisco
Cisco 1921

5.

Configuration du switch Dell – VLAN Management

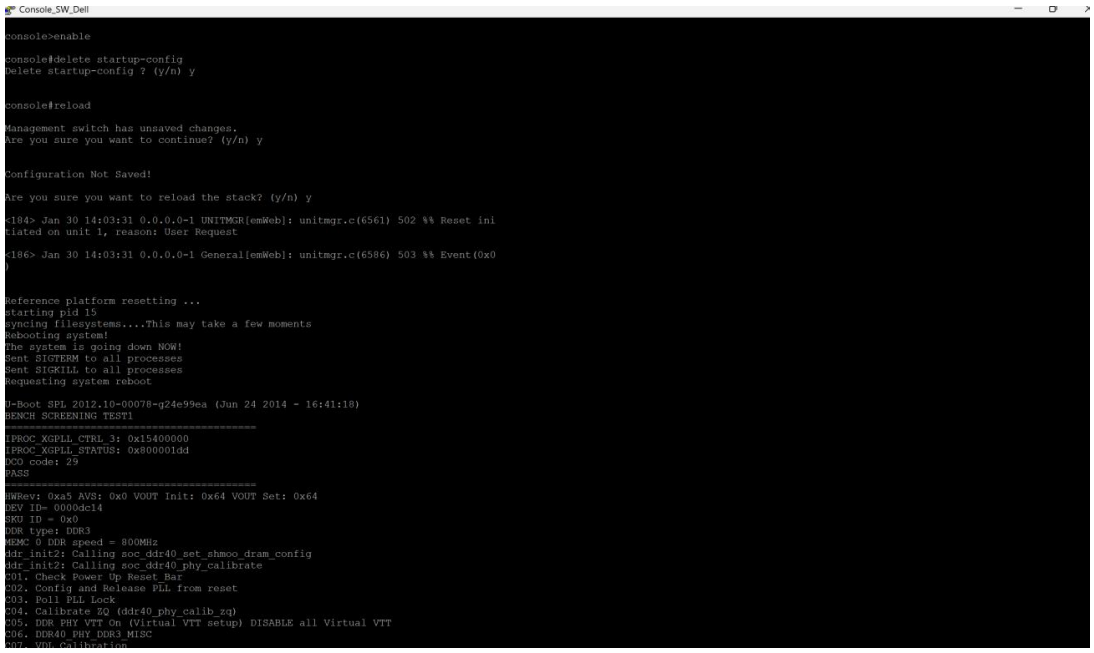
Configuration de l’interface VLAN 99 pour l’administration du switch.

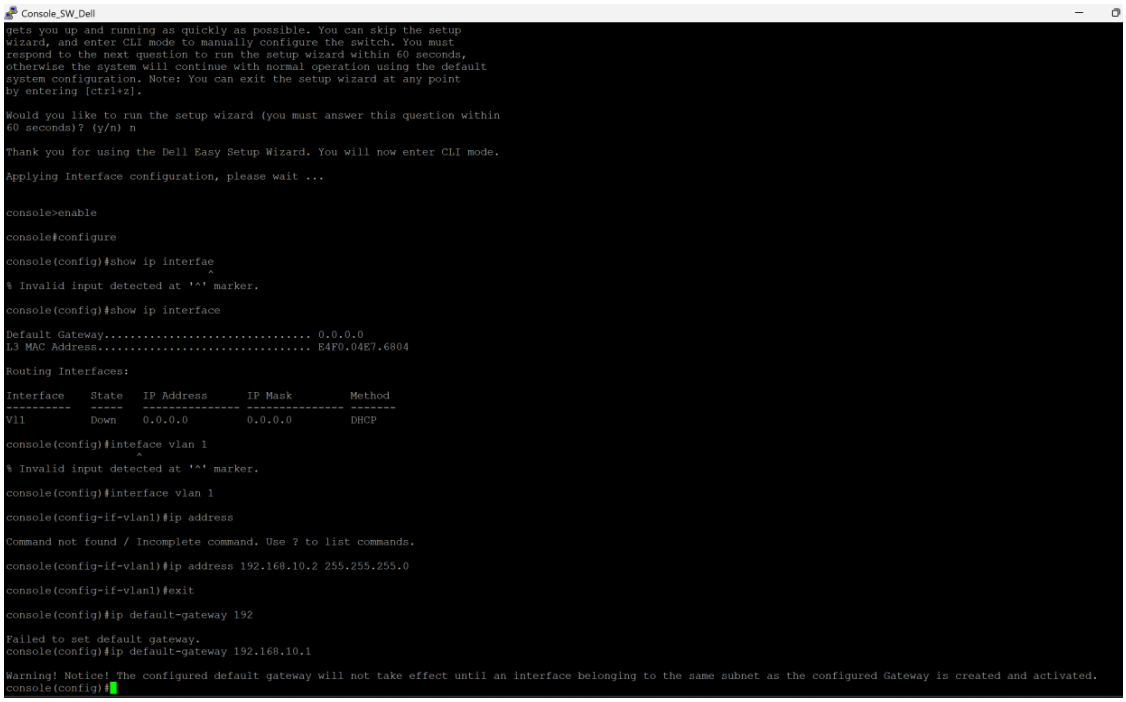




6. Création des VLANs utilisateurs

Création des VLANs SITE_1 (VLAN 10) et SITE_2 (VLAN 20).


