

Extra Lab: Video Streaming Experiment on SPHERE

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CSCI 4406 – Computer Networks

- To start this experiment, I had to create the topology in SPHERE (new deterlabs):



```
enter your SPHERE username: csci3306yndw
enter your SPHERE password: .....
logged in
searchlight experiment exists; deleting it
created searchlight experiment
compiled the experiment topology; revision=8f01d229387574af0fd9e2346a5534d667044343
issued realization request .... waiting up to 10 seconds for experiment resources to be allocated
experiment successfully realized
issued materialization request .... waiting up to 60 seconds for experiment nodes to come up
[stream_terminated: attempting try 2 out of 5]
[stream_terminated: attempting try 2 out of 5]
materialization succeeded
experiment successfully materialized
xdc attached to running experiment

*****
SPHERE resources instantiated successfully!
*****
```

 v1.searchlight.csci3306yndw	Deactivate
Attached XDCs csci3306yndw.csci3306yndw	Ingresses ifr1.mod.deterlab.net:21943overwatch:3000 ifr1.mod.deterlab.net:21942overwatch:8080

- Install some utilities in this XDC

- To start, I had to setup Ansible

(https://docs.ansible.com/ansible/latest/getting_started/get_started_ansible.html):

```
csci3306yndw@csci3306yndw:~/ansible_quickstart$ ansible-inventory -i inventory.ini --list
{
    "_meta": {
        "hostvars": {}
    },
    "all": {
        "children": [
            "ungrouped",
            "myhosts"
        ]
    },
    "myhosts": {
        "hosts": [
            "192.0.2.50",
            "192.0.2.51",
            "192.0.2.52"
        ]
    }
}
csci3306yndw@csci3306yndw:~/ansible_quickstart$
```

