

# Apache Traffic Control

## Up and Running

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<https://bit.ly/atc-up-and-running>

<https://s.apache.org/atc-slack>

#atc-up-and-running

What  
is a  
CDN?

A **Content Delivery Network (CDN)** is a network of caching proxy servers that are geographically located to optimize content delivery to users for high availability and performance.

What  
is a  
CDN?

Why  
build  
a  
CDN?

Prediction that a tsunami  
of bits were coming to  
Comcast platforms and  
how do we scale that  
problem?

What  
is a  
CDN?

Why  
build  
a  
CDN?

What  
is  
Traffic  
Control?

**Traffic Control** is a  
caching server control  
plane suite of service-  
based components which  
are used to aggregate  
caching servers into a  
Content Delivery  
Network (CDN).



## Traffic Control Story

- 01/2012: Work starts in Comcast
- 10/2012: Comcast Production Deployment
- ...
- 02/2017: 1st Apache Incubator Release

# Traffic Control Story

- **May 16, 2018: ATC becomes a TLP!**

Traffic Control Story . 20 Committers representing 7 different companies

Traffic Control Community . 12 PMC Members  
. 9348 Commits

(as of Sept 5, 2018) . [github.com/apache/trafficco](https://github.com/apache/trafficco)



Traffic  
Control  
Story

- Latest Stable Release  
2.2 - June 18, 2018

Traffic  
Control  
Community

- Latest Dev Release 3.0

(as of  
Sept 5,  
2018)

## Goals

- Everything in the CDN is Open Source (and appropriately licensed)
- Use COTS hardware and Cloud
- Loosely coupled components, stateless, scalable

Goals

- Client Routing

Key  
Features

- Operations  
Administration

- Monitoring

Comcast's  
CDN  
Stats

- Terabits delivered per second
- Petabytes delivered per day
- Billions of transactions at the edge per day
- Petabytes of cache storage

Comcast's  
CDN  
Stats

- Exabytes total delivered
- $10^{18}$  or  
1,000,000,000,000,000,000



# Traffic Control Components

# Traffic Operations

Config Management

Administration UI/API(s) for operations  
to control the CDN

What  
is a  
Delivery  
Service?

A group of settings and options to optimize content delivery for each customer on the CDN.

What is a **Delivery Service**? Configuration settings that are applied to any ATC component.

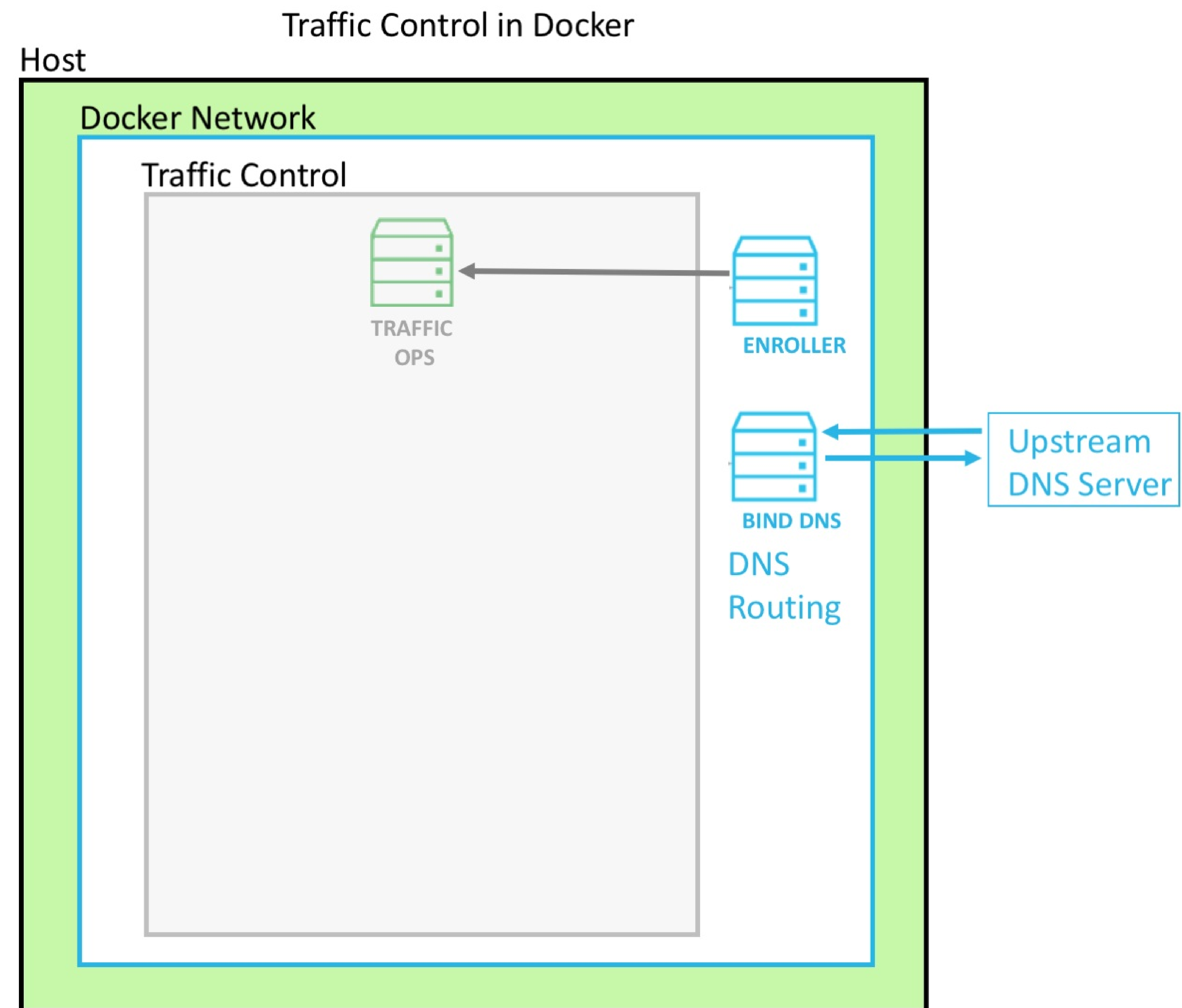
What are **Parameters**?

What is a **Delivery Service**? Parameters that are bundled into groups

What are **Parameters**?

What are **Profiles**?