Console_SW_Dell
console>enable
console#delete startup-config
Delete startup-config ? (y/n) y
console#reload
Management switch has unsaved changes.
Are you sure you want to continue? (y/n) y
Configuration Not Saved!
Are you sure you want to reload the stack? (y/n) y
<184> Jan 30 14:03:31 0.0.0.0-1 UNITMGR[emWeb]: unitmgr.c(6561) 502 %% Reset ini
tiated on unit 1, reason: User Request
<186> Jan 30 14:03:31 0.0.0.0-1 General[emWeb]: unitmgr.c(6586) 503 %% Event(0x0
)
Reference platform resetting ...
starting pid 15
syncing filesystems....This may take a few moments
Rebooting system!
The system is going down NOW!
Sent SIGTERM to all processes
Sent SIGKILL to all processes
Requesting system reboot
U-Boot SPL 2012.10-00078-g24e99ea (Jun 24 2014 - 16:41:18)
BENCH SCREENING TEST1
IPROC XGPLL CTRL 3: 0x15400000
IPROC XGPLL STATUS: 0x800001dd
DCO code: 29
PASS
HWRev: 0xa5 AVS: 0x0 VOUT Init: 0x64 VOUT Set: 0x64
DEV ID= 0000dc14
SKU ID = 0x0
DDR type: DDR3
MEMC 0 DDR speed = 800MHz
ddr_init2: Calling soc_ddr40_set_shmoo_dram_config
ddr_init2: Calling soc_ddr40_phy_calibrate
C01. Check Power Up Reset_Bar
C02. Config and Release PLL from reset
C03. Poll PLL Lock
C04. Calibrate ZQ (ddr40_phy_calib_zq)
C05. DDR PHY VTT On (Virtual VTT setup) DISABLE all Virtual VTT
C06. DDR40 PHY DDR3 MISC
C07. VDL Calibration


