

Apache Traffic Control

Up and Running

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Traffic Control Slack

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?

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

Why
build
a CDN?

What is
a CDN?

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).

Why
build
a CDN?

What is
Traffic
Control?

Traffic Control Story

- 01/2012: Work starts in Comcast
- 10/2012: Comcast Production Deployment

...

- 02/2017: 1st Apache Incubator Release
- 06/2018: **ATC becomes a TLP!**
- 20 Committers representing 7 different companies

Traffic Control Story

- [Github Project](#)
- Latest Stable Release 2.2

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

- Multiple Terabits delivered per second
- Multiple Petabits delivered per day
- Billions of transactions at the edge per day
- Multiple Petabytes of cache storage
- Multiple Exabytes total delivered
 - 1^{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.

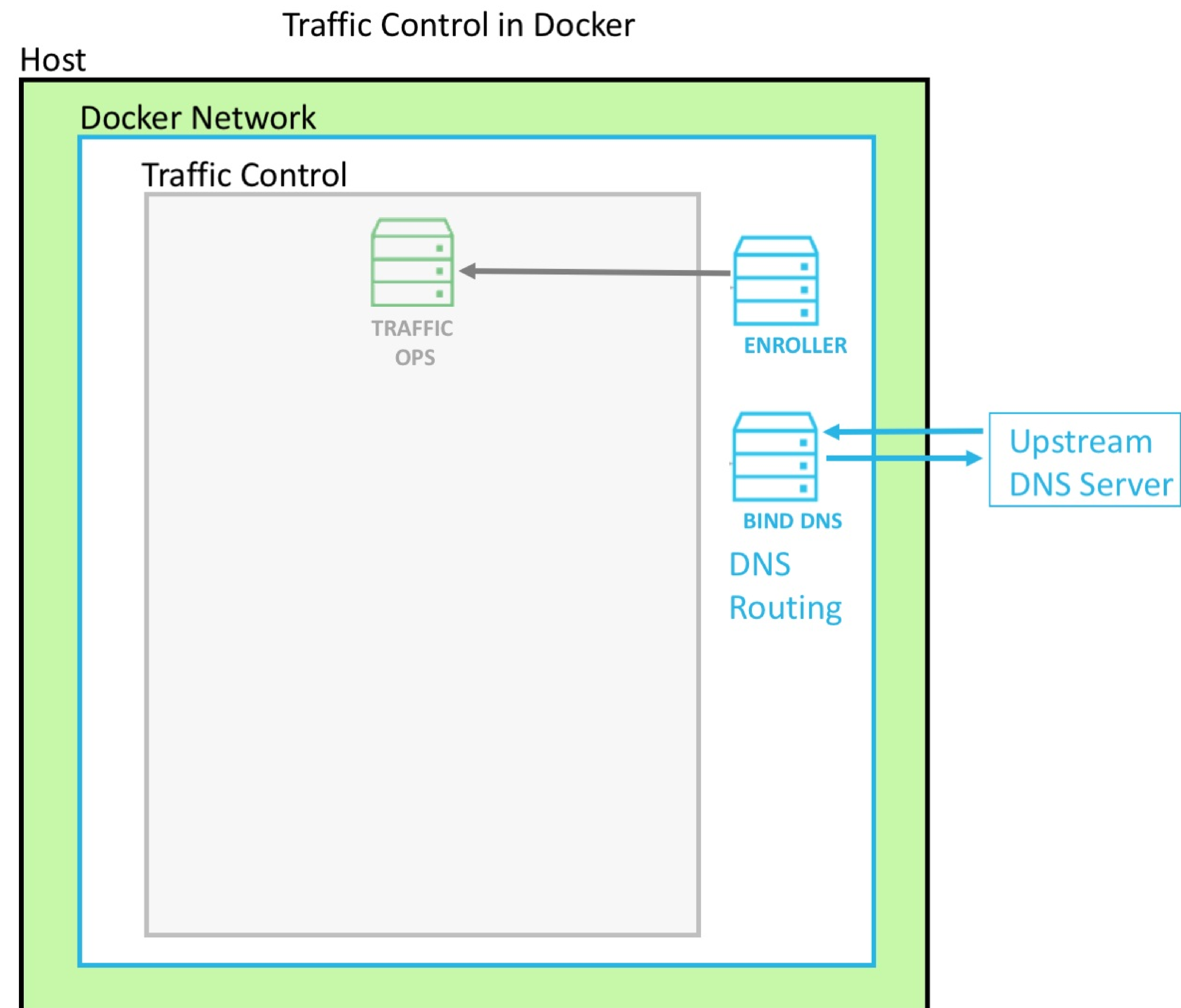
What are
Parameters?

What is
a
Delivery
Service?

- Parameters that are bundled into groups

What are
Parameters?

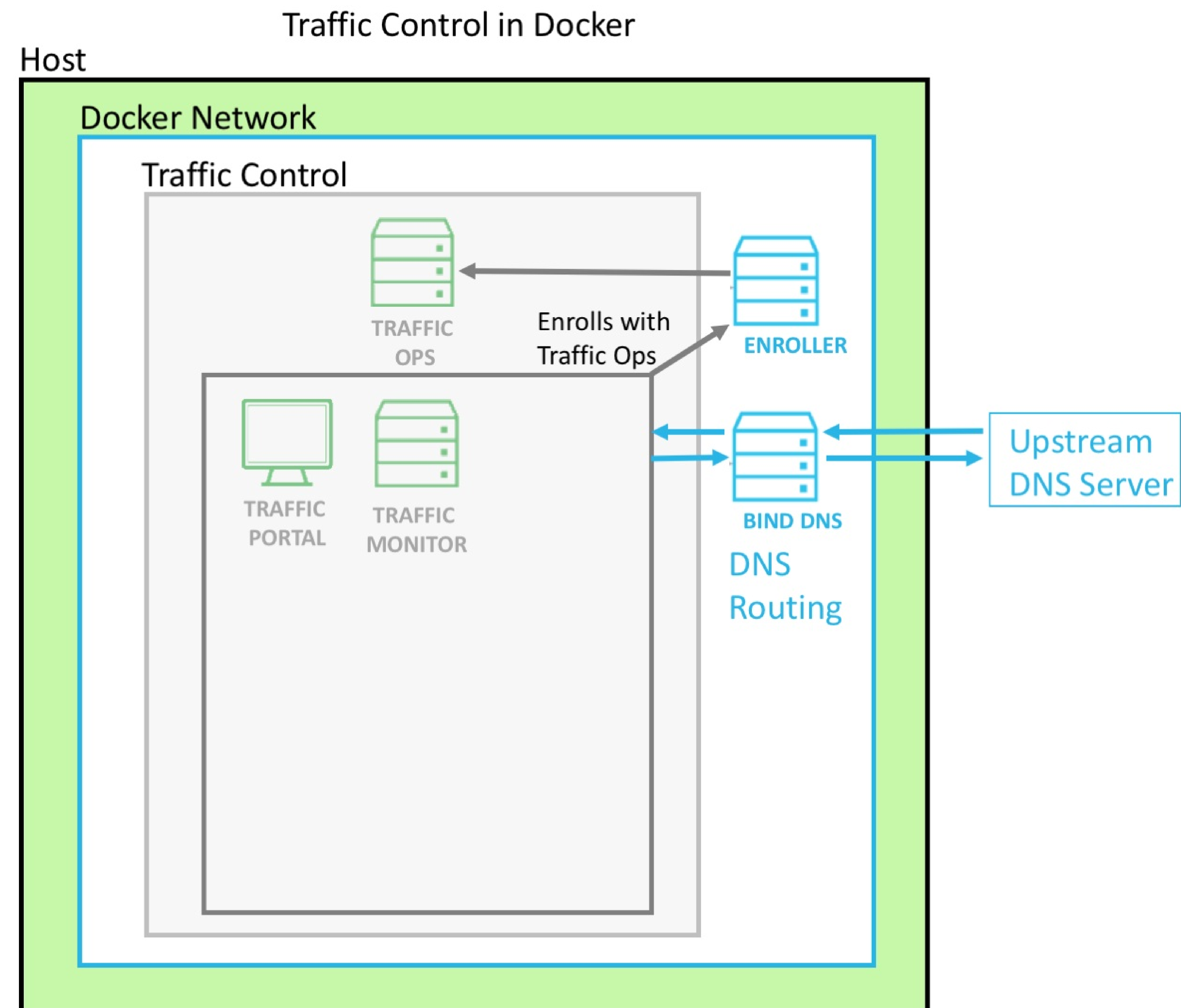
What are
Profiles?