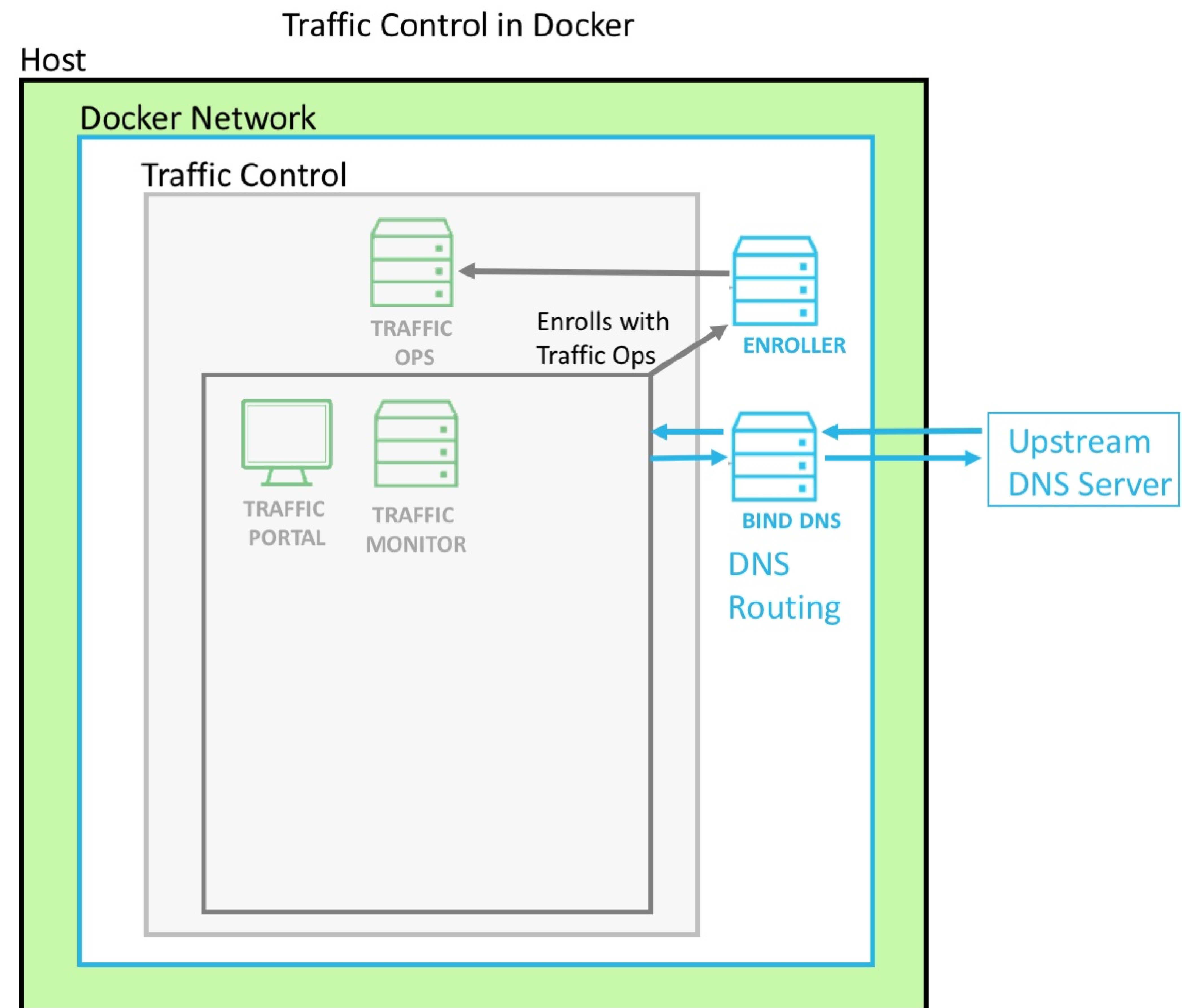




# Demo Traffic Ops

# Traffic Portal

Config Management Improved



# Demo Traffic Portal

Dan Kirkwood



# Operational Readiness Test (ORT)

Config File Delivery

Scheduled script for polling Traffic Ops  
APIs

# Traffic Monitor

## Health Protocol

Decider of health for edge caches and  
delivery services

# Demo Traffic Monitor

What is a Consistent Hash?

A ring which it then uses to make sure that requests are routed to a target based on the configured weights.