Console_SW_Dell
gets you up and running as quickly as possible. You can skip the setup
wizard, and enter CLI mode to manually configure the switch. You must
respond to the next question to run the setup wizard within 60 seconds,
otherwise the system will continue with normal operation using the default
system configuration. Note: You can exit the setup wizard at any point
by entering [ctrl+z].
Would you like to run the setup wizard (you must answer this question within
60 seconds)? (y/n) n
Thank you for using the Dell Easy Setup Wizard. You will now enter CLI mode.
Applying Interface configuration, please wait ...
console>enable
console#configure
console(config)#show ip interfae
% Invalid input detected at '^' marker.
console(config)#show ip interface
Default Gateway..... 0.0.0.0
L3 MAC Address..... E4F0.04E7.6804
Routing Interfaces:
Interface State IP Address IP Mask Method
---------- ----- --------------- --------------- -------
Vl1 Down 0.0.0.0 0.0.0.0 DHCP
console(config)#inteface vlan 1
% Invalid input detected at '^' marker.
console(config)#interface vlan 1
console(config-if-vlan1)#ip address
Command not found / Incomplete command. Use ? to list commands.
console(config-if-vlan1)#ip address 192.168.10.2 255.255.255.0
console(config-if-vlan1)#exit
console(config)#ip default-gateway 192
Failed to set default gateway.
console(config)#ip default-gateway 192.168.10.1
Warning! Notice! The configured default gateway will not take effect until an interface belonging to the same subnet as the configured Gateway is created and activated.
console(config)#

```
Routing Interfaces:

Interface    State   IP Address      IP Mask         Method
----------   -----   --------------- --------------- -------
Vl1          Down    0.0.0.0         0.0.0.0         DHCP

console(config)#inteface vlan 1
                ^
% Invalid input detected at '^' marker.

console(config)#interface vlan 1

console(config-if-vlan1)#ip address

Command not found / Incomplete command. Use ? to list commands.

console(config-if-vlan1)#ip address 192.168.10.2 255.255.255.0

console(config-if-vlan1)#exit

console(config)#ip default-gateway 192

Failed to set default gateway.
console(config)#ip default-gateway 192.168.10.1

Warning! Notice! The configured default gateway will not take effect until an interface belonging to the same subnet as the configured Gateway is created and activated.
console(config)#show ip interface vlan 1

Routing interface status..... Down
Primary IP Address..... 192.168.10.2/255.255.255.0
Method..... Manual
Routing Mode..... Enable
Administrative Mode..... Enable
Forward Net Directed Broadcasts..... Disable
Proxy ARP..... Enable
Local Proxy ARP..... Disable
Active State..... Inactive
MAC Address..... E4F0.04E7.6804
Encapsulation Type..... Ethernet
IP MTU..... 1500
Bandwidth..... 10000 kbps
Destination Unreachables..... Enabled
ICMP Redirects..... Enabled
```

```
console(config-if-vlan1)#exit

console(config)#ip default-gateway 192

Failed to set default gateway.
console(config)#ip default-gateway 192.168.10.1

Warning! Notice! The configured default gateway will not take effect until an interface bel
console(config)#show ip interface vlan 1

Routing interface status..... Down
Primary IP Address..... 192.168.10.2/255.255.255.0
Method..... Manual
Routing Mode..... Enable
Administrative Mode..... Enable
Forward Net Directed Broadcasts..... Disable
Proxy ARP..... Enable
Local Proxy ARP..... Disable
Active State..... Inactive
MAC Address..... E4F0.04E7.6804
Encapsulation Type..... Ethernet
IP MTU..... 1500
Bandwidth..... 10000 kbps
Destination Unreachables..... Enabled
ICMP Redirects..... Enabled

console(config)#copy running-config startup-config
                ^
% Invalid input detected at '^' marker.

console(config)#copy running-config startup-config
                ^
% Invalid input detected at '^' marker.

console(config)#write memory
                ^
% Invalid input detected at '^' marker.

console(config)#help
                ^
% Invalid input detected at '^' marker.

console(config)#exit

console#copy running-config startup-config

This operation may take few minutes.
Management interfaces will not be available during this time.

Are you sure you want to save? (y/n) y

Configuration Saved!
console#
```

```
Configuration Saved!
console#configure

console(config)#vlan 99

console(config-vlan99)#name MANAGEMENT

console(config-vlan99)#exit

console(config)#interface vlan 99

console(config-if-vlan99)#ip address 192.168.99.2 255.255.255.0

console(config-if-vlan99)#exit

console(config)#ip default-gateway 192.168.99.1

Warning! Notice! The configured default gateway will not take effect until an interface belonging to the same subnet as the configured Gateway is created and activated.
console(config)#exit

console#copy running-config startup-config

This operation may take few minutes.
Management interfaces will not be available during this time.

Are you sure you want to save? (y/n) y

Configuration Saved!
console#
```

```
console#configure

console(config)#vlan 10

console(config-vlan10)#name SITE_1

console(config-vlan10)#exit

console(config)#vlan 20

console(config-vlan20)#name SITE_2

console(config-vlan20)#exit

console(config)#show vlan

VLAN   Name                             Ports          Type
-----  ---------------                  -------------  --------------
1      default                          Po1-128,       Default
                                        Gi1/0/1-48,
                                        Te1/0/1-2
10     SITE_1                                          Static
20     SITE_2                                          Static
99     MANAGEMENT                                      Static

console(config)#
```

```
console#show vlan

VLAN   Name                             Ports          Type
-----  ---------------                  -------------  --------------
1      default                          Po1-128,       Default
                                        Gi1/0/1-48,
                                        Te1/0/1-2
99     MANAGEMENT                                      Static

console#show ip interface vlan 99

Routing interface status..................... Down
Primary IP Address........................... 192.168.99.2/255.255.255.0
Method....................................... Manual
Routing Mode................................. Enable
Administrative Mode.......................... Enable
Forward Net Directed Broadcasts.............. Disable
Proxy ARP.................................... Enable
Local Proxy ARP.............................. Disable
Active State................................. Inactive
MAC Address.................................. E4F0.04E7.6804
Encapsulation Type........................... Ethernet
IP MTU....................................... 1500
Bandwidth.................................... 10000 kbps
Destination Unreachables..................... Enabled
ICMP Redirects............................... Enabled

console#
```

7. Configuration des routeurs Cisco

Configuration des interfaces LAN et WAN sur les routeurs Cisco.

