Project #4 –NFV ServiceChains

GROUP #4 NSC
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Background

– Classically, Network Functions are Expensive, hard to manage and operate.

– Network Functions Virtualization (NFV) is an emerging trend that lack an automated framework enabling easy deployment and management

– An automated framework is required to offer the services by bridging the SDN controller with a lightweight NFV platform, driven by high-level policies.

Approach

This Approach can be divided into four parts:
1. *Network design*
2. *Service Chains*
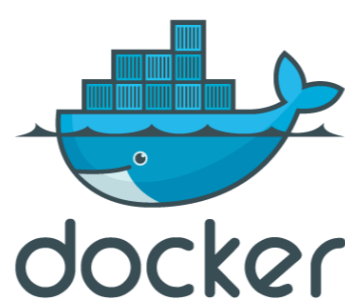3. *Network Management*
4. *SDN Framework*

1. Network design

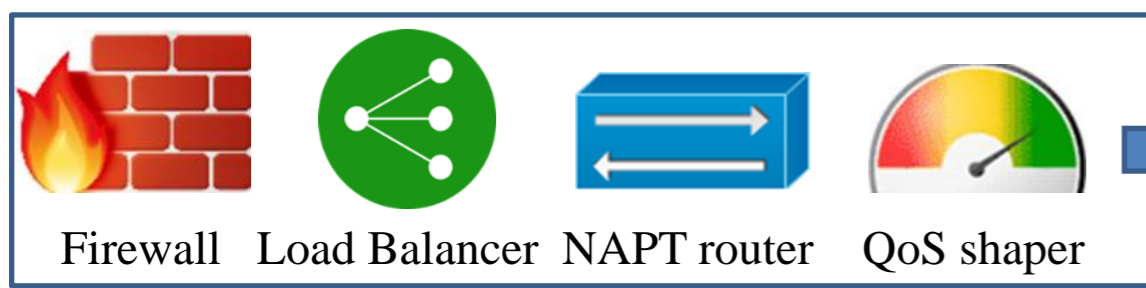(1)Three zones
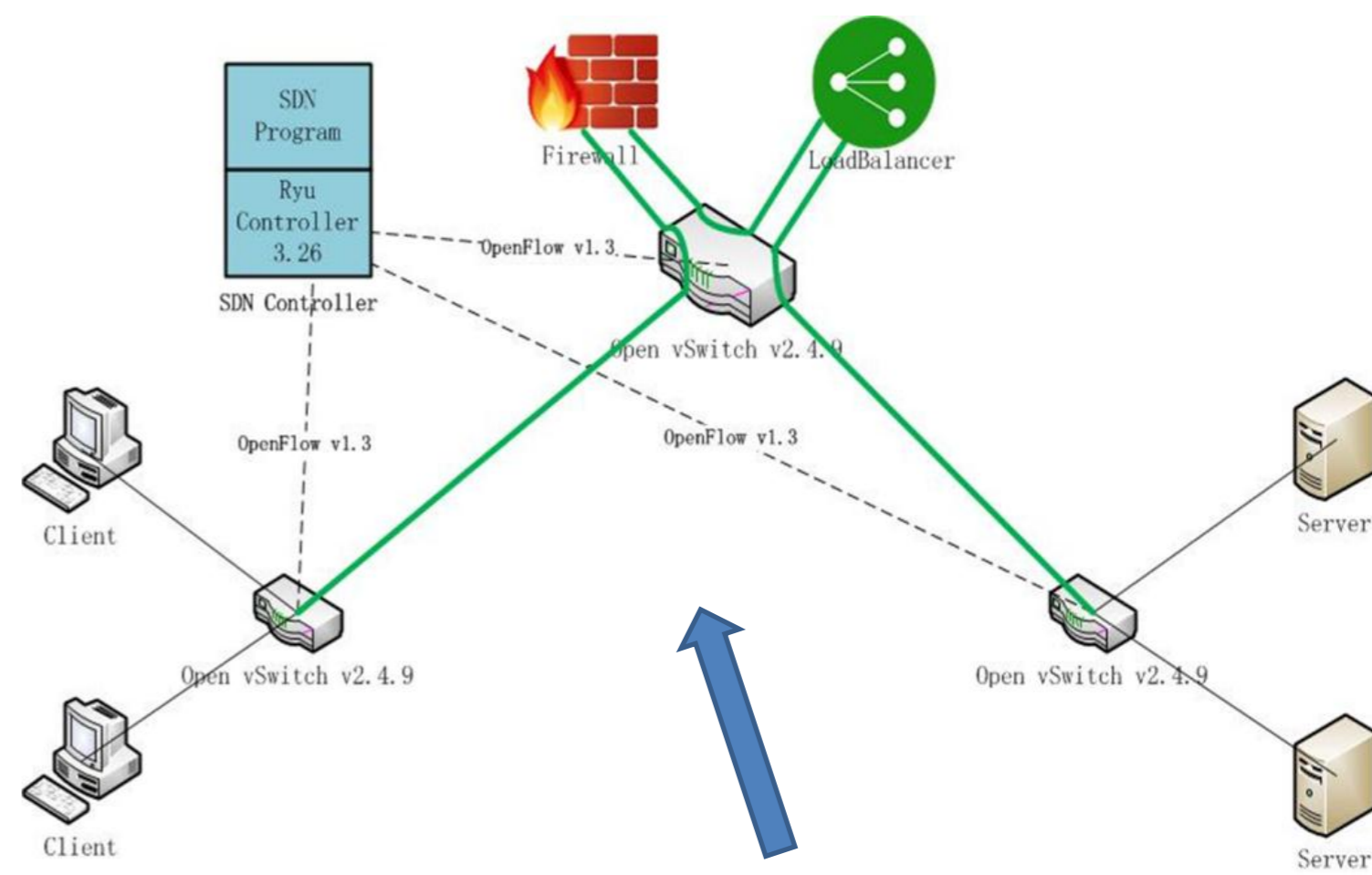(2)Five network service:
- DNS
- FTP
- HTTP
- VoIP
- Video streaming