Authors Daniel Lewin  
and F. Thomas Leighton

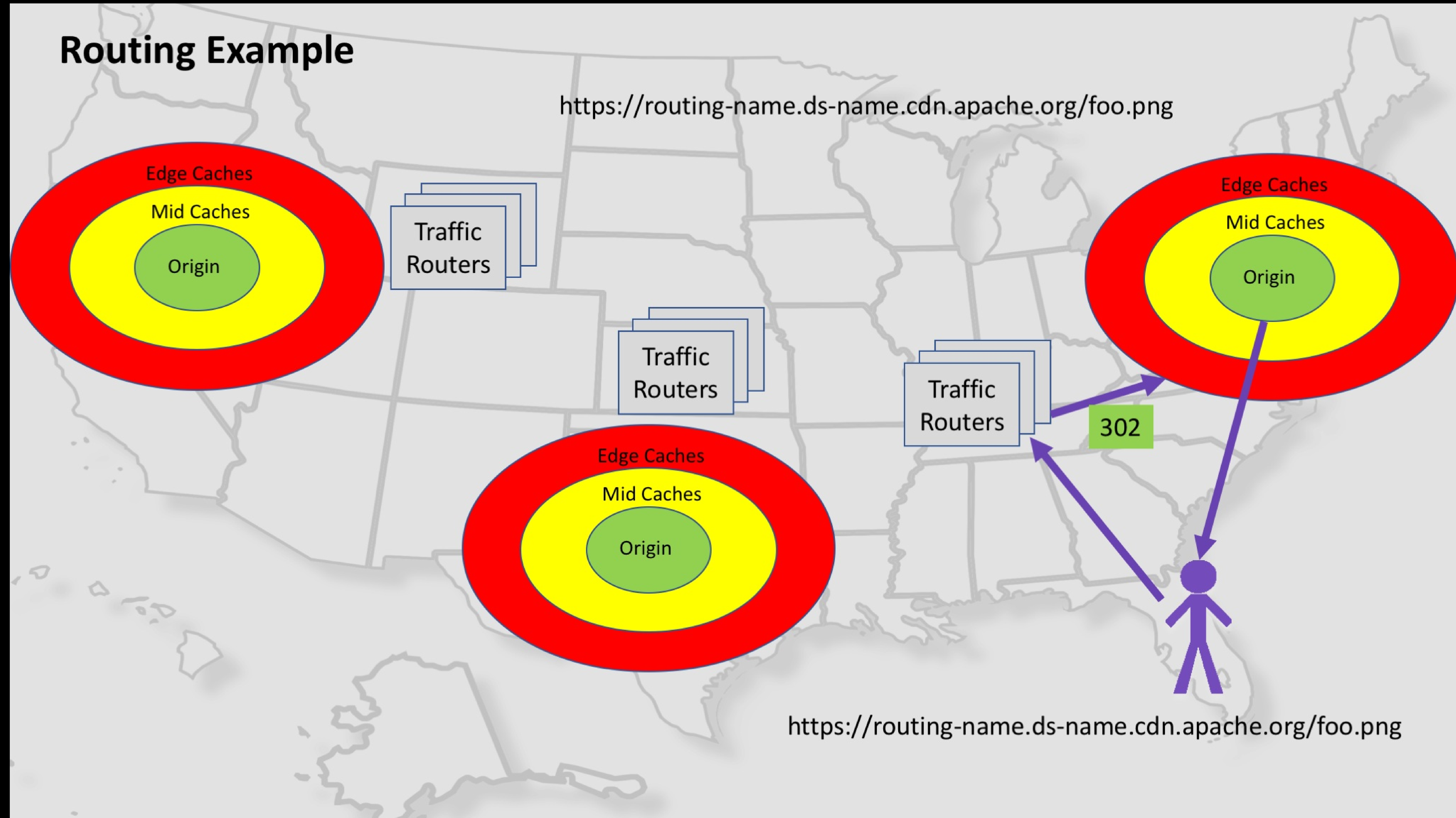
# Traffic Router

Content Routing

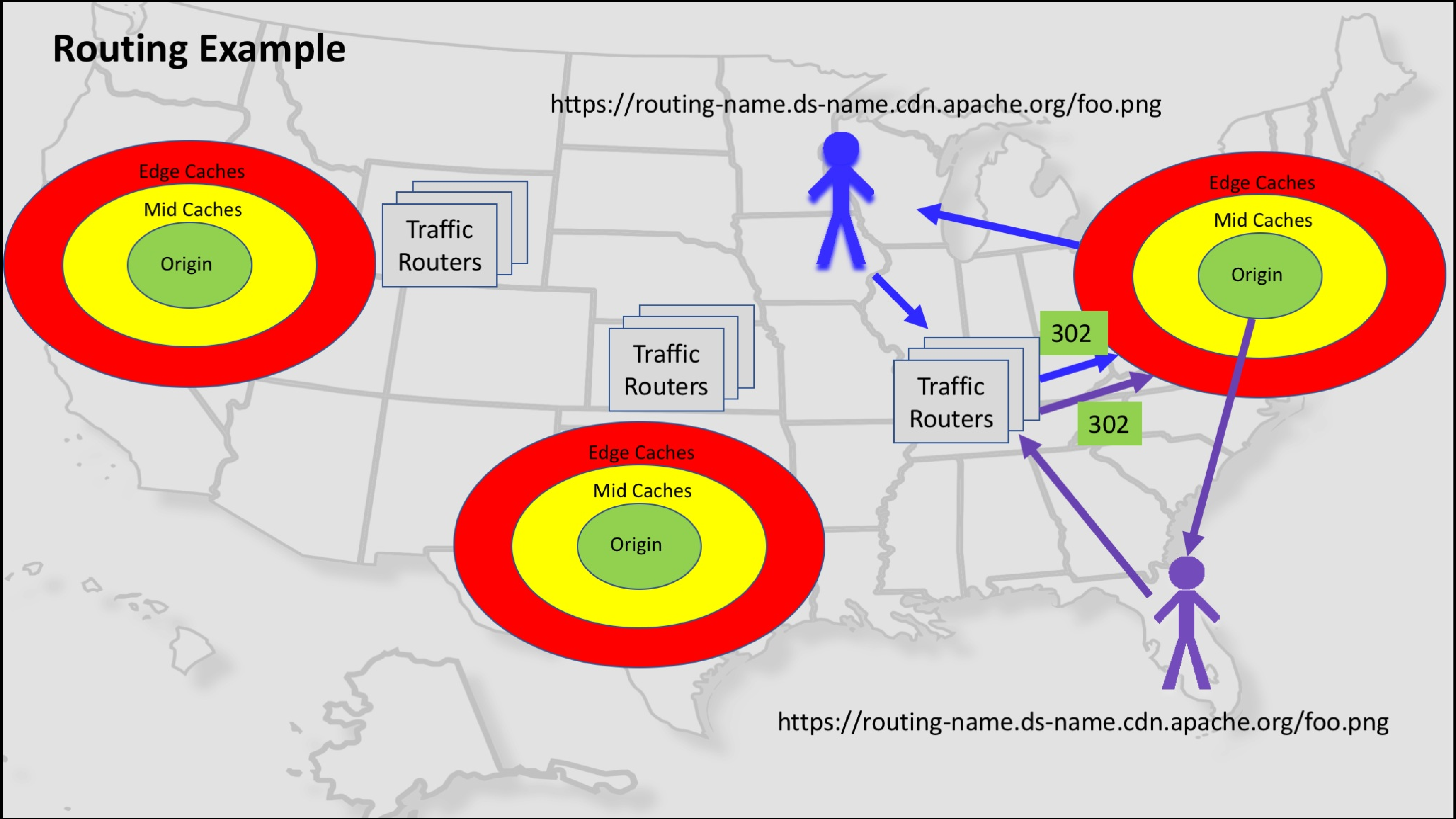
Client requests dispatcher



## Routing Example

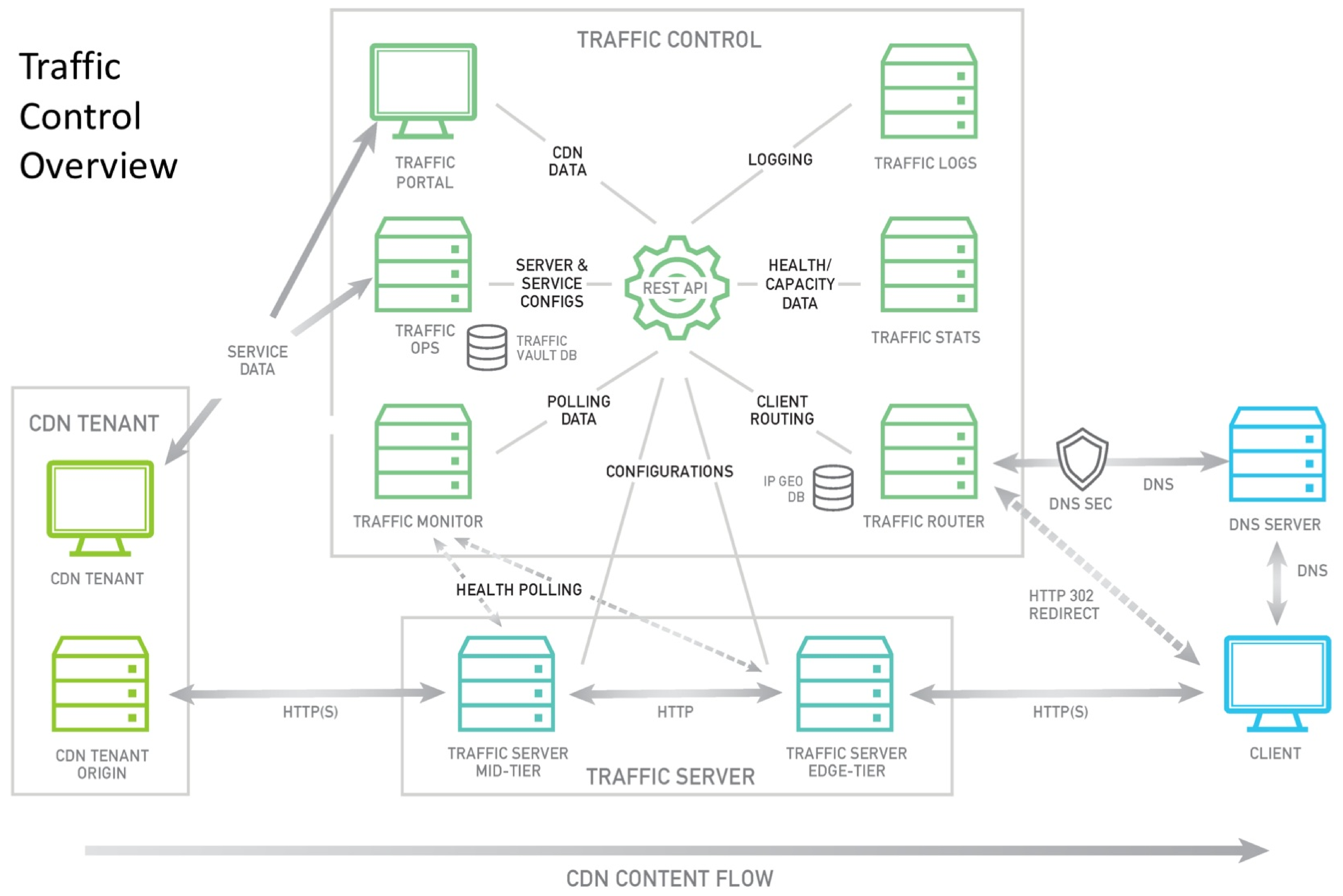