Demo Docker Container for Traffic Ops

Traffic Portal

Config Management Improved



Demo Docker Container for 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 Docker Container for 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.

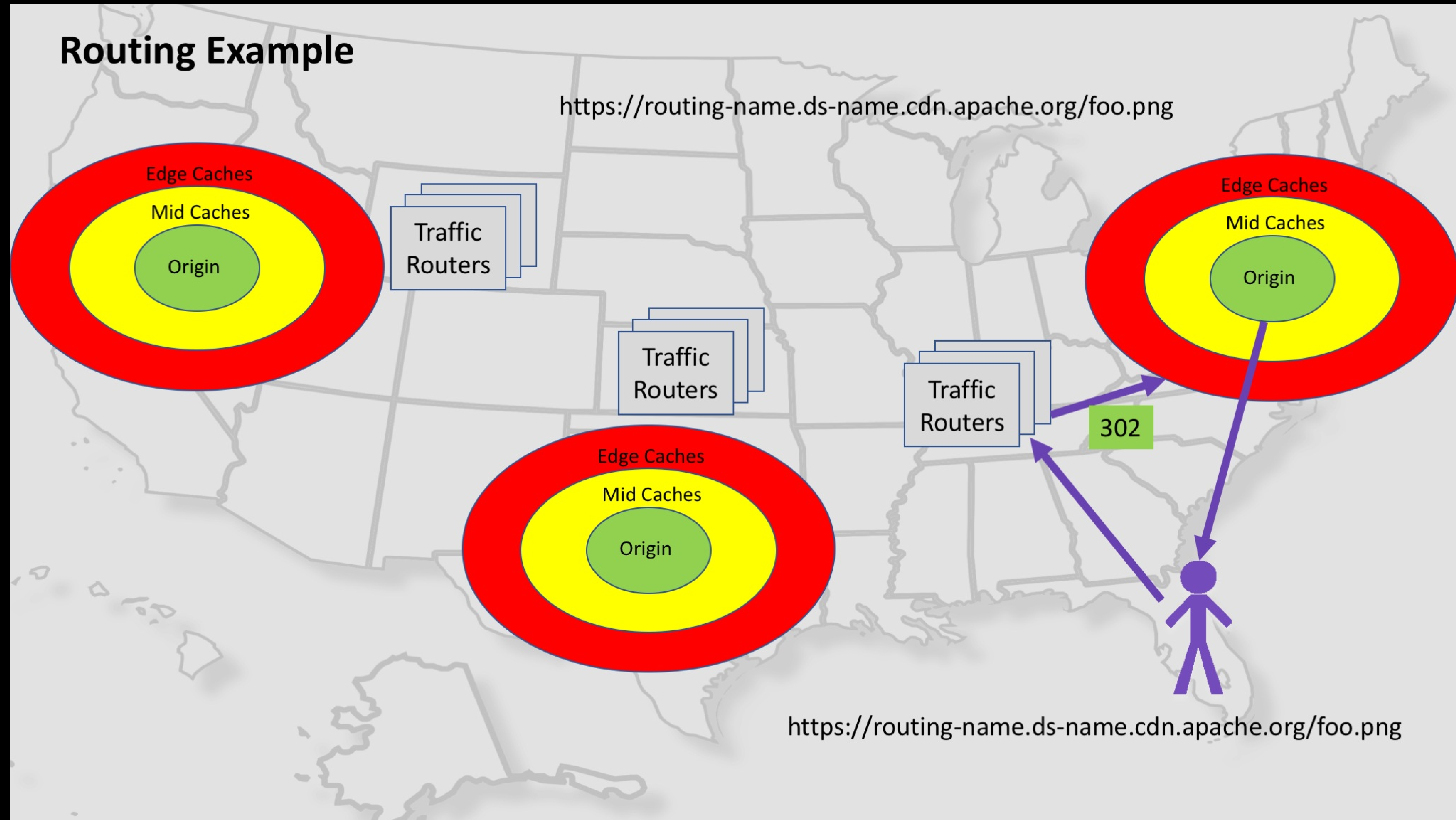
This consistent hash ring is separate from the consistent hash ring used in cache selection.