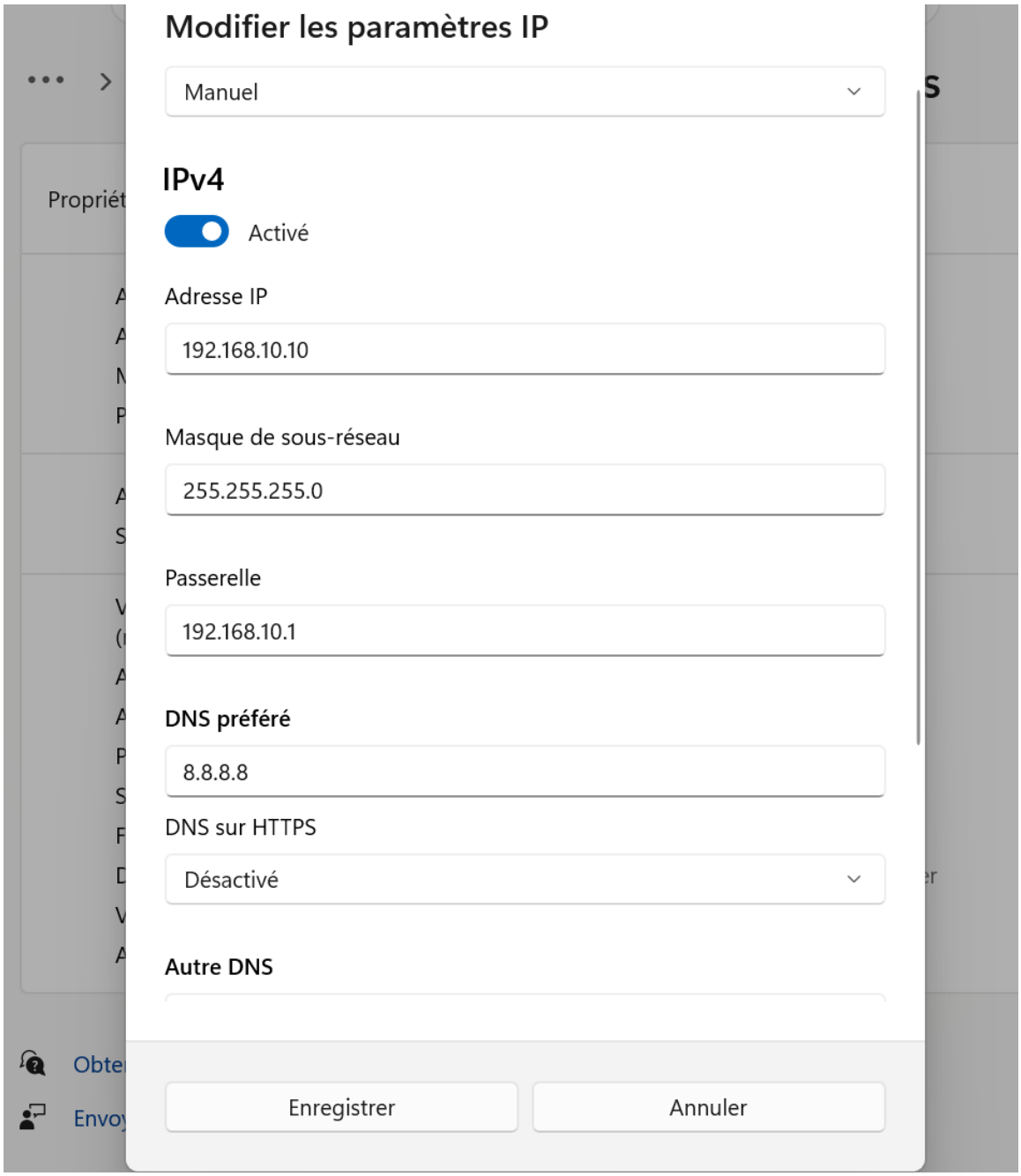
```
router>enable
router#erase startup-config
************************************************************
Erasing Nvram will not clear license registration.
License De-Registration has to be done seperately
************************************************************
Erasing the nvram filesystem will remove all configuration files! Continue? [
[OK]
Erase of nvram: complete
router#
*Jan 30 14:12:30.535: %SYS-7-NV_BLOCK_INIT: Initialized the geometry of nvram
*Jan 30 14:12:42.559: %IP-4-DUPADDR: Duplicate address 192.168.100.1 on Gigab
ourced by c067.af2a.6f81
router#reload
Proceed with reload? [confirm]
*Jan 30 14:13:12.559: %IP-4-DUPADDR: Duplicate address 192.168.100.1 on Gigab
ourced by c067.af2a.6f81

*Jan 30 14:13:23.427: %SYS-5-RELOAD: Reload requested by console. Reload Reas
nd.
System Bootstrap, Version 15.0(1r)M16, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2012 by cisco Systems, Inc.

Total memory size = 512 MB
CISCO1921/K9 platform with 524288 Kbytes of main memory
Main memory is configured to 64 bit mode with ECC disabled


Readonly ROMMON initialized
program load complete, entry point: 0x80903000, size: 0x4c4a0
program load complete, entry point: 0x80903000, size: 0x4c4a0
```