# Routing Example

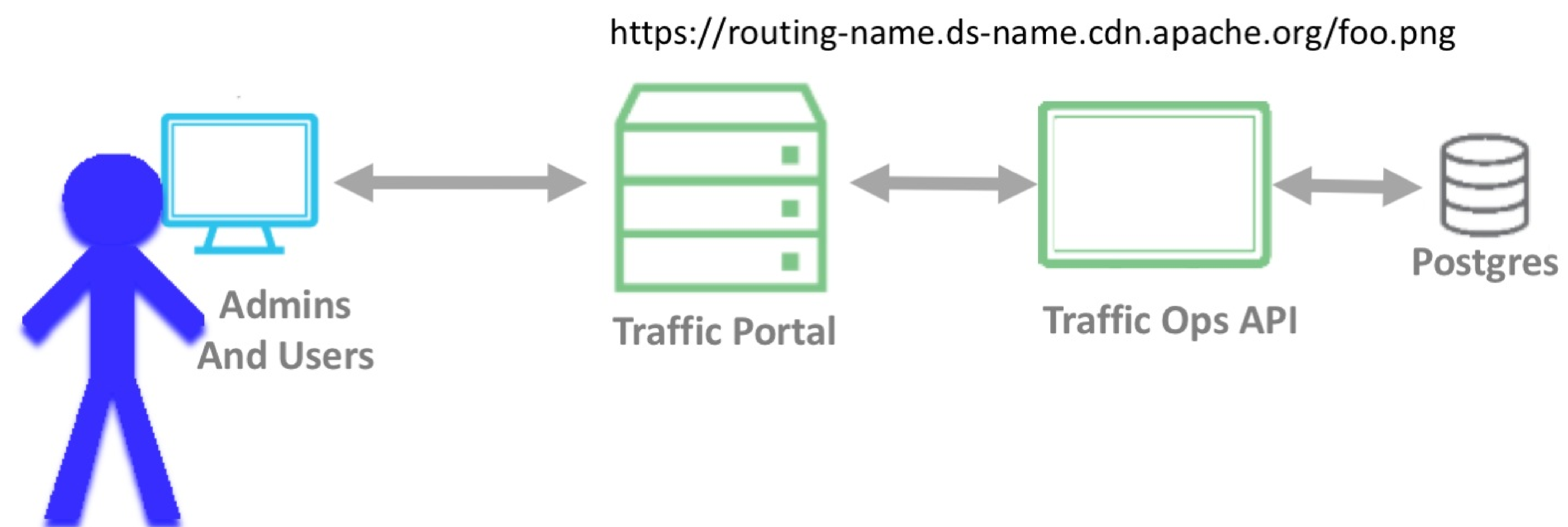




Traffic Control Overview



## Traffic Portal User Interaction



## Traffic Router Interaction (HTTP)

<https://video.ciab.cdn.local/foo.png>

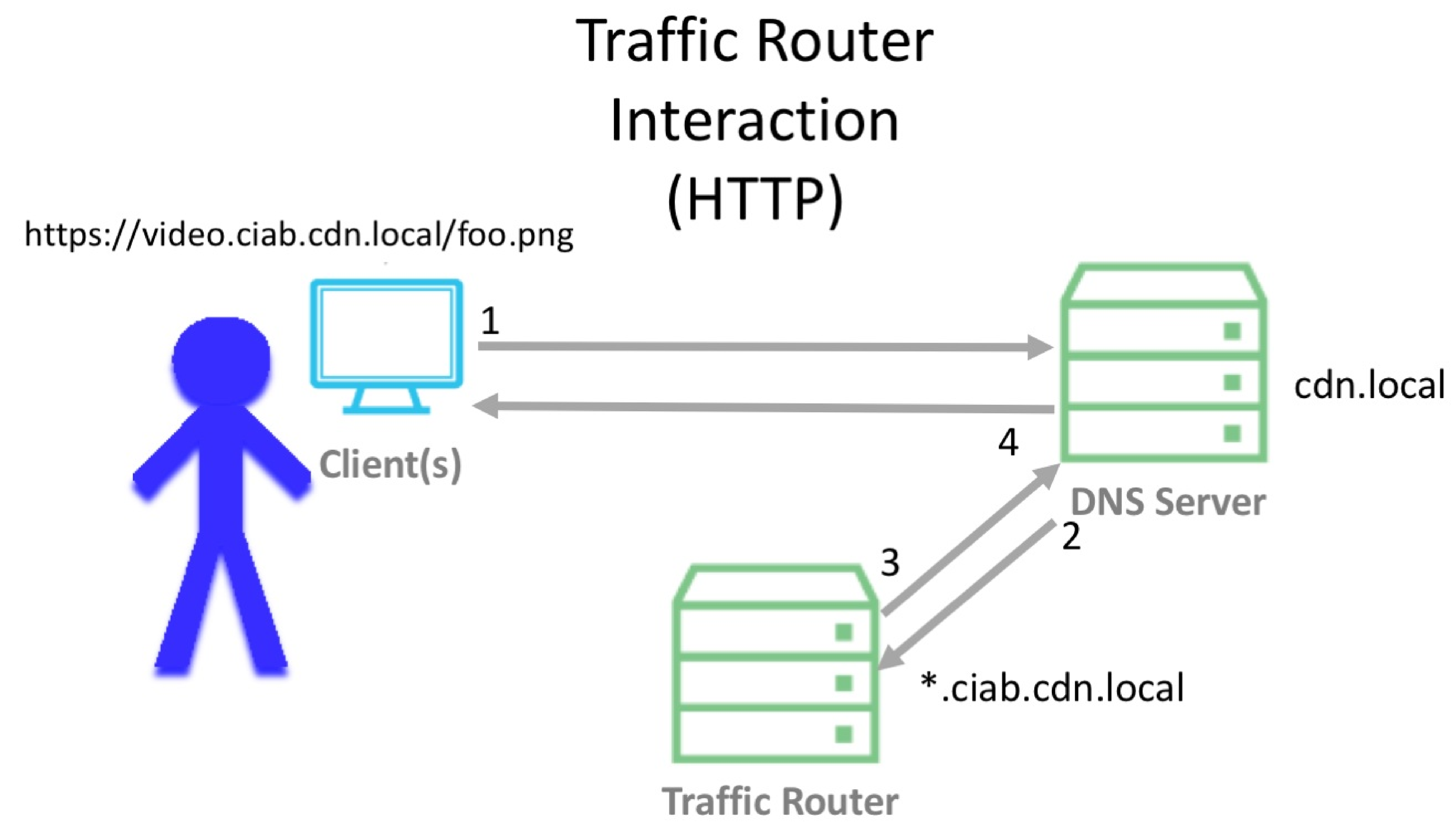


Client(s)