2. Service Chains

Four network functions:

Firewall   Load Balancer   NAPT router   QoS shaper

All network functions running in docker
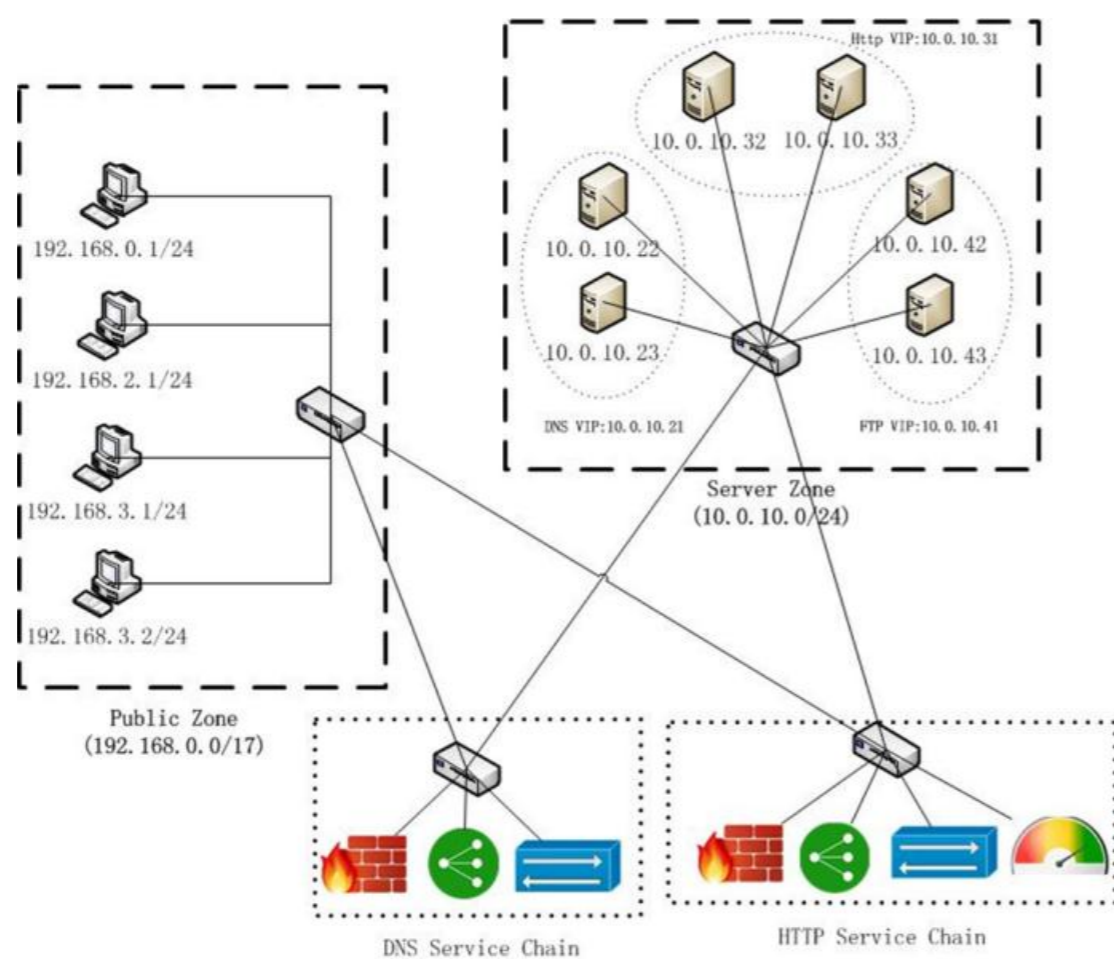
3. Network Management
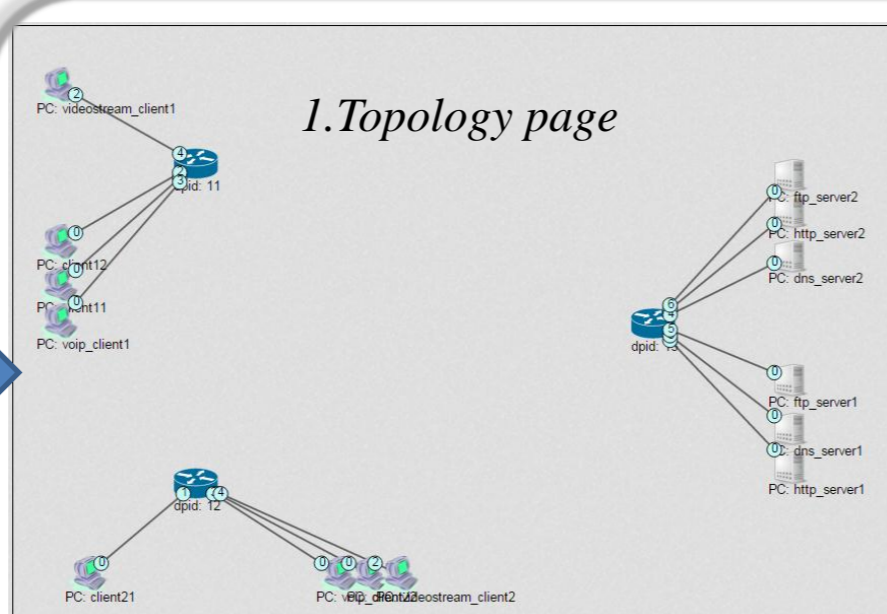Multiple service chains will be created and monitored according to existing policy defined by user

4. SDN Framework
- Deploy and manage the service chains
- Dynamically steer traffic across the specific chain according to its service type (follow the green line)

Outcome

To realize the Flexible Deployment, Management and Monitoring of NFs :

1. A web GUI
- Show the topology
- Define and manage the policies for network services
- Show the monitoring information

2. Deploy the required NFs and create the service chain according to the policy

3. The SDN controller will setup the appropriate rules and steer the traffic appropriately

4. The monitoring module will capture the request metrics when the traffic passing

Web GUI(IP:192.16.125.174:8080)

1.Topology page

POLICIES

This page is used to define the policies

NEW POLICY

SERVICE   ALLOWED SUBNET   BANDWIDTH   SCHEDULER

FUNCTIONS: ☐ Firewall   ☐ NAPT   ☐ LoadBalancer   ☐ QoS
Delete this policy

Define new policy   Delete the existing policy
Submit

ID	SERVICE	ALLOWED SUBNET	BANDWIDTH	SCHEDULER	
173	video	192.168.2.0/24	10MBps	OTHER	update
NETWORK FUNCTIONS:			QoS→		

2.Policies page of the web GUI:
- *Define new policy(red)*
- *Show existing policies(blue)*