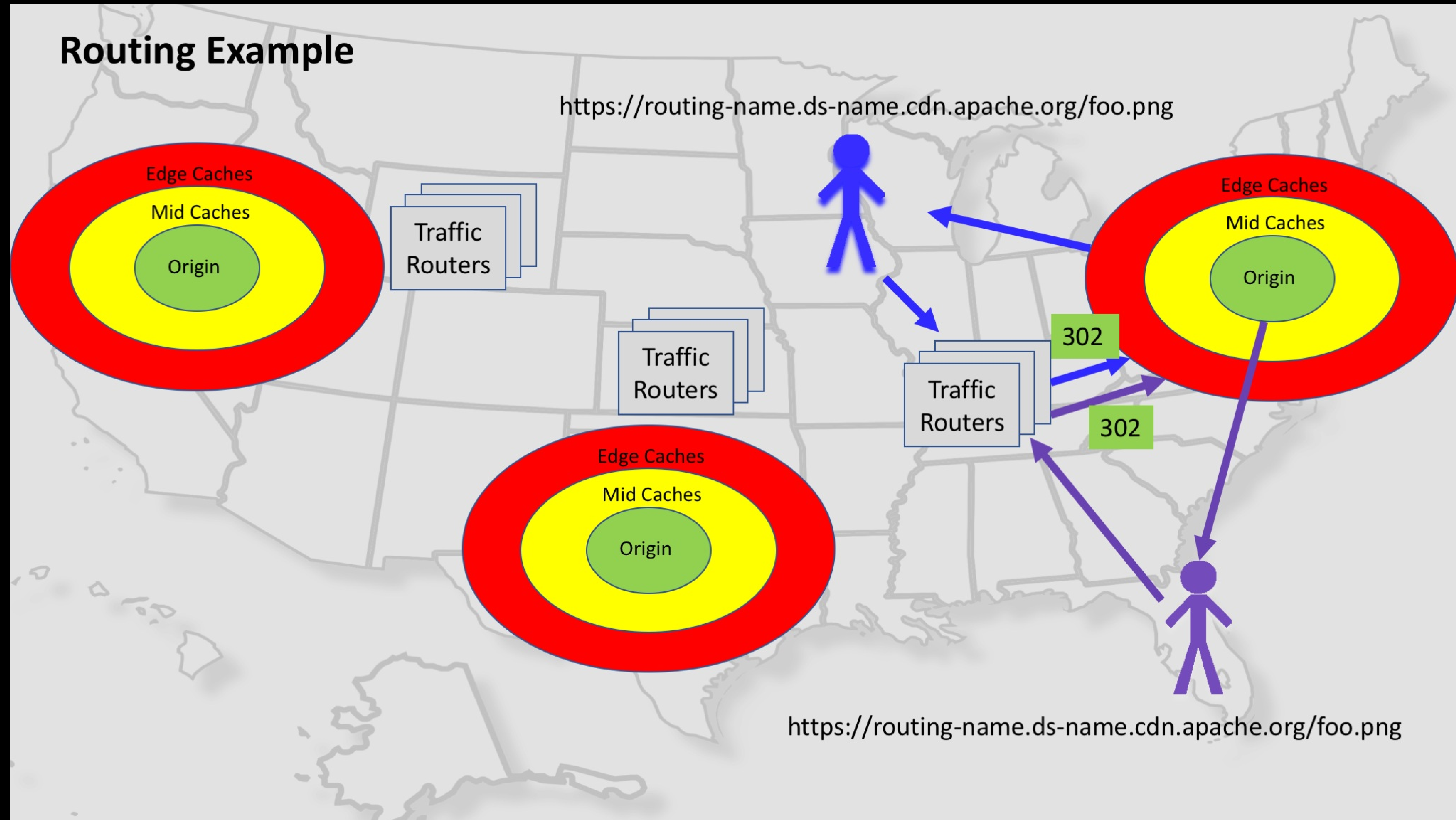
-Daniel Lewin and F. Thomas Leighton

Traffic Router

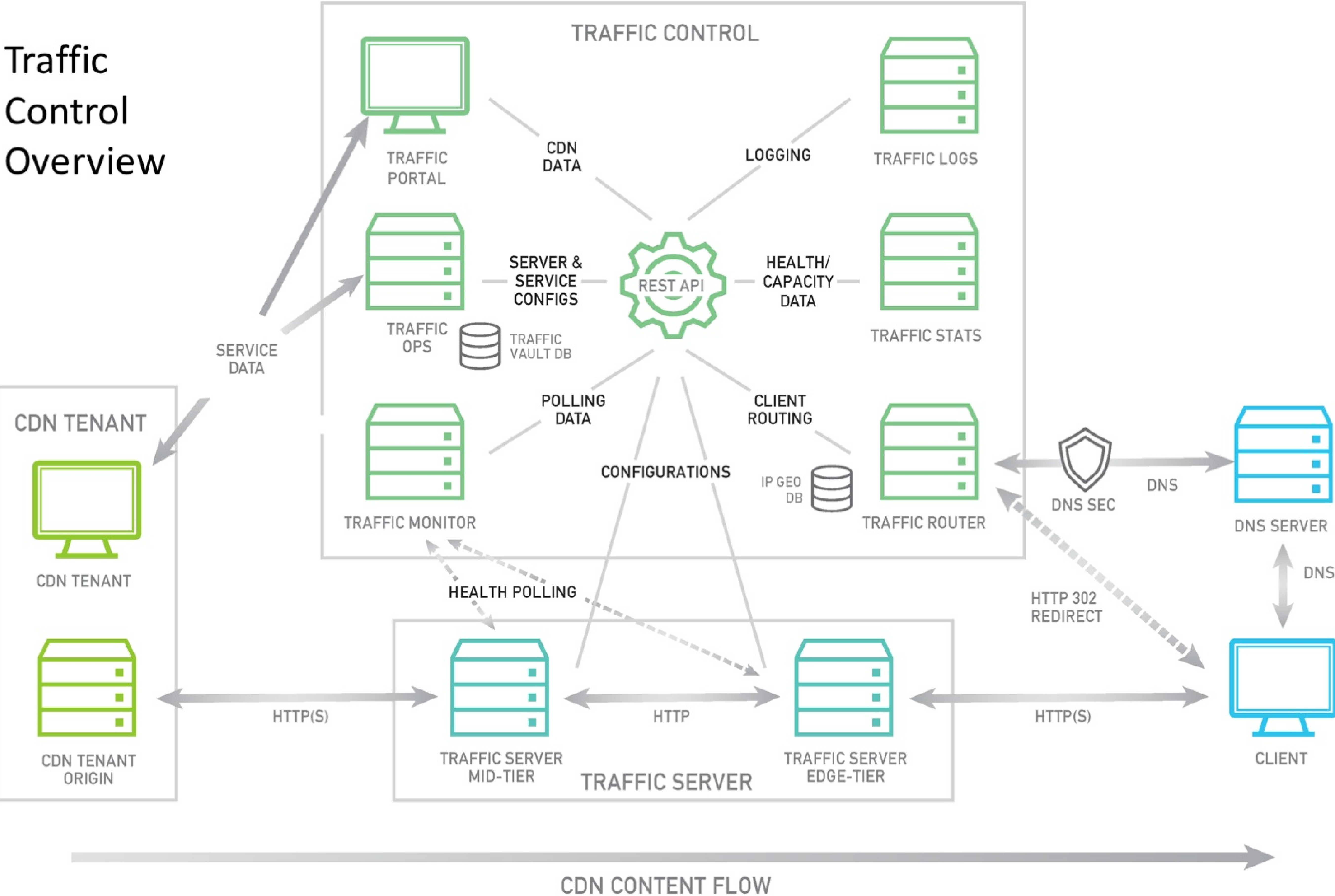
Content Routing

Client requests dispatcher

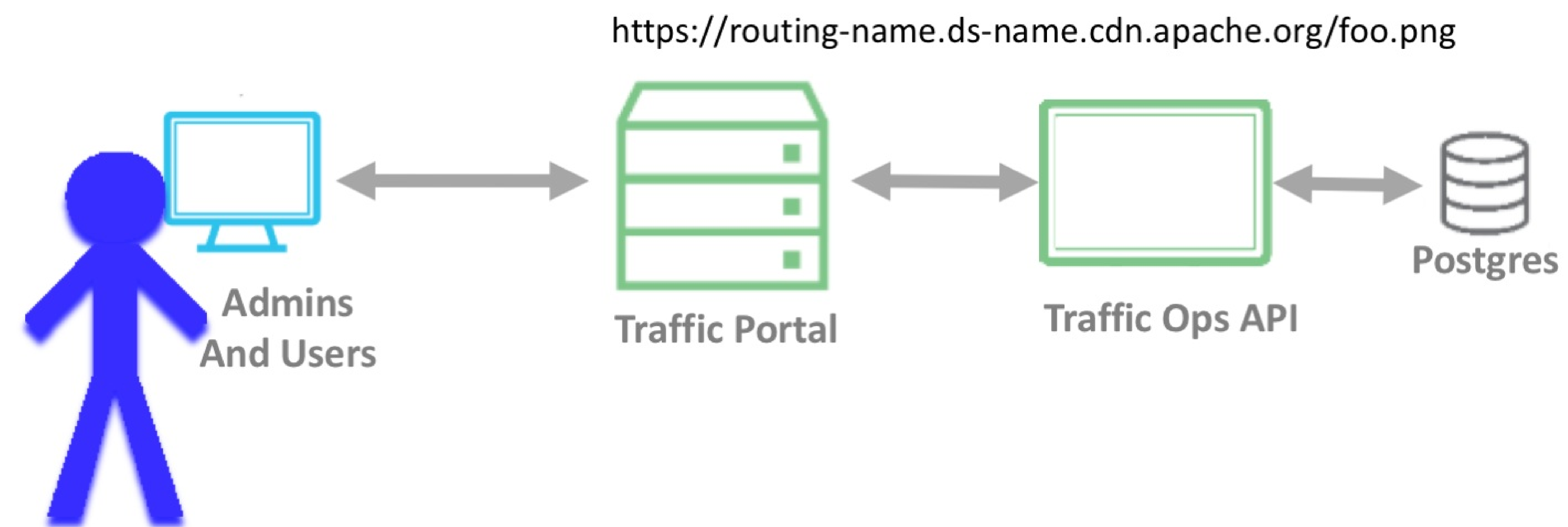