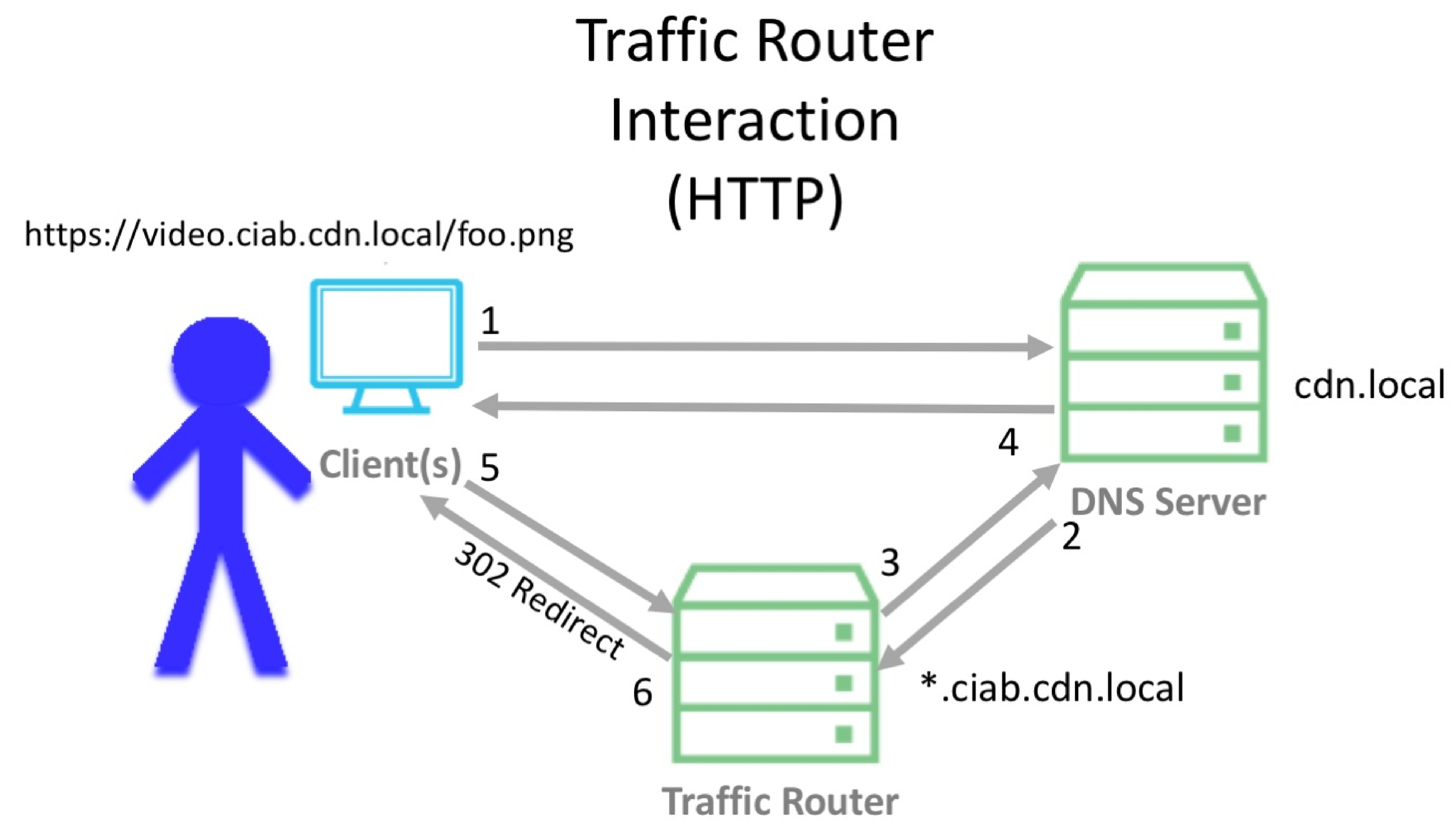


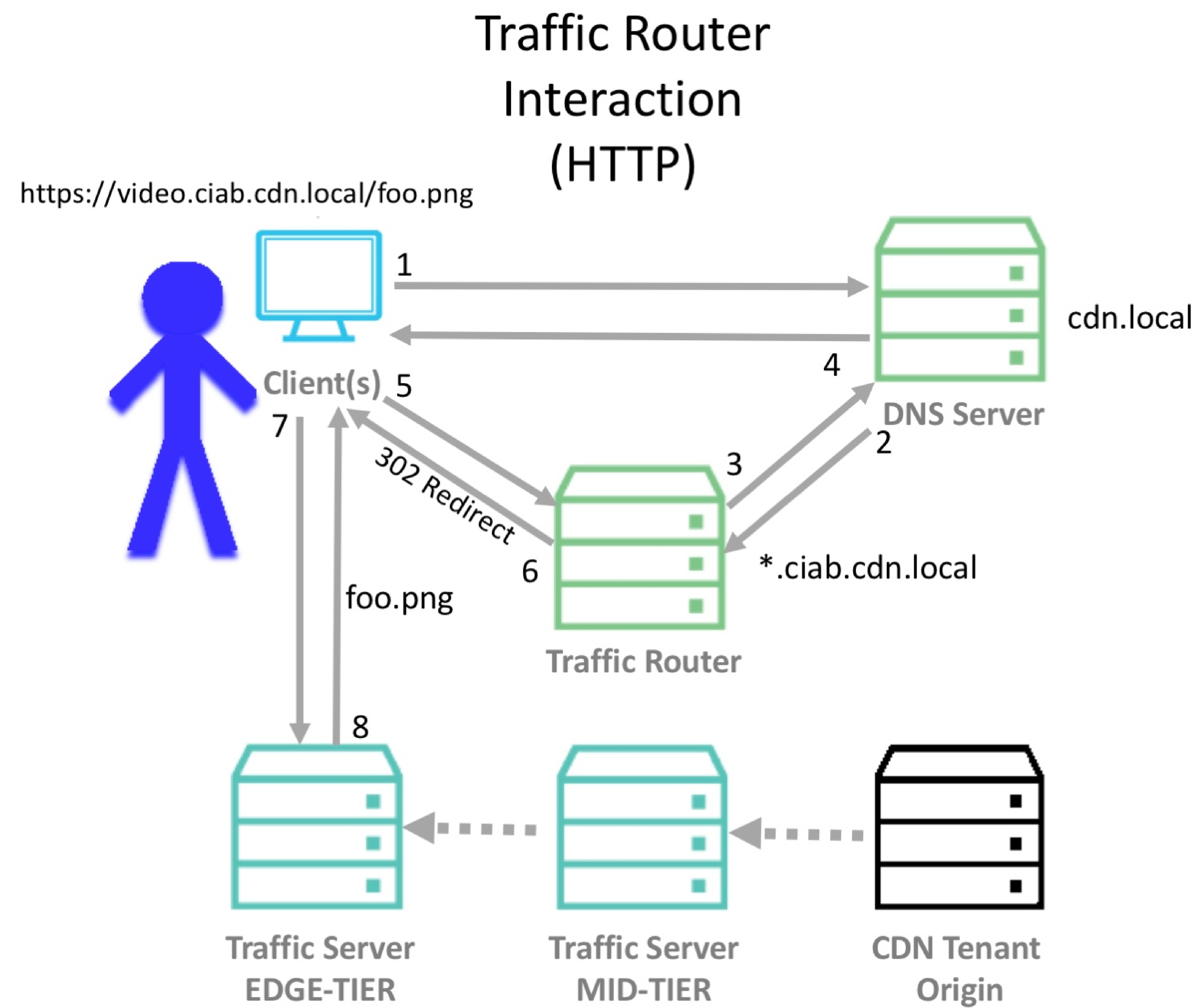
DNS Server

cdn.local

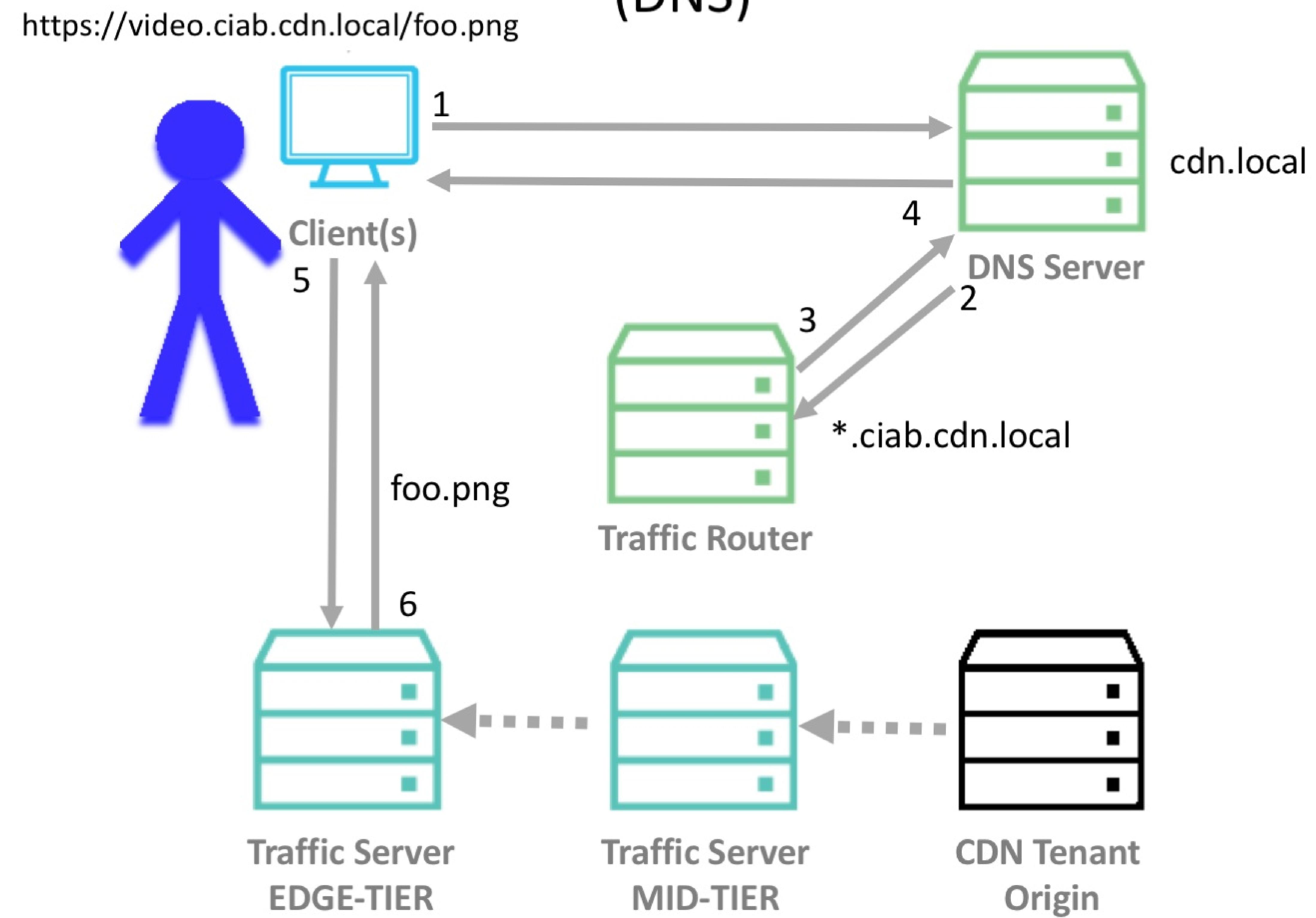


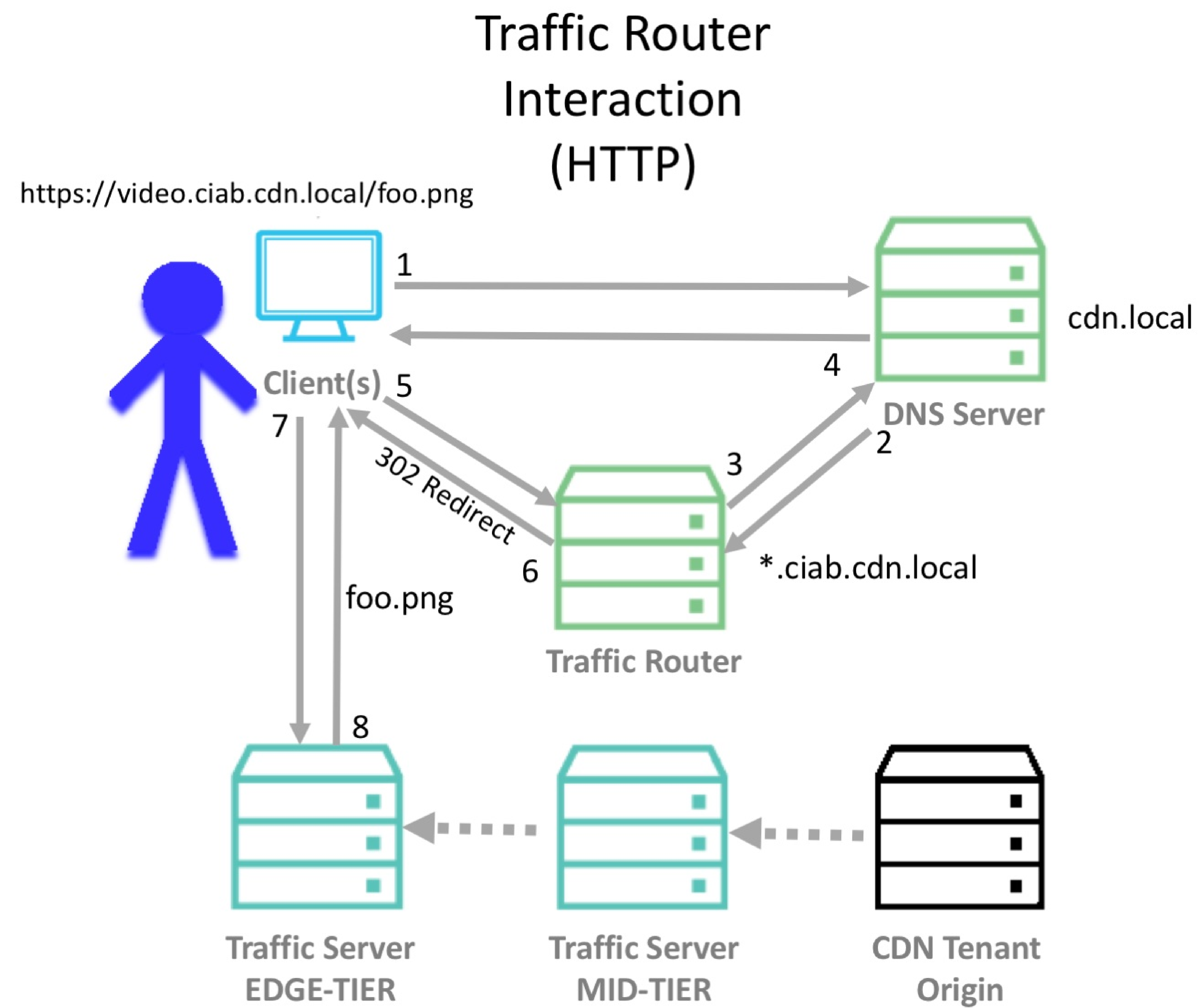




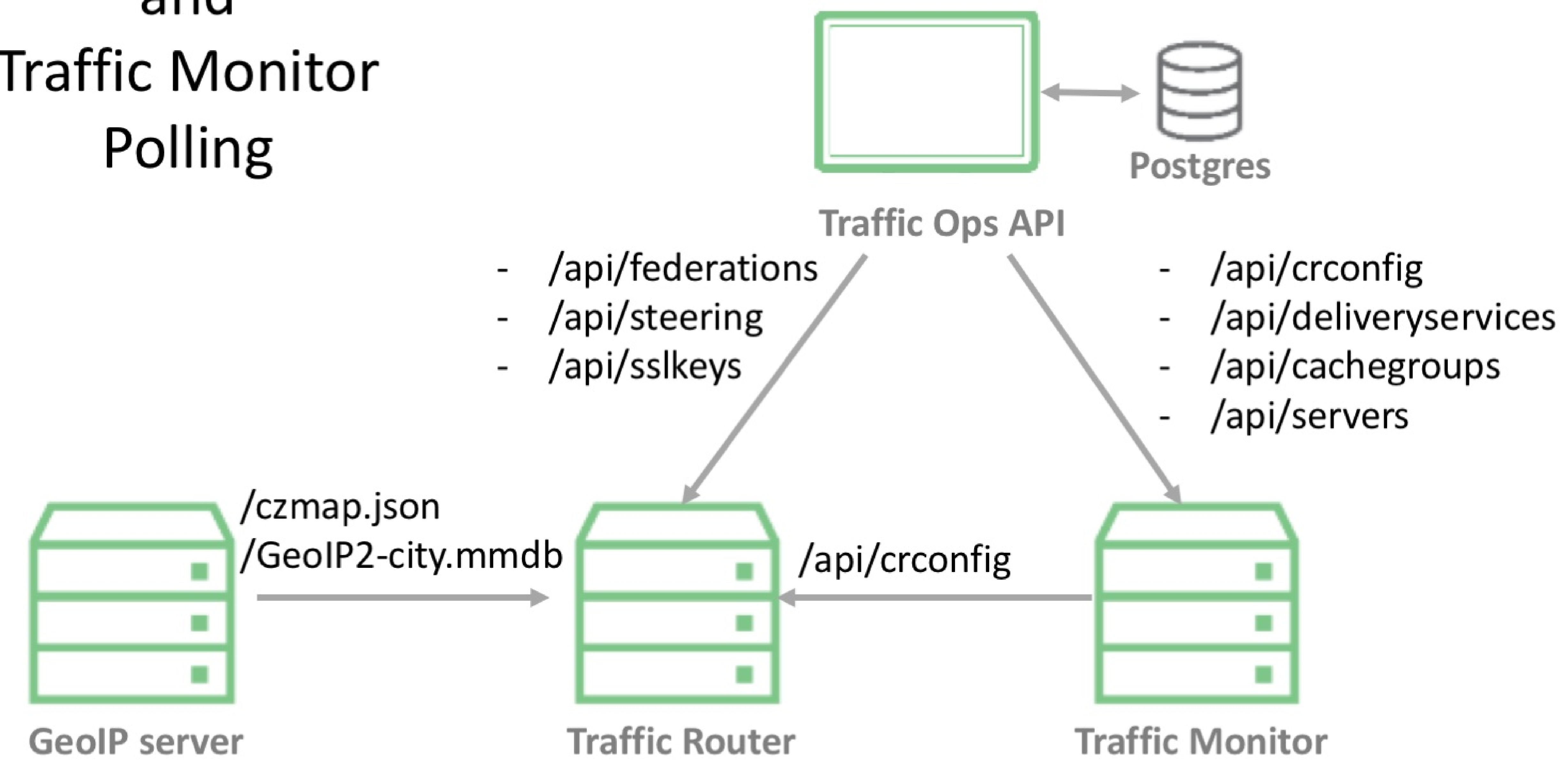


## Traffic Router Interaction (DNS)



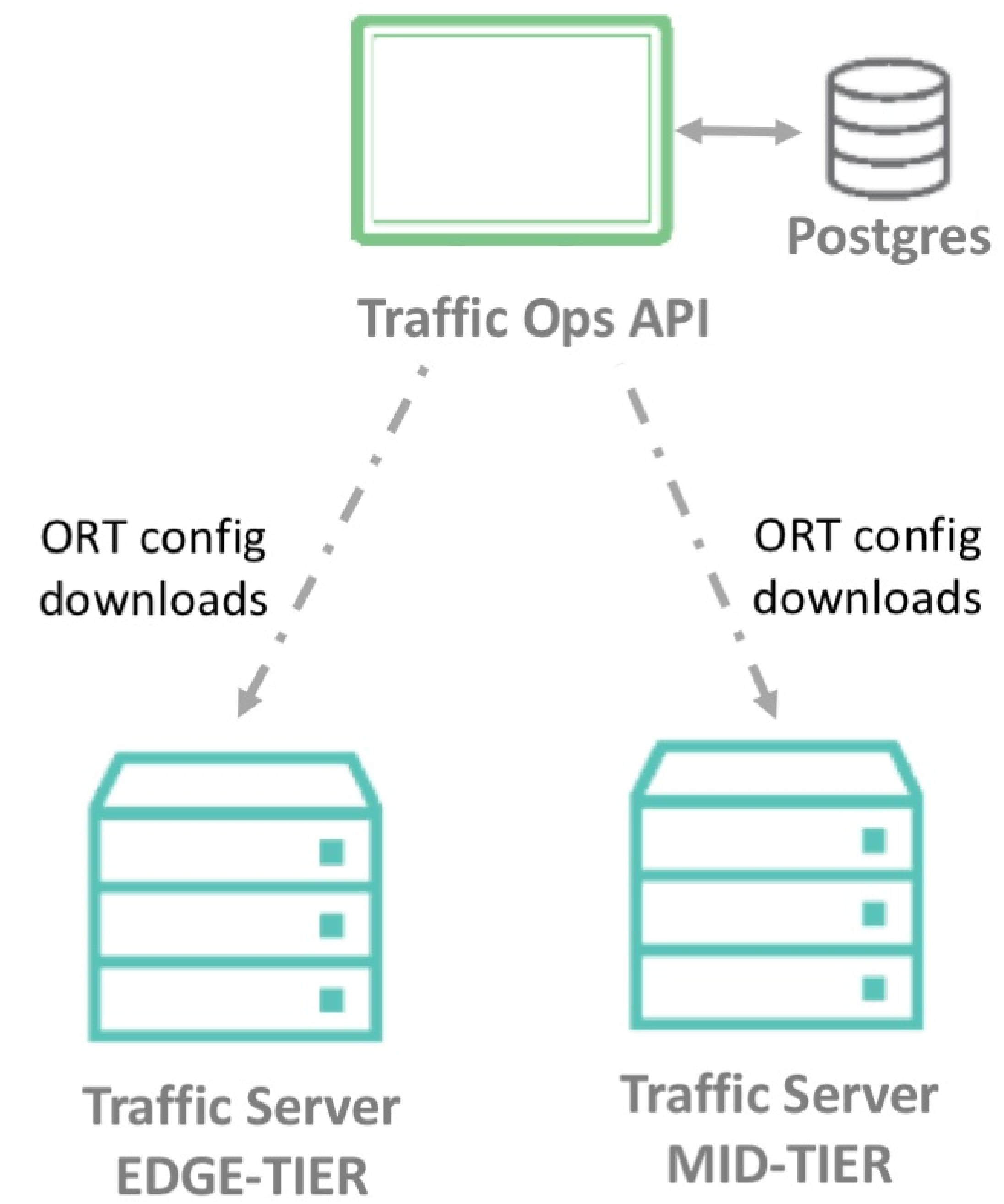