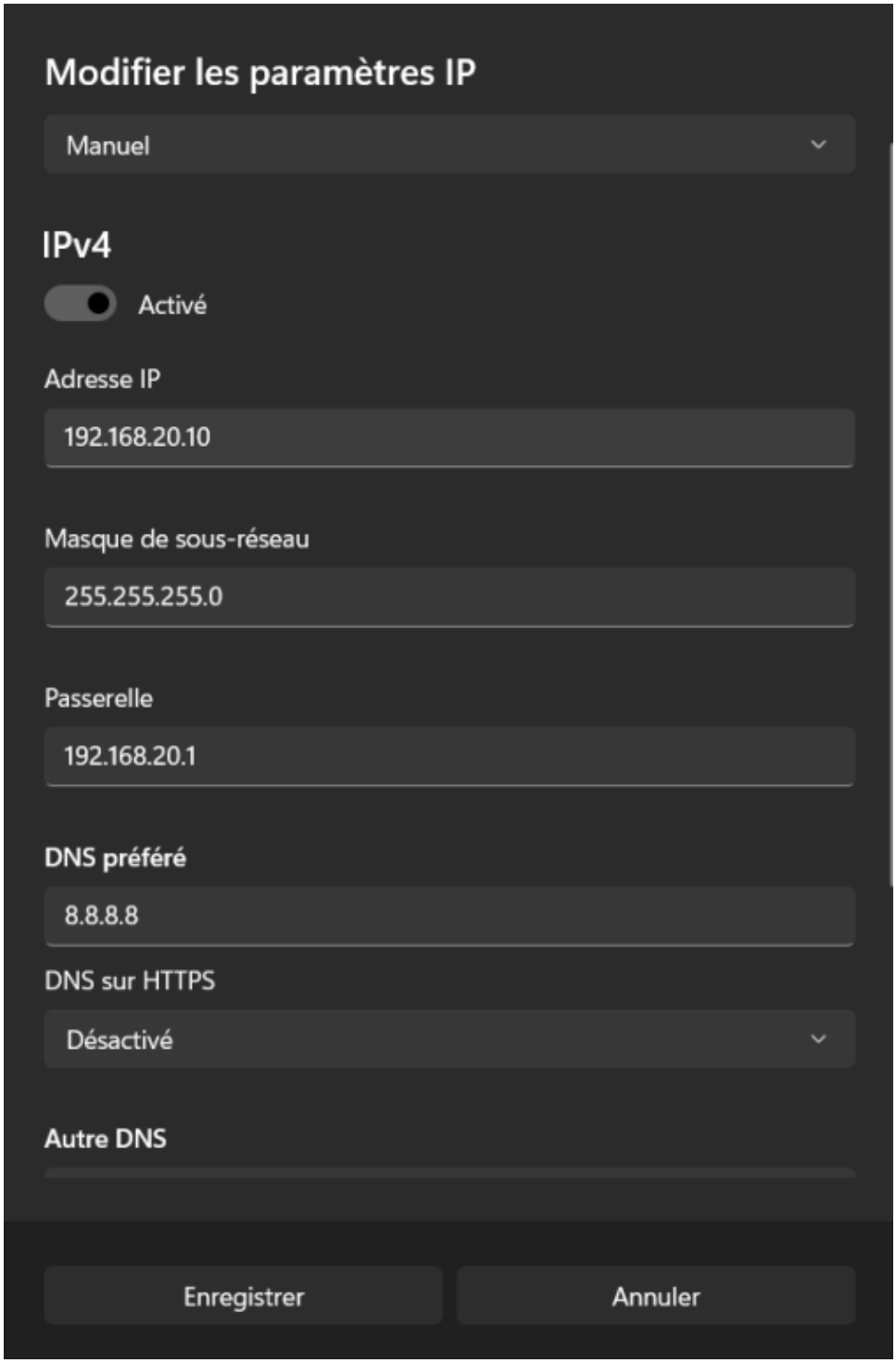
```
Router>enable
Router#conf
Router#configure ter
Router#show ip interface brief
Interface                  IP-Address      OK? Method Status                Protocol
Embedded-Service-Engine0/0 unassigned      YES unset  administratively down down
GigabitEthernet0/0         unassigned      YES unset  administratively down down
GigabitEthernet0/1         unassigned      YES unset  administratively down down
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#inter
Router(config)#interface gig
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#desc
Router(config-if)#description LAN_S
Router(config-if)#description LAN_siteE__2
Router(config-if)#description LAN_siteE_2
Router(config-if)#ip address 192.168.20.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#
*Jan 30 14:20:51.275: %LINK-3-UPDOWN: Interface GigabitEthernet0/0, changed state to down
*Jan 30 14:20:55.391: %LINK-3-UPDOWN: Interface GigabitEthernet0/0, changed state to up
*Jan 30 14:20:56.391: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, cha
nged state to up
Router(config)#interface gigabitEthernet 0/1
Router(config-if)#description WAN_vers_site_1
Router(config-if)#ip address 192.168.100.2 255.255.255.252
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#
*Jan 30 14:23:04.359: %LINK-3-UPDOWN: Interface GigabitEthernet0/1, changed state to down
Router(config)#
*Jan 30 14:23:08.391: %LINK-3-UPDOWN: Interface GigabitEthernet0/1, changed state to up
*Jan 30 14:23:09.391: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, cha
nged state to up
Router(config)#exit
Router#
*Jan 30 14:23:17.359: %SYS-5-CONFIG_I: Configured from console by consoles
% Type "show ?" for a list of subcommands
Router#show ip interface brief
Interface                  IP-Address      OK? Method Status                Protocol
Embedded-Service-Engine0/0 unassigned      YES unset  administratively down down
GigabitEthernet0/0         192.168.20.1    YES manual up                    up
GigabitEthernet0/1         192.168.100.2   YES manual up                    up
Router#
```

```
Router>ip route 192.168.10.0 255.255.255.0 192.168.100.1
          ^
% Invalid input detected at '^' marker.

Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip route 192.168.10.0 255.255.255.0 192.168.100.1
Router(config)#exit
Router#show i
*Jan 30 14:49:51.671: %SYS-5-CONFIG_I: Configured from console by consolep
% Incomplete command.

Router#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR

Gateway of last resort is not set

S     192.168.10.0/24 [1/0] via 192.168.100.1
      192.168.20.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.168.20.0/24 is directly connected, GigabitEthernet0/0
L        192.168.20.1/32 is directly connected, GigabitEthernet0/0
      192.168.100.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.168.100.0/30 is directly connected, GigabitEthernet0/1
L        192.168.100.2/32 is directly connected, GigabitEthernet0/1
Router#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 = 1/1/1 ms
Router#
```