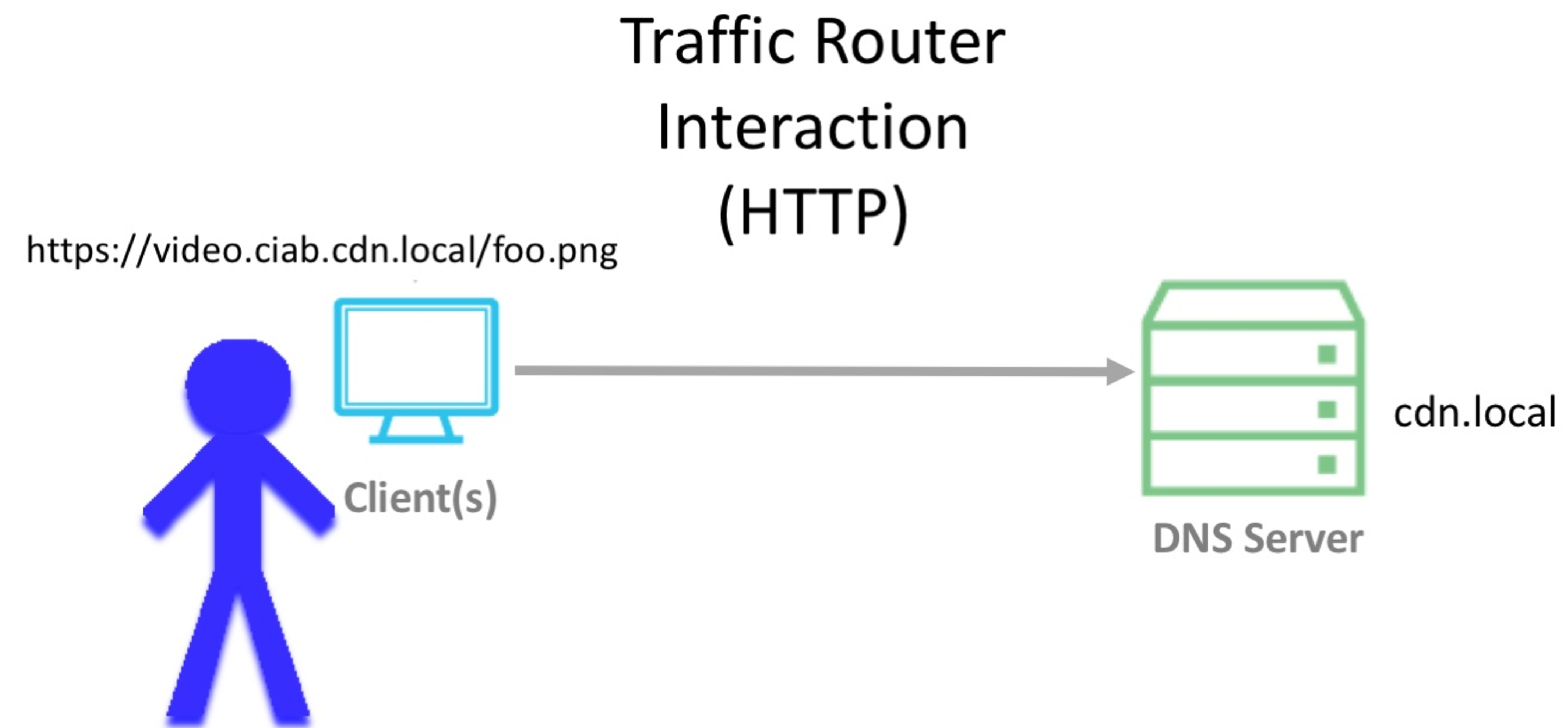


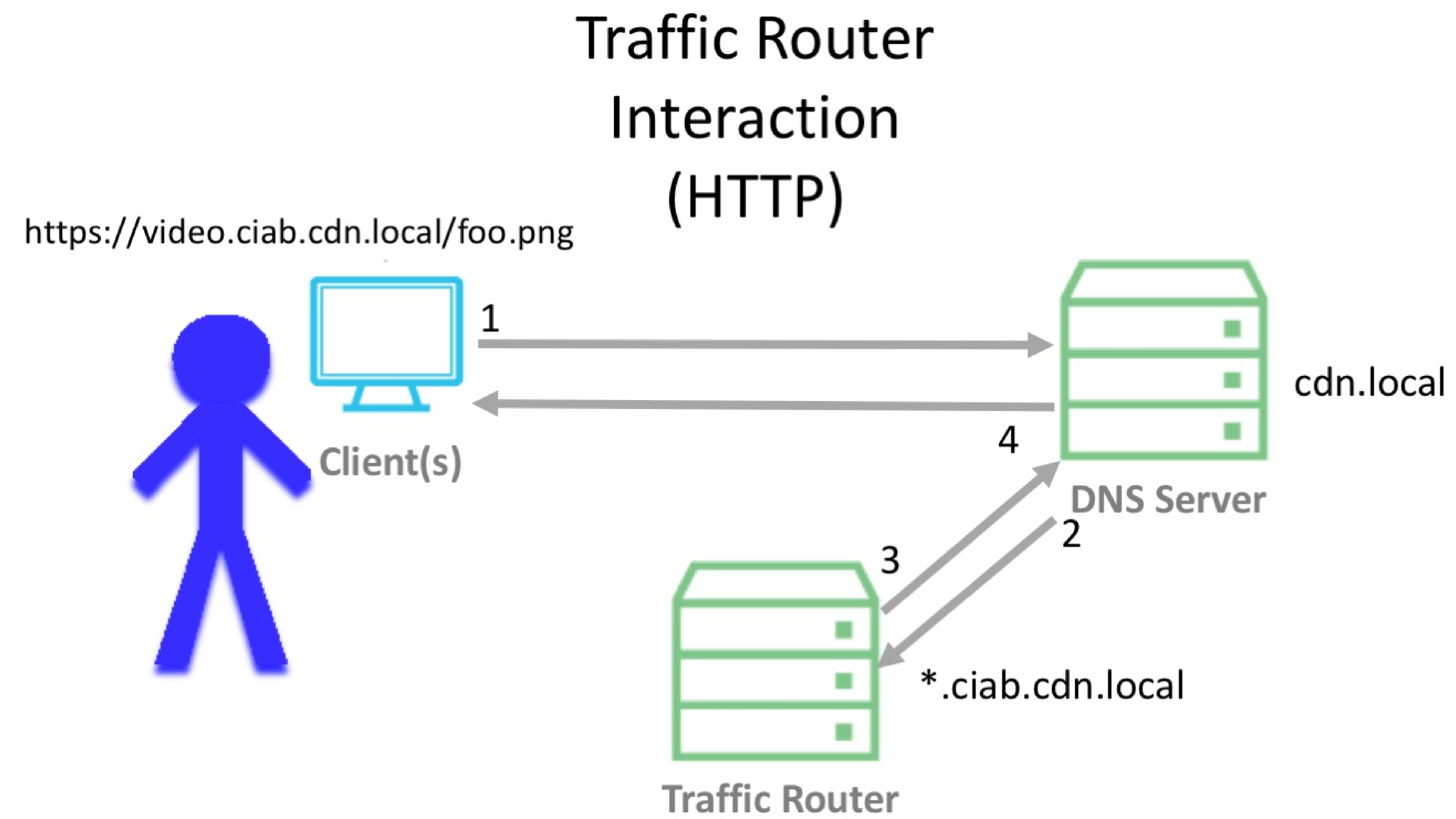
Traffic Control Overview

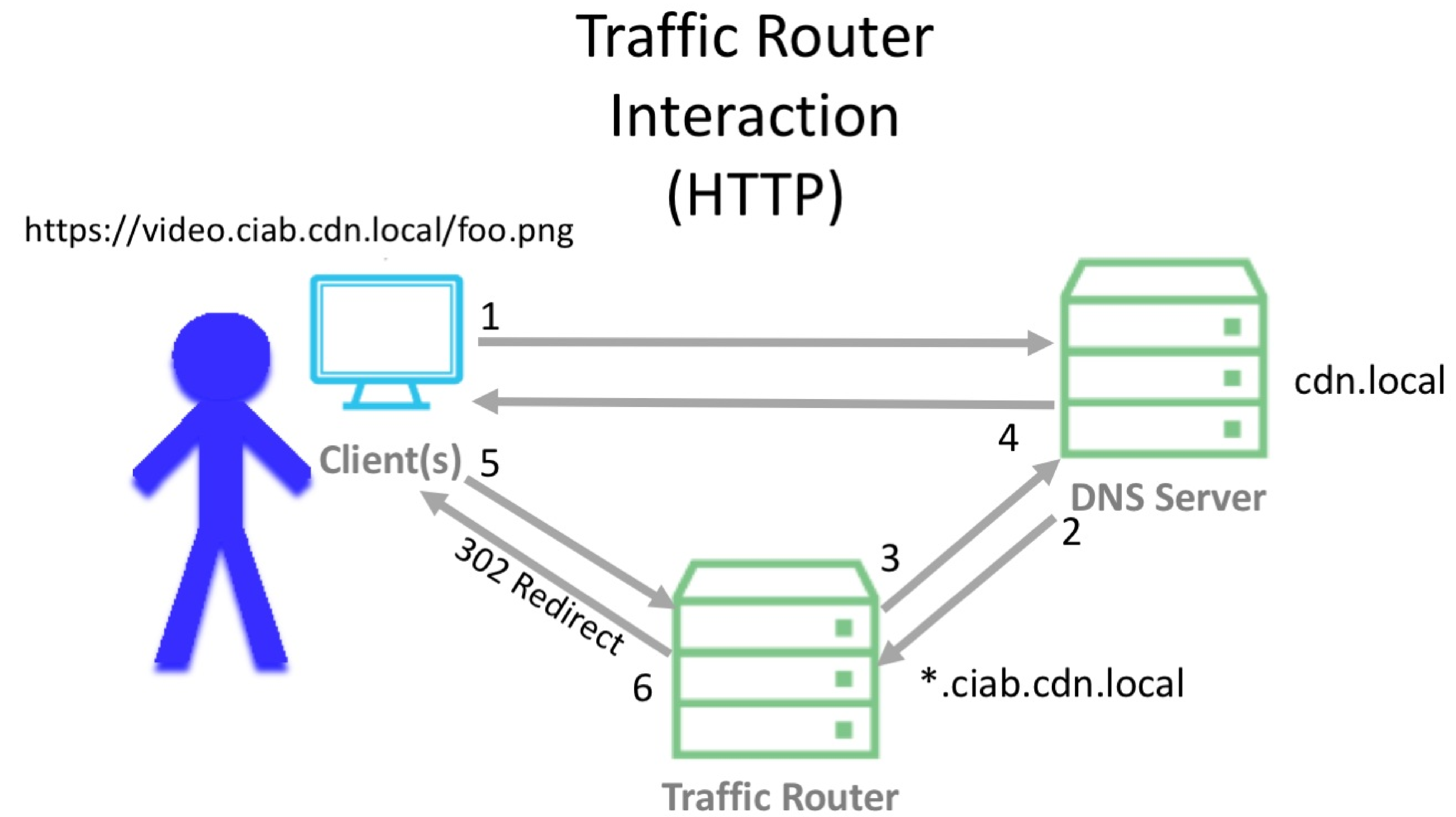


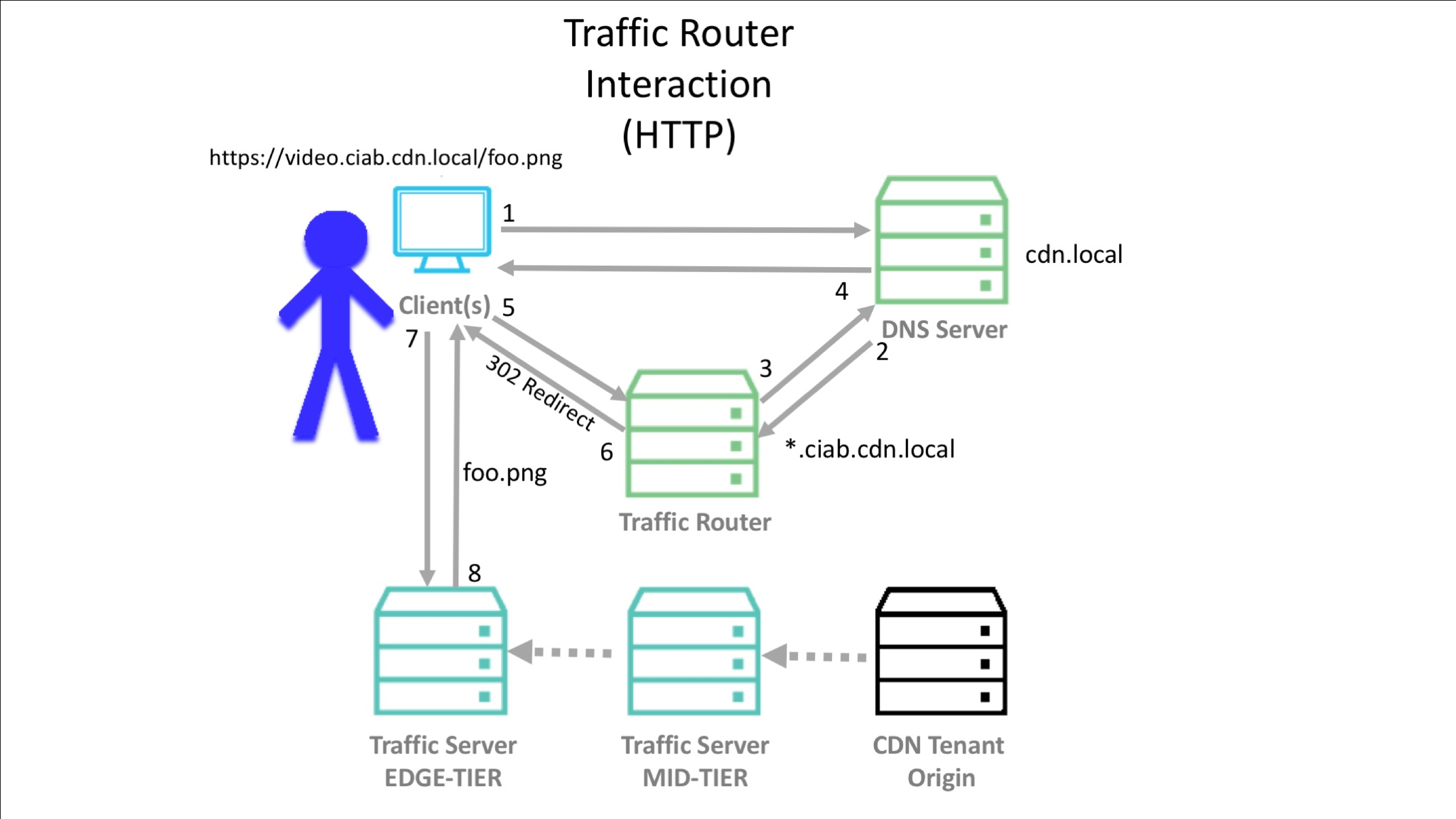
Traffic Portal User Interaction