## Traffic Router and Traffic Monitor Polling



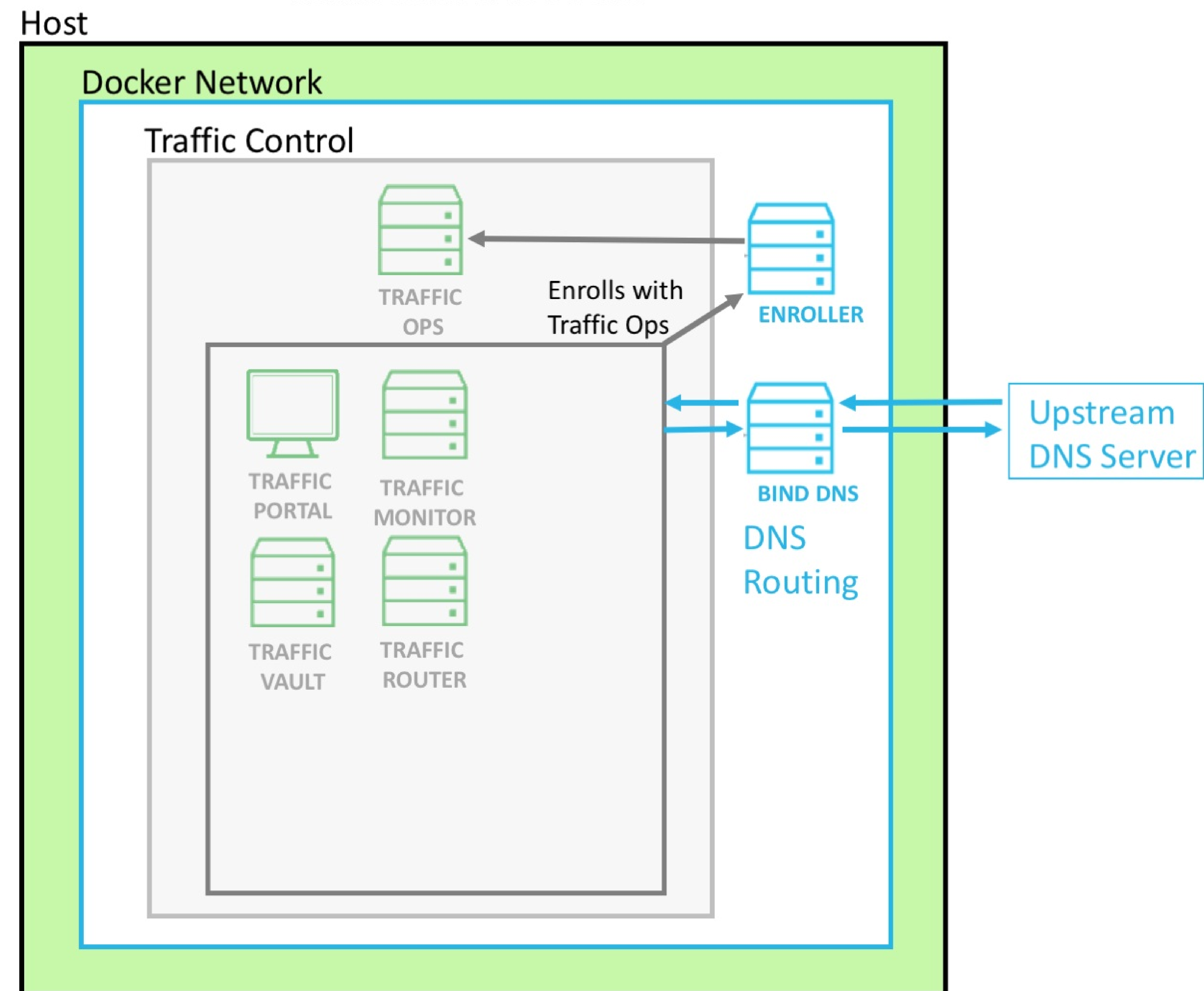


## ORT Config Polling





## Traffic Control in Docker



# Demo Traffic Router

# Traffic Stats

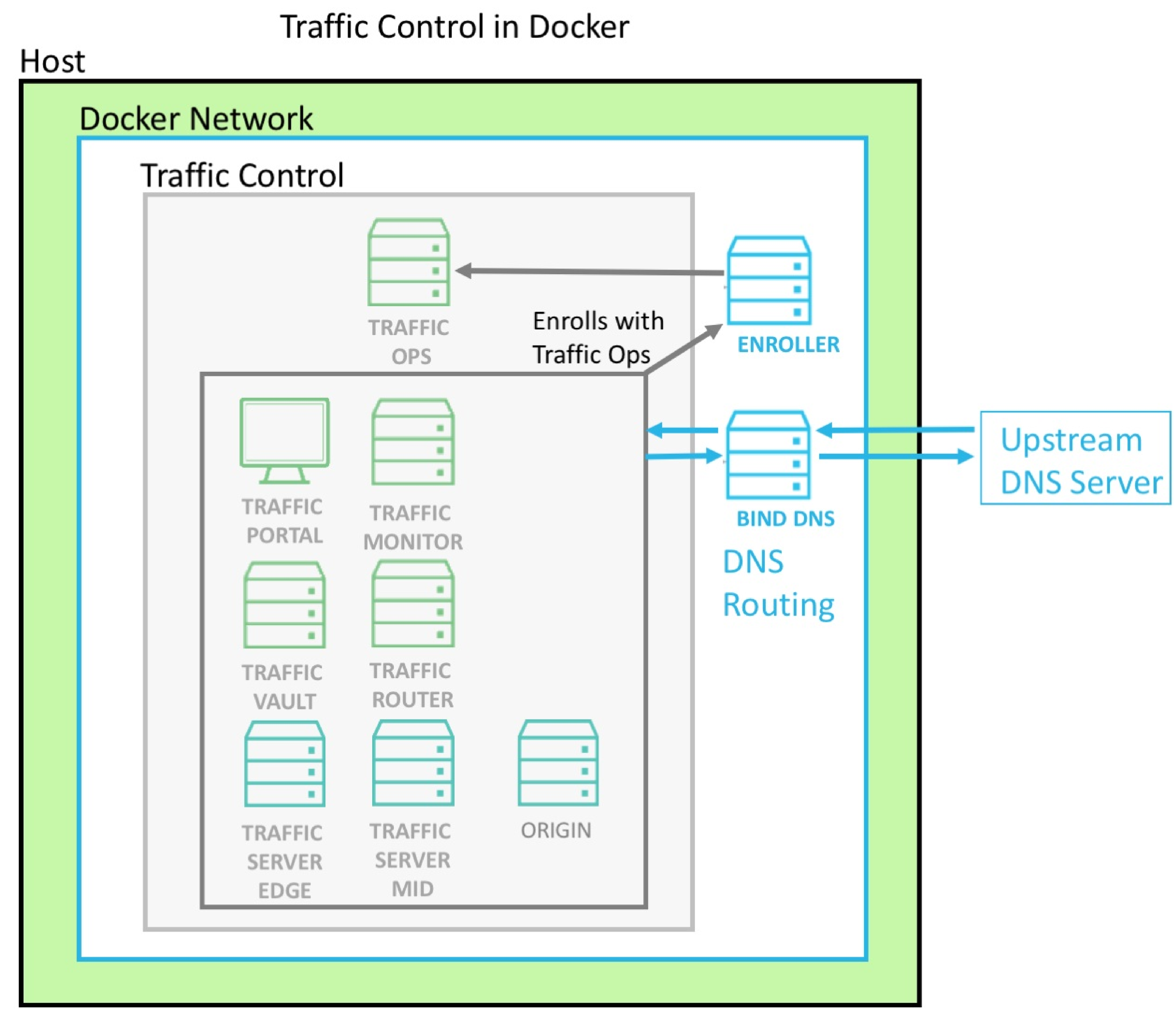
## Analytics

Acquires and stores statistics about the  
CDNs

# Traffic Vault

## SSL Keys

**Storage of SSL keys for Traffic Router's  
DNSSEC**



- Future  
Development
- Self Service for tenants
  - Logging analytics
  - Pattern Based  
Consistent Hashing



Future  
Development

- URI Signing (RFC draft)
- Additional caching software support (Nginx and others)
- HTTP/2 - push content vs pull

Thank  
you

Jeff Bevill

Brennen Fieck

Rob Butts

# Slack Questions?

## Resources

These slides

<http://bit.ly/atc-up-and-running>

These slides in pdf

<http://bit.ly/atc-up-and-running-pdf>

## Resources

Traffic Control Website

<https://trafficcontrol.apache.org>

Traffic Control Releases

<https://trafficcontrol.apache.org/releases>

Apache Traffic Server

<http://trafficserver.apache.org>

THE END