8. Configuration des postes clients

Configuration IP manuelle des postes clients.


Modifier les paramètres IP
Manuel
IPv4
Activé
Adresse IP
192.168.10.10
Masque de sous-réseau
255.255.255.0
Passerelle
192.168.10.1
DNS préféré
8.8.8.8
DNS sur HTTPS
Désactivé
Autre DNS
Enregistrer
Annuler

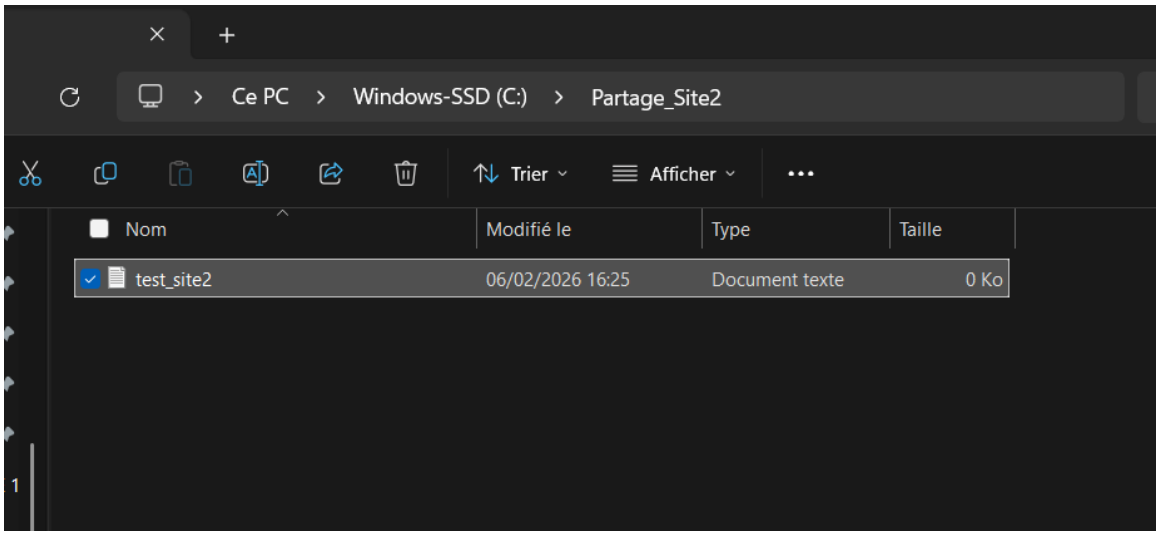

Modifier les paramètres IP
Manuel
IPv4
Activé
Adresse IP
192.168.20.10
Masque de sous-réseau
255.255.255.0
Passerelle
192.168.20.1
DNS préféré
8.8.8.8
DNS sur HTTPS
Désactivé
Autre DNS
Enregistrer
Annuler

9. Tests de connectivité

Des tests de ping sont réalisés afin de valider la communication inter-sites.