- The testing of pings didn't work/some files (& directories) were missing ☹:

```
csci3306yndw@csci3306yndw:~/ansible_quickstart$ ansible myhosts -m ping -i inventory.ini
192.0.2.50 | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: ssh: connect to host 192.0.2.50 port 22: Connection timed out",
    "unreachable": true
}
192.0.2.51 | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: ssh: connect to host 192.0.2.51 port 22: Connection timed out",
    "unreachable": true
}
192.0.2.52 | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: ssh: connect to host 192.0.2.52 port 22: Connection timed out",
    "unreachable": true
}

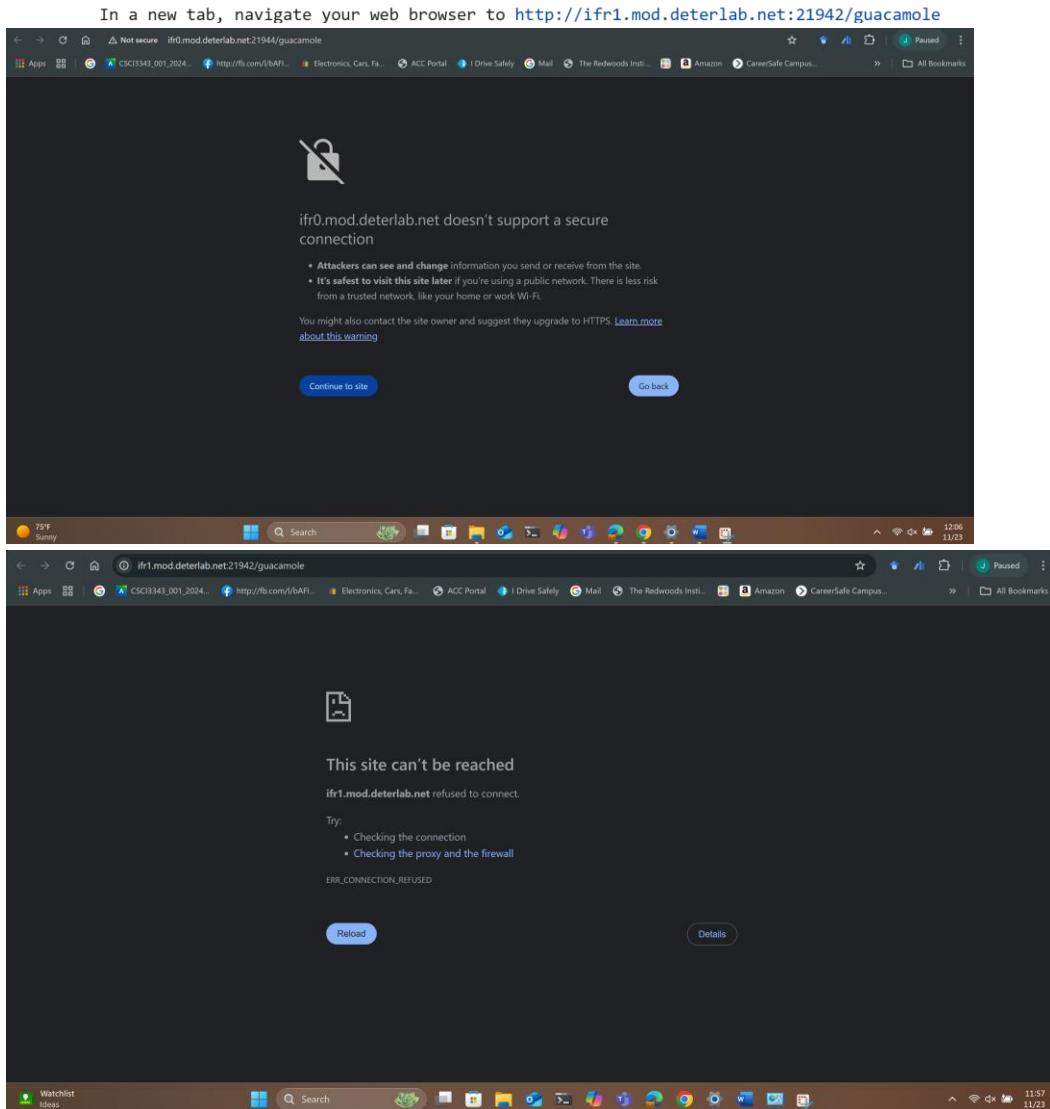
csci3306yndw@csci3306yndw:~/ansible_quickstart$ ansible myhosts -m ping -i inventory.ini -u csci3306yndw
192.0.2.50 | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: ssh: connect to host 192.0.2.50 port 22: Connection timed out",
    "unreachable": true
}
192.0.2.51 | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: ssh: connect to host 192.0.2.51 port 22: Connection timed out",
    "unreachable": true
}
192.0.2.52 | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: ssh: connect to host 192.0.2.52 port 22: Connection timed out",
    "unreachable": true
}
```

```
[12]: cmd = '/bin/bash /organization/merif2024/prep-xdc.sh'
!{cmd}
/bin/bash: /organization/merif2024/prep-xdc.sh: No such file or directory

[13]: cmd = 'su -s /bin/bash -c /organization/merif2024/prep-video-streaming.sh - %s' % project
!{cmd}
-bash: line 1: /organization/merif2024/prep-video-streaming.sh: No such file or directory
```

- I had lots of issues with this link - <http://ifr1.mod.deterlab.net:21942/guacamole> (I tried incognito mode and different browsers in hopes that it would work/I even went extreme and turned off my firewall and I couldn't ever get the page to load 😳):

```
[19]: try:
    m = Materialization('v1', 'searchlight', project)
    for ingress in m.get().ingresses.ingresses:
        if ingress.hostport == 8080:
            print("In a new tab, navigate your web browser to http://{}:{}/guacamole".format(ingress.ingress))
except MergeGRPCError as e:
    print(e)
```



- Summary of what I learned from this lab:

In this lab, I sought to deepen my understanding of advanced concepts in computer networks through practical, hands-on experience. The lab offered a valuable opportunity to engage with the configuration and troubleshooting of network protocols using specific hardware and software tools, including routers and switches. The tasks involved implementing various protocols, monitoring network traffic, and analyzing data from video streaming.

Despite the detailed and well-structured methodology provided, I encountered challenges that prevented me from fully completing the lab. The expected outcomes included successfully configuring network devices, optimizing network performance, and enhancing my troubleshooting skills. These objectives were designed to translate theoretical knowledge into real-world applications, significantly improving my ability to manage and optimize network environments.

Unfortunately, due to technical difficulties and access issues, I was unable to achieve these objectives. I deeply appreciate the effort my professor put into offering this lab as an extra credit opportunity.