New service chains created according to the existing policies

LATENCY

Sub page 2:
- *Round Trip Time per NF Chain*
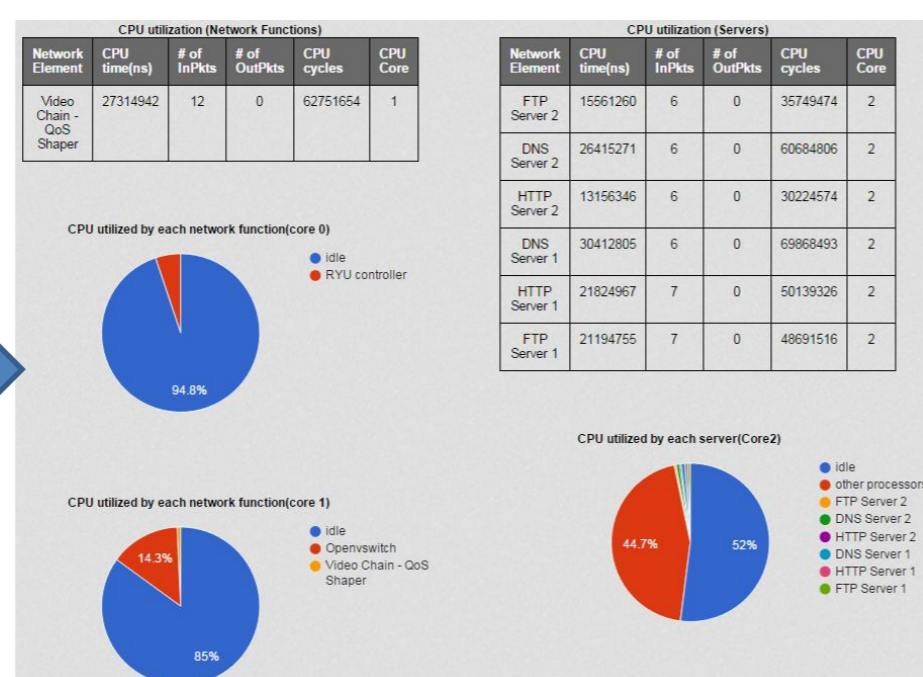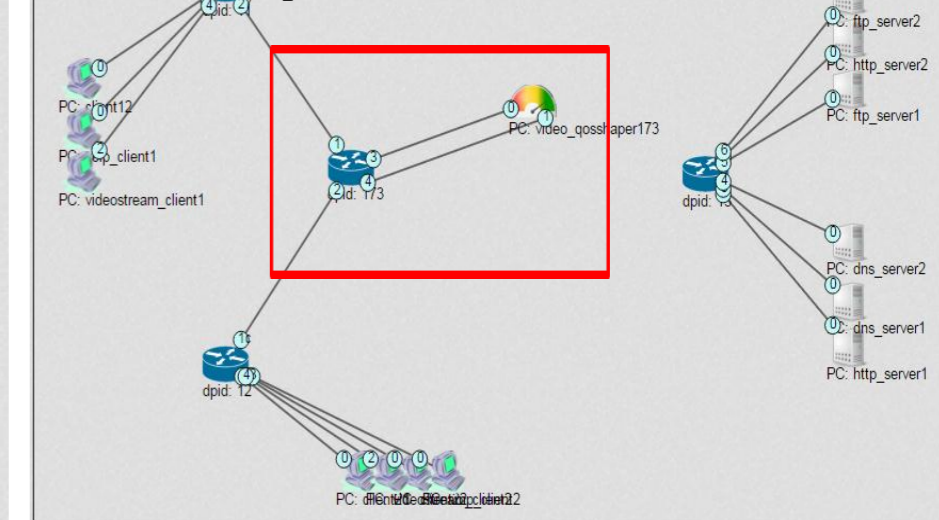
3.Monitoring pages
Sub page 1:
- *CPU Pinning and Utilization of NFs and Services*
- *Number of input and output packets*

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