Création d'un dossier partagé sur Site 2 : C:\Partage_Site2

Fichier de test : test_site2.txt

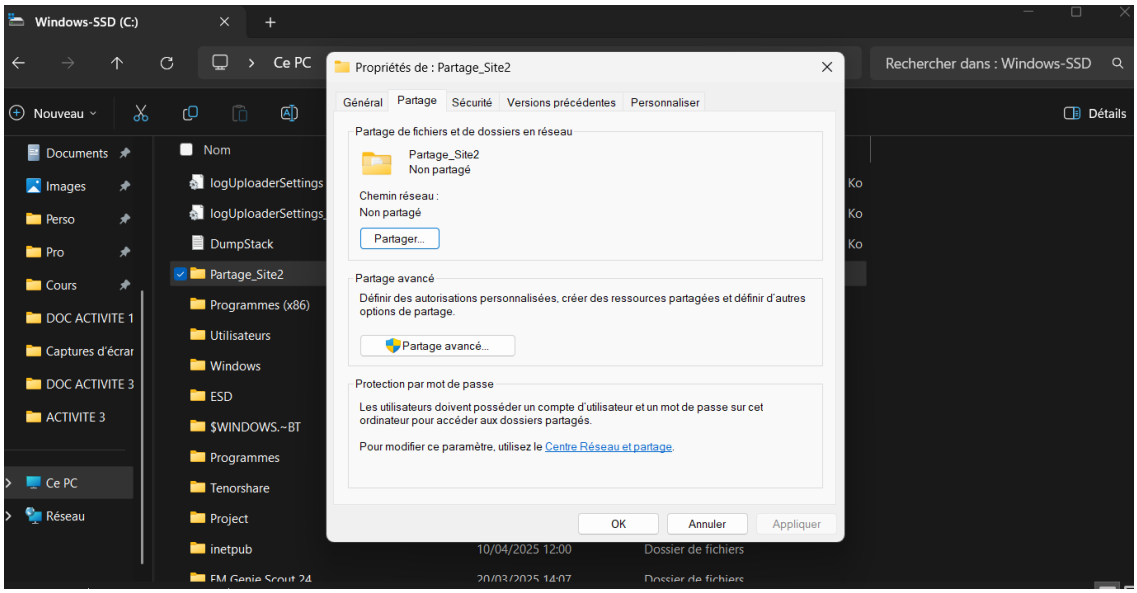


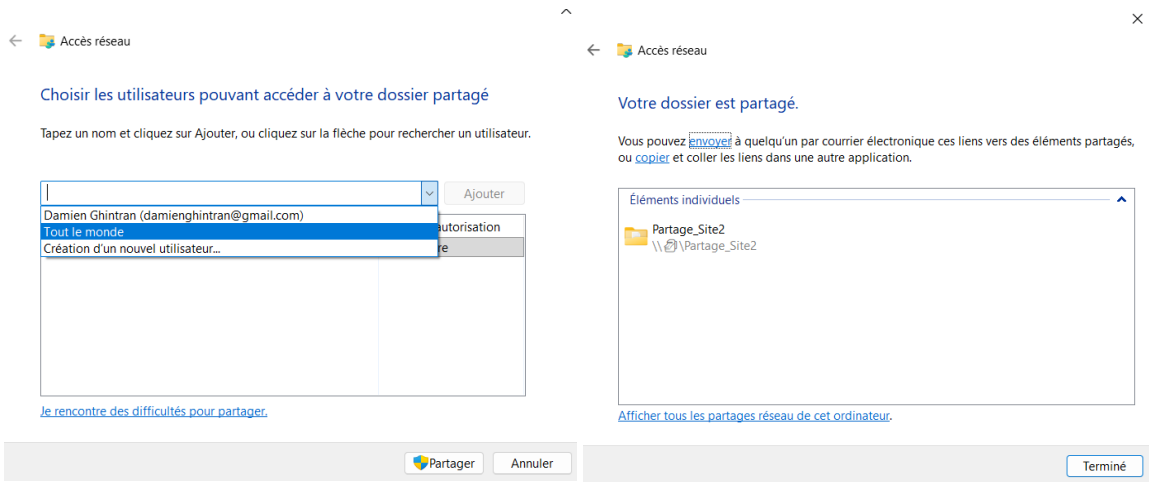
Un dossier partager a été créé sur le poste du Site 2 afin de tester la communication au niveau applicatif.

Configuration du partage

Faire : Propriétés > Partage > Partager > Autoriser l'accès réseau à tout le monde