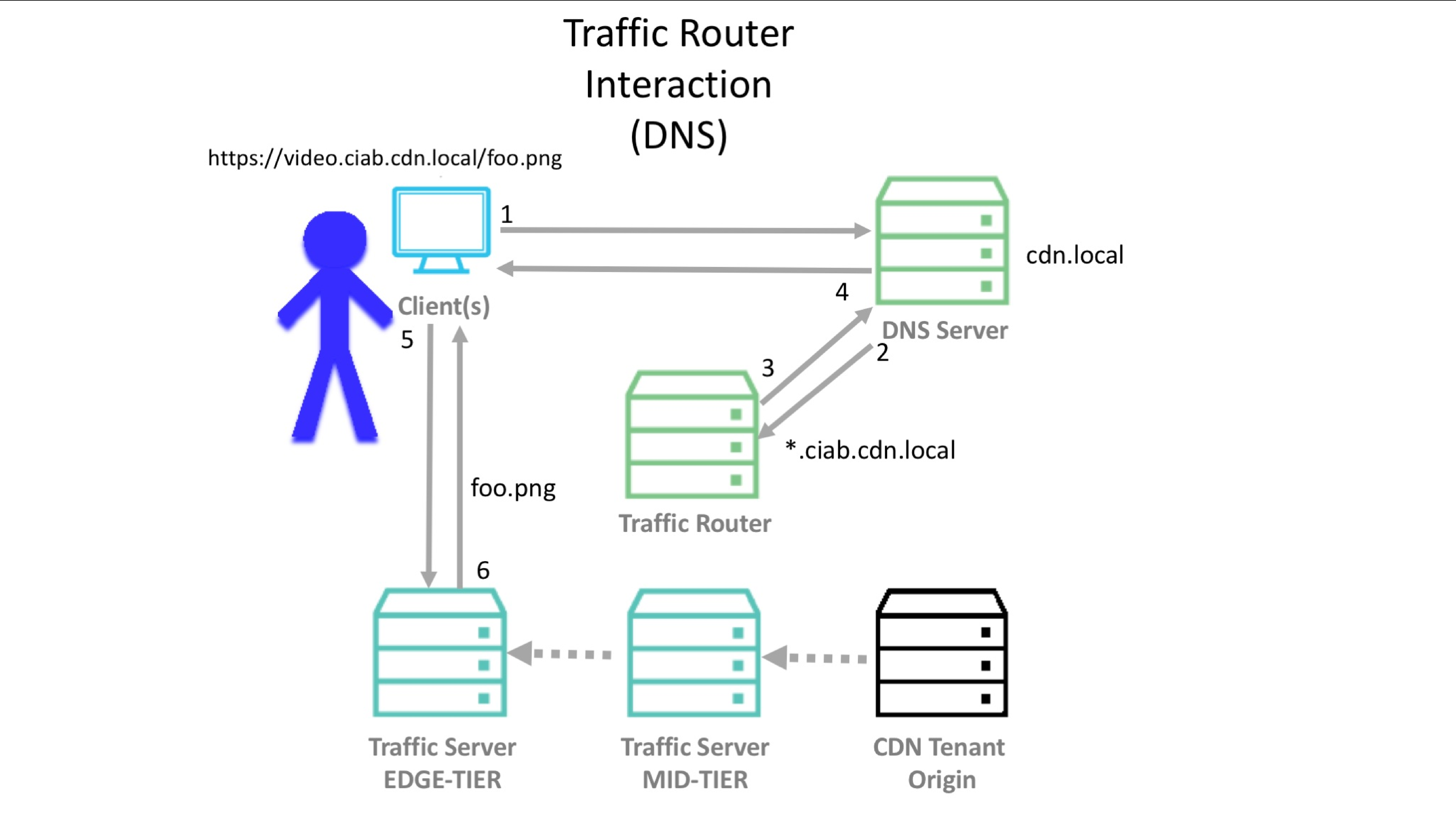




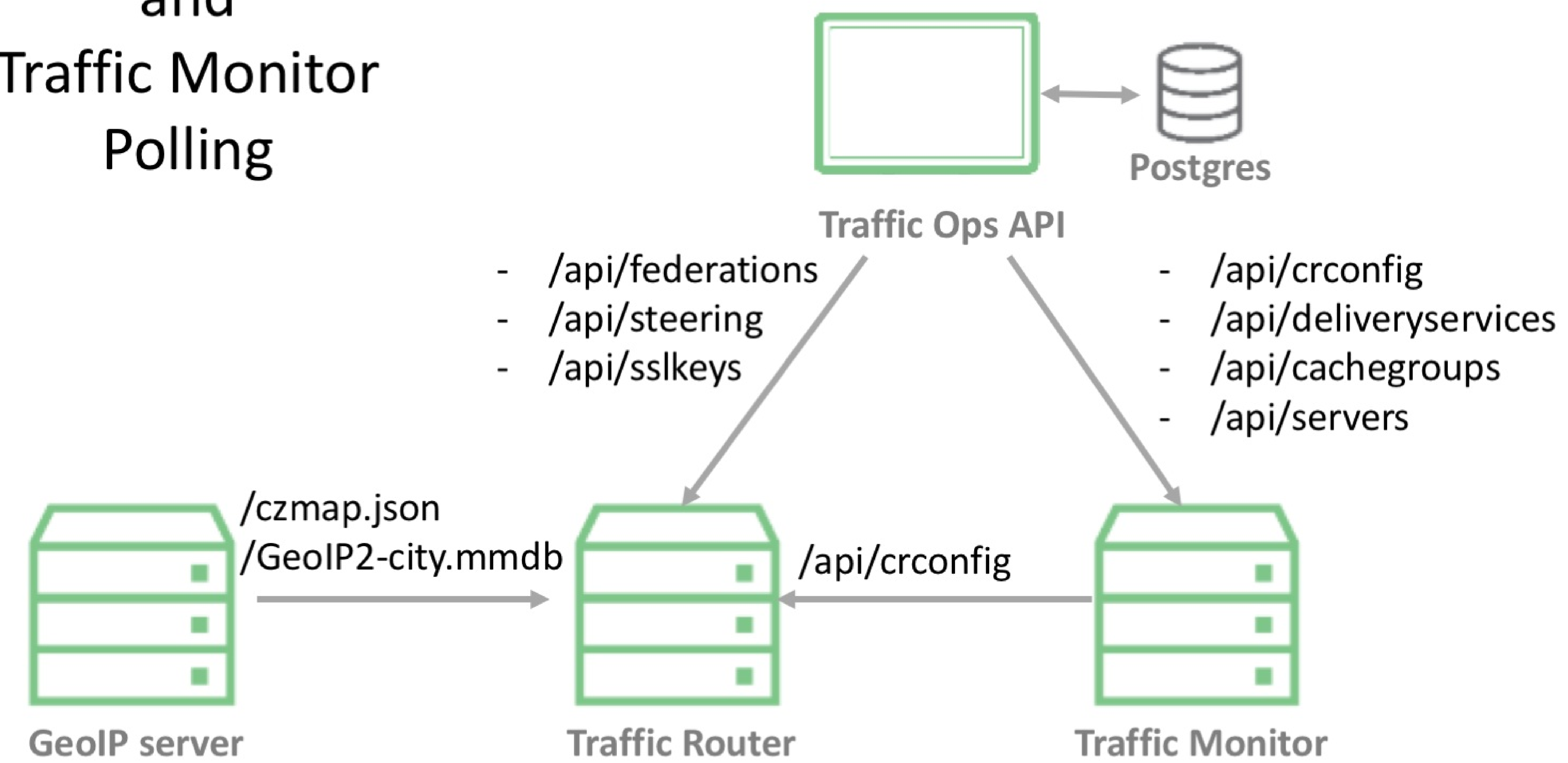




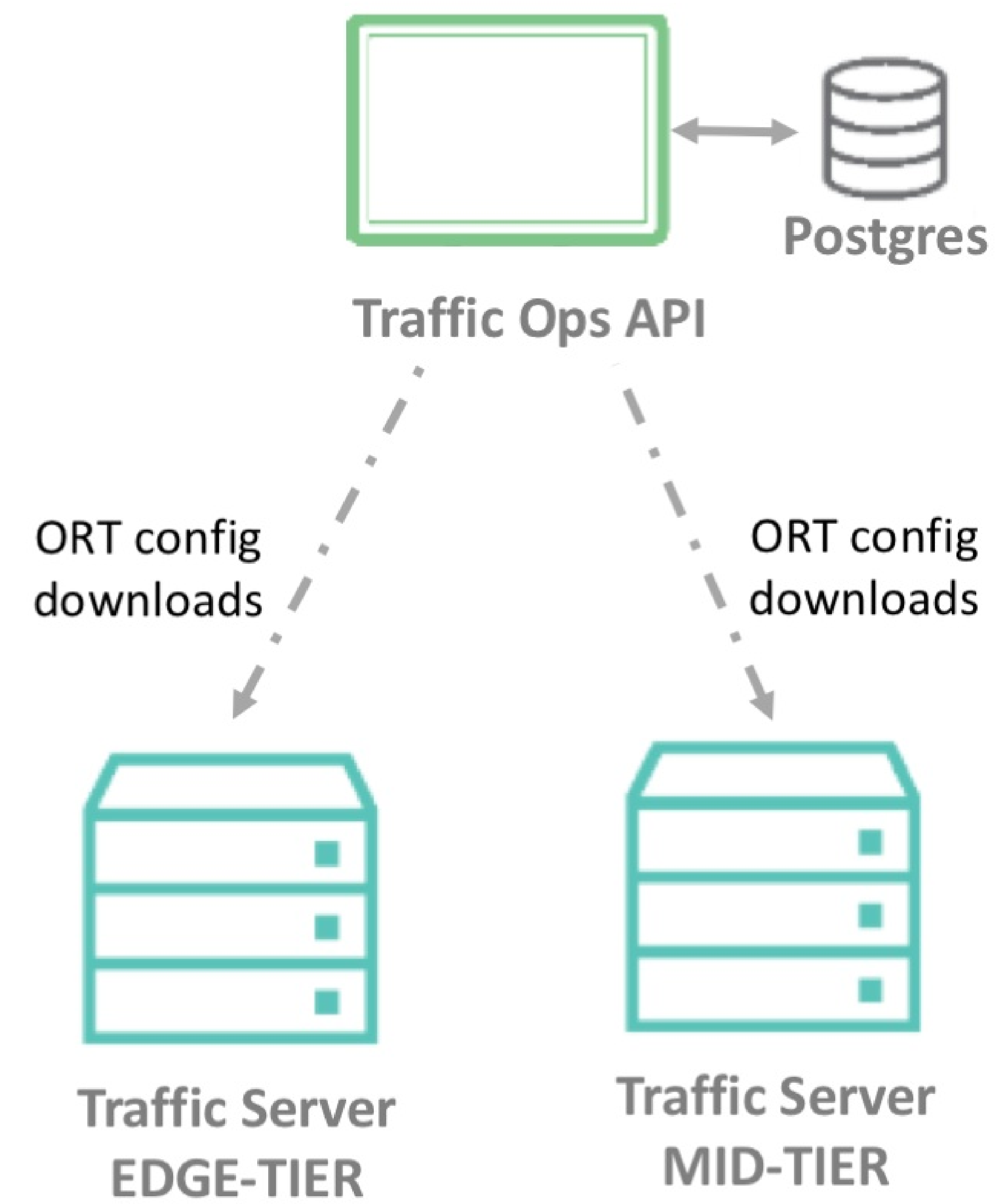


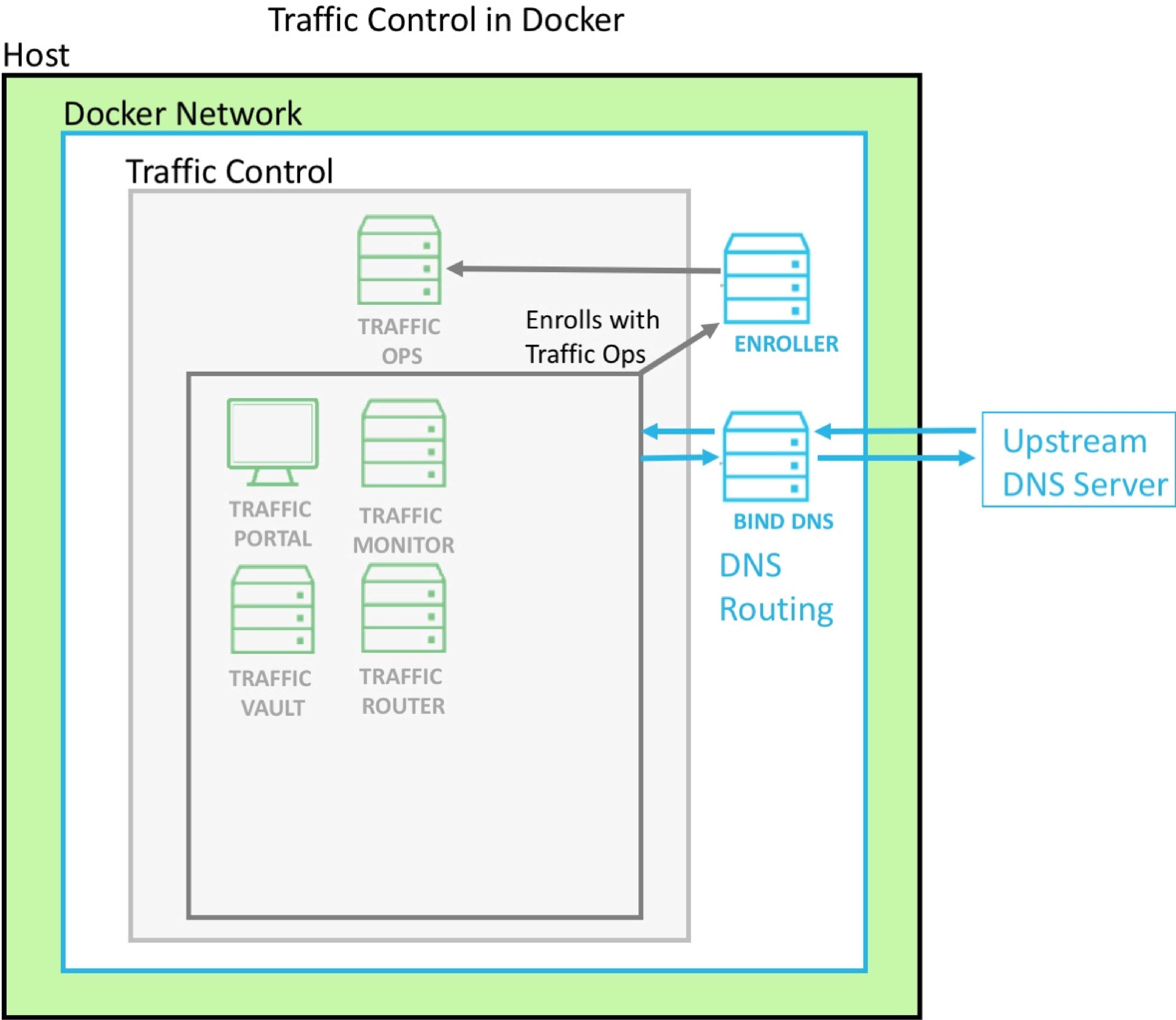


Traffic Router and Traffic Monitor Polling



ORT Config Polling





