

Traffic Steering using RUM DNS



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(Edge Performance & Traffic)

My Team



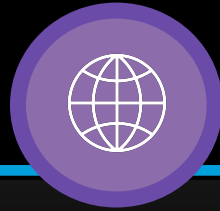
- **Public DNS**
- **CDN Operations**
- **Load balancer & reverse proxy at PoPs and DCs**

Largest Professional Network



500M+

Members



200+

Countries



2

signups/second

Problem Statement



SiteSpeed

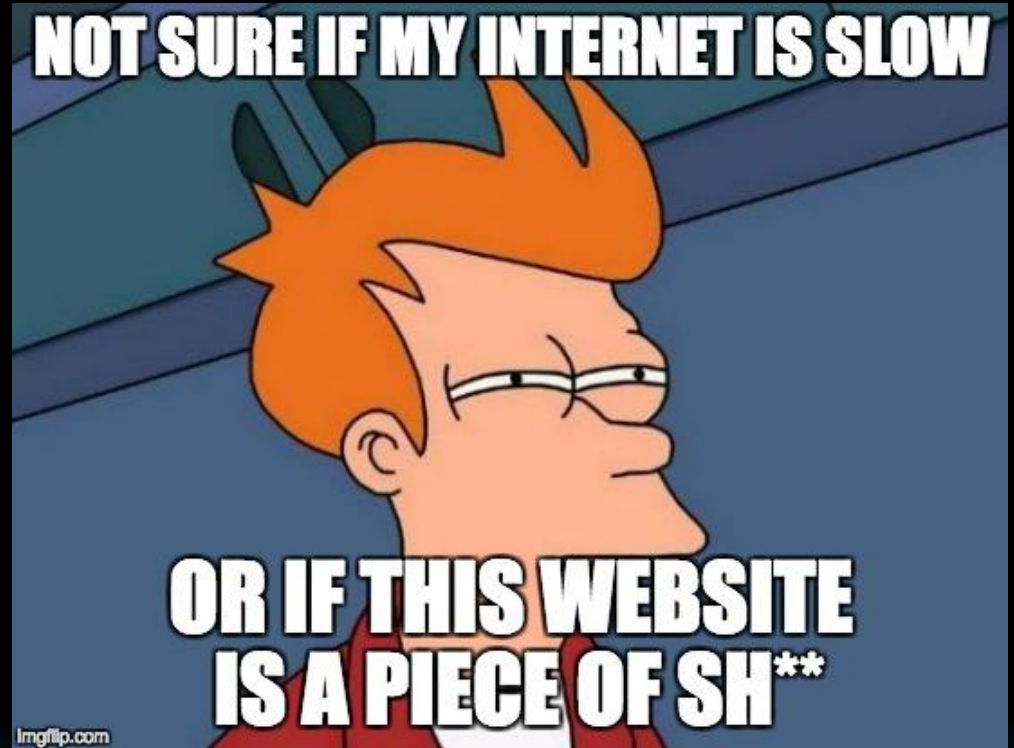
Problem Statement

Delay	User perception
0–100 ms	Instant
100–300 ms	Small perceptible delay
300–1000 ms	Machine is working
1,000+ ms	Likely mental context switch
10,000+ ms	Task is abandoned

- **User Engagement**

Problem Statement

Delay	User perception
0–100 ms	Instant
100–300 ms	Small perceptible delay
300–1000 ms	Machine is working
1,000+ ms	Likely mental context switch
10,000+ ms	Task is abandoned



Problem Statement



SiteSpeed

- **User Engagement**
- **Revenue**

Agenda



CDN strategy



POP Strategy



RUM Steering



Tooling

Agenda



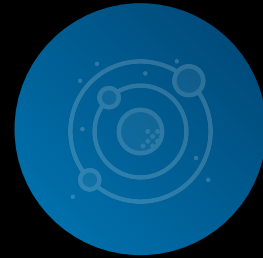
CDN strategy



POP Strategy



RUM Steering



Tooling

LinkedIn CDN Stats

>80%

Cache Hit Rate

>85%

Origin bandwidth
offloaded

LinkedIn CDN partners



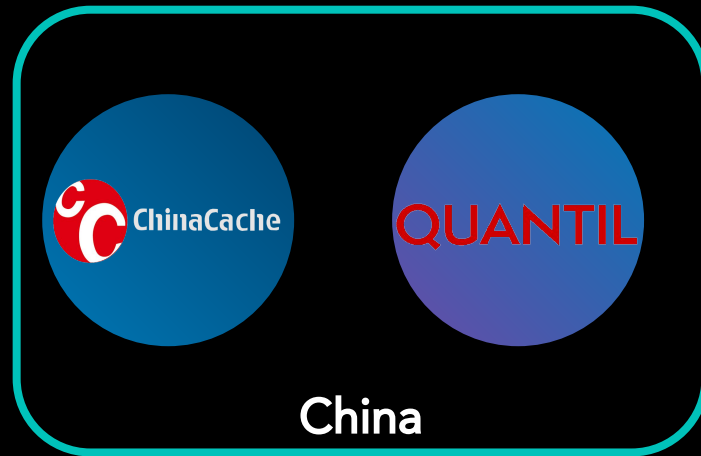
A rounded rectangular box with a blue border containing three circular icons. From left to right: the Akamai logo (orange and blue), the LinkedIn logo (white 'in' on a blue square), and the edgecast logo (white and green). Below the icons is the word 'Global' in white text.

Akamai

in

edgecast

Global



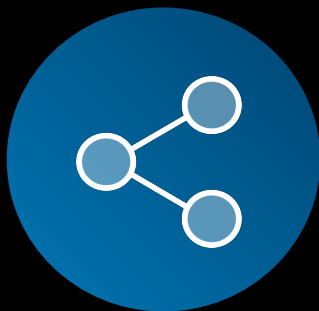
A rounded rectangular box with a cyan border containing two circular icons. From left to right: the ChinaCache logo (red and white) and the QUANTIL logo (red text on a blue circle). Below the icons is the word 'China' in white text.

ChinaCache

QUANTIL

China

Multi CDN Strategy



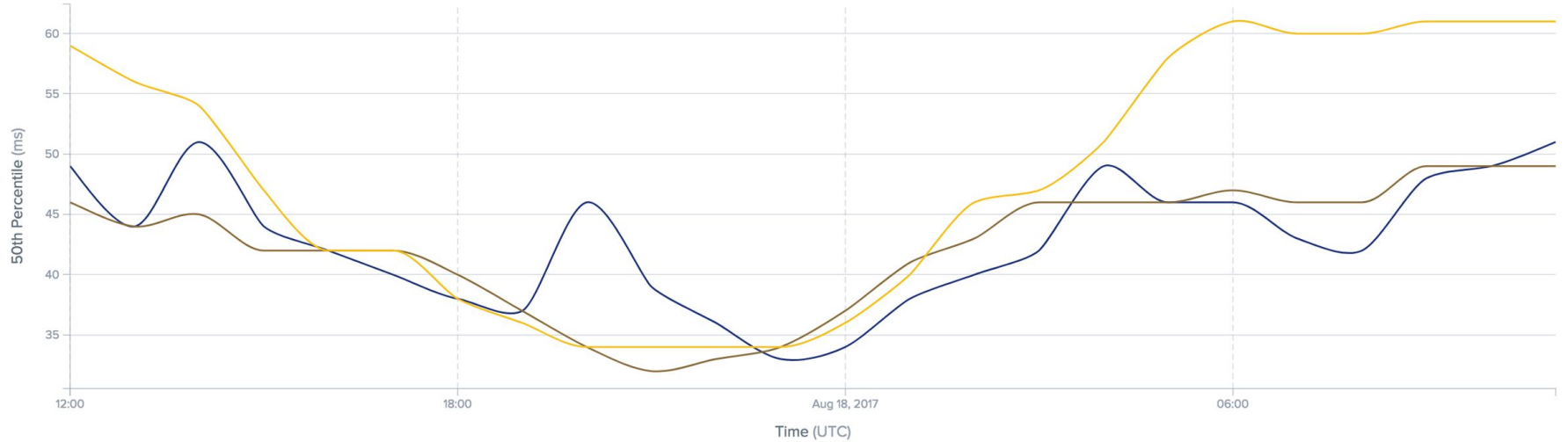
Benefits

- **Performance:** Having multiple options allows comparing and selecting the best CDN to each network in each geography in real time
- **Redundancy:** CDNs can be pulled out of rotation for planned & unplanned events
- **Capacity:** Traffic spikes of all shapes and sizes can be handled

Multi CDN Strategy

(India CDN Performance)

Filters: Last 24 Hours, Entire Radar Community, Client IP, 50th Percentile, Response Time, Platforms 3, India

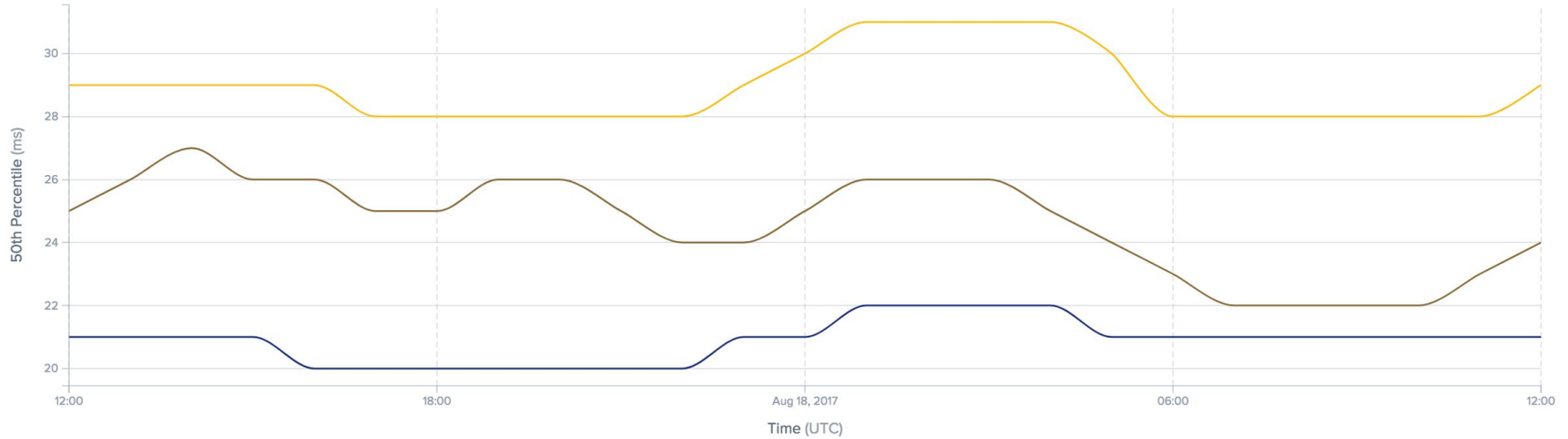


CDN1 CDN2 CDN3

Multi CDN Strategy

(US CDN Performance)

Filters: Last 24 Hours, Entire Radar Community, Client IP, 50th Percentile, Response Time, Platforms 3, United States



CDN1 CDN2 CDN3

Agenda



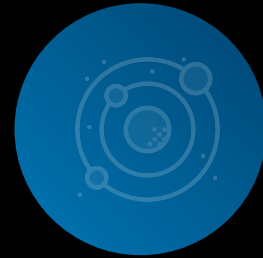
CDN strategy



POP Strategy



RUM Steering



Tooling

Point of Presence (POP)



POP (Point of Presence)

Typical DataCenter



Users



Internet

LB/RP: TCP+SSL
termination



Application servers



POP (Point of Presence)

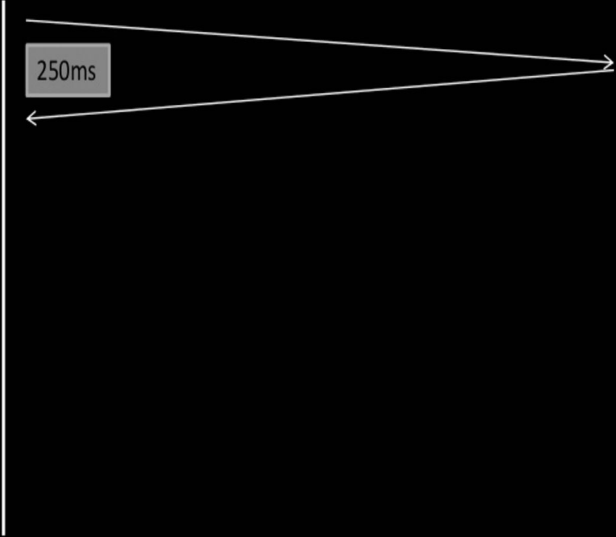
Typical DataCenter



Users



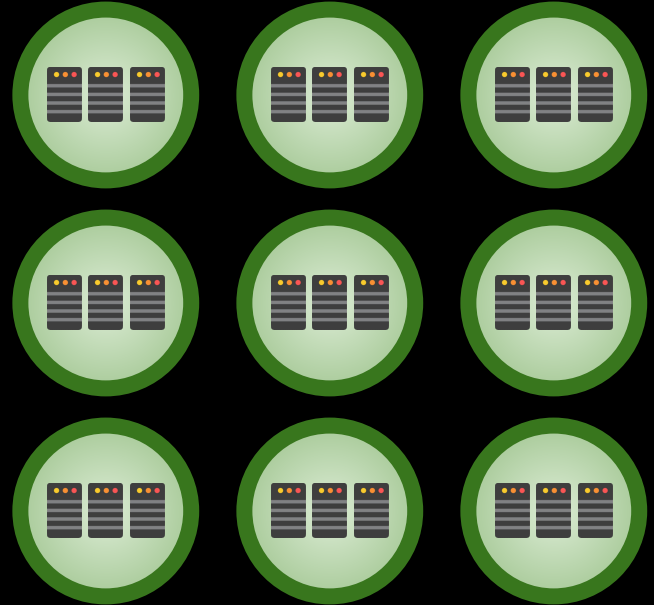
250ms



LB/RP: TCP+SSL termination

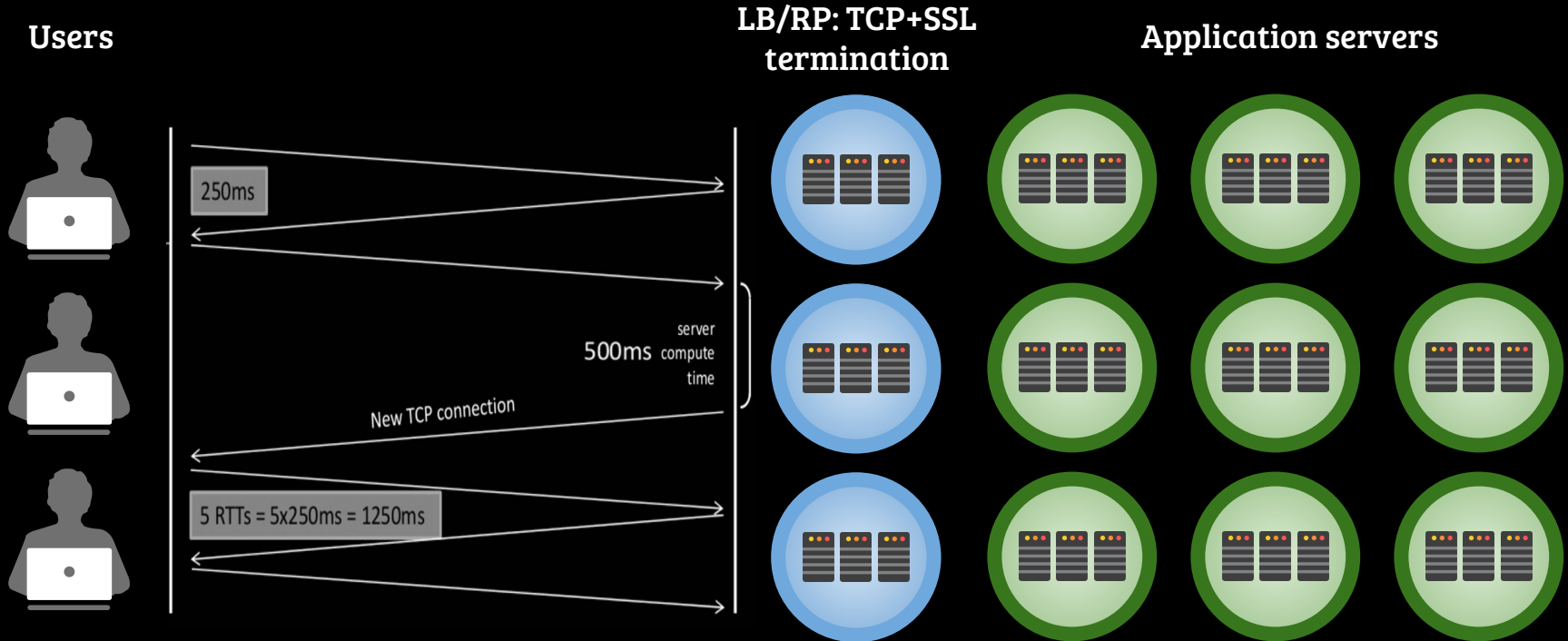


Application servers



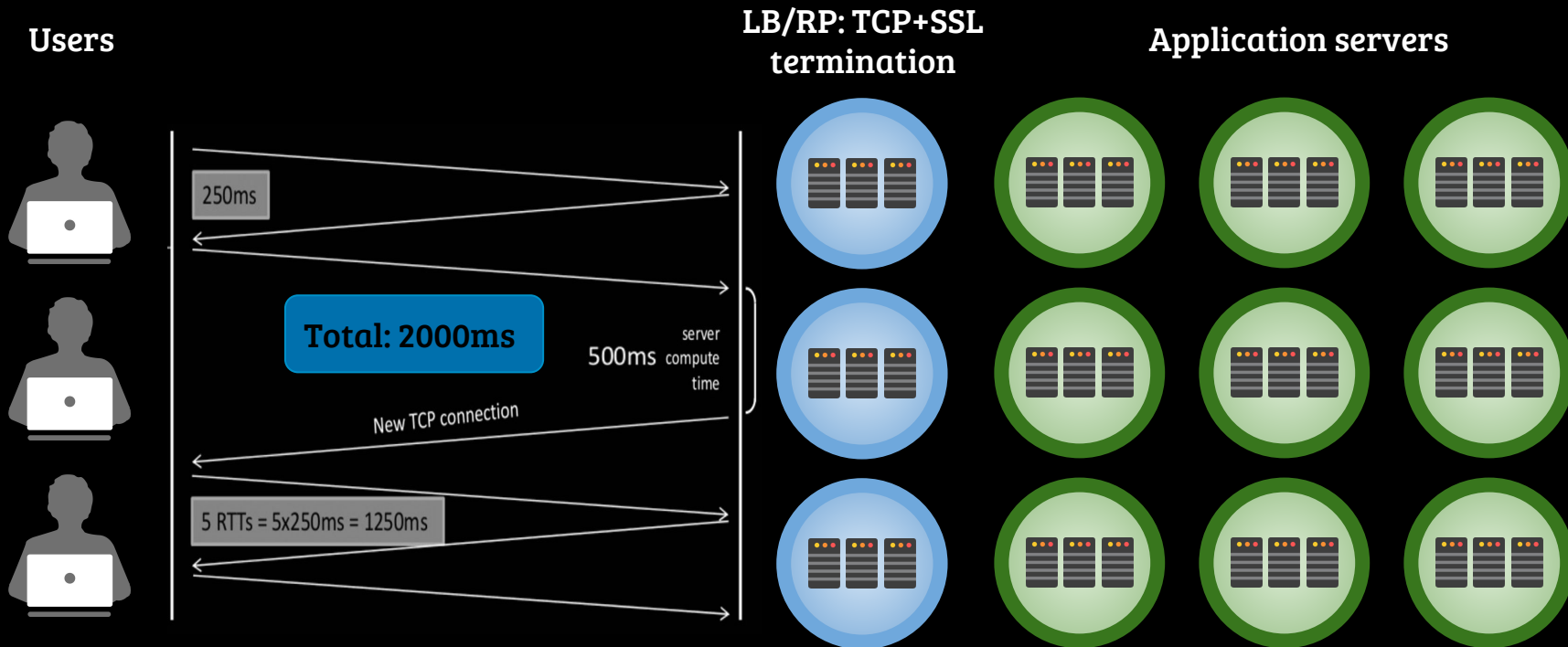
POP (Point of Presence)

Typical DataCenter



POP (Point of Presence)

Typical DataCenter



POP (Point of Presence)

Decouple LBs

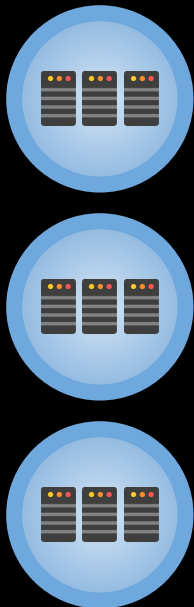


Users



Internet

LB/RP: TCP+SSL
termination