Puis Vérifier depuis les paramètres que profil réseau : privé

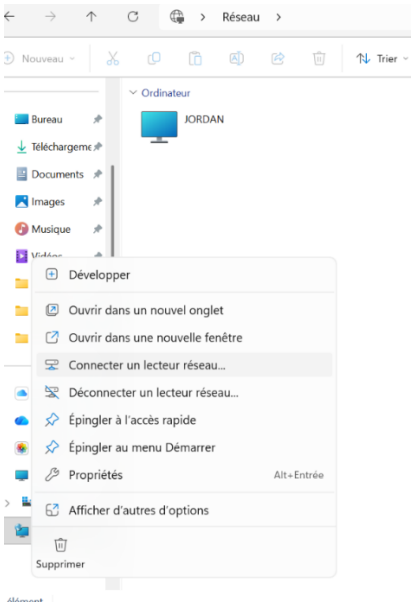


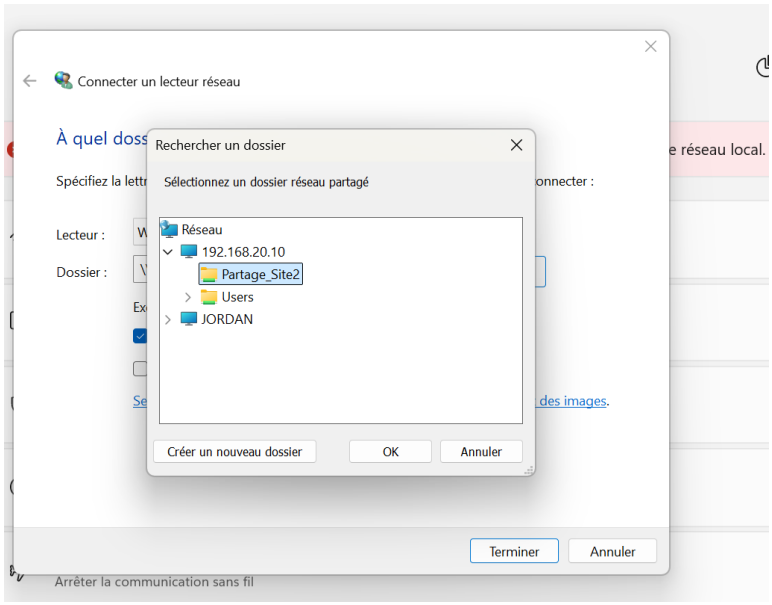


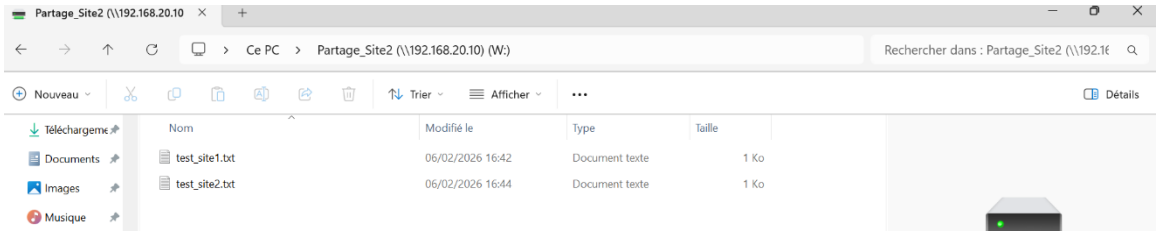
Accès depuis le site 1

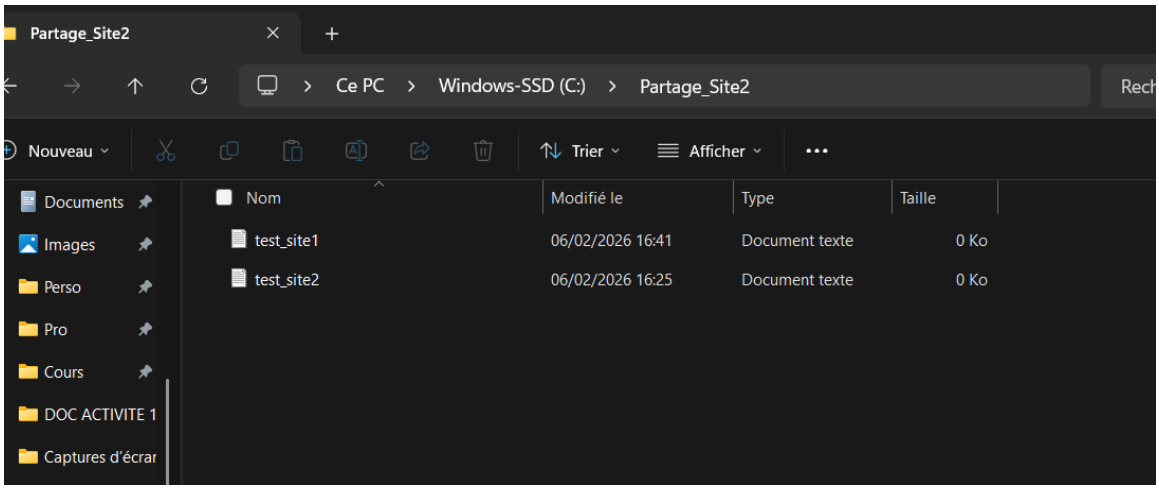
Depuis l’explorateur de fichier Windows, se connecter au fichier réseau.

Rechercher \\192.168.20.10









Procéder à un partage de fichiers entre les postes

Cela vérifie la communication réelle entre postes sur le réseau, et pas seulement la couche réseau. On teste ici la couche application (partage de fichiers Windows).

10. Conclusion

Cette activité a permis de mettre en œuvre une infrastructure réseau fonctionnelle répondant aux objectifs pédagogiques du BTS SIO SISR.