Demo Docker Container for Traffic Router

Traffic Stats

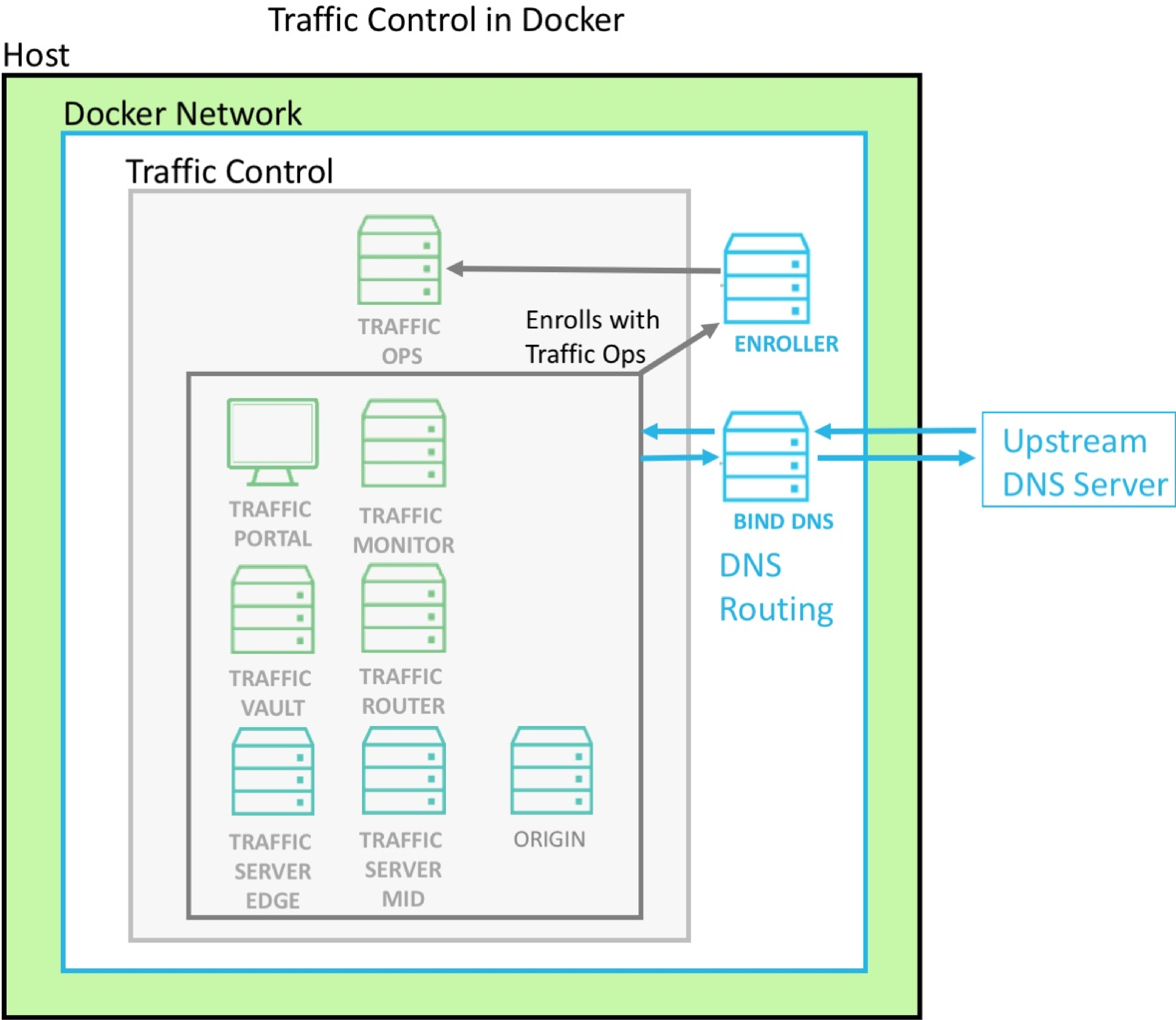
Analytics

**Acquires and stores statistics about the CDNs
managed by
Traffic Control**

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
- 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?

Traffic Control Resources

These slides

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

These slides in pdf

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

Traffic Control Website

<https://trafficcontrol.apache.org>

Traffic Control Releases

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

Apache Traffic Server

<http://trafficserver.apache.org>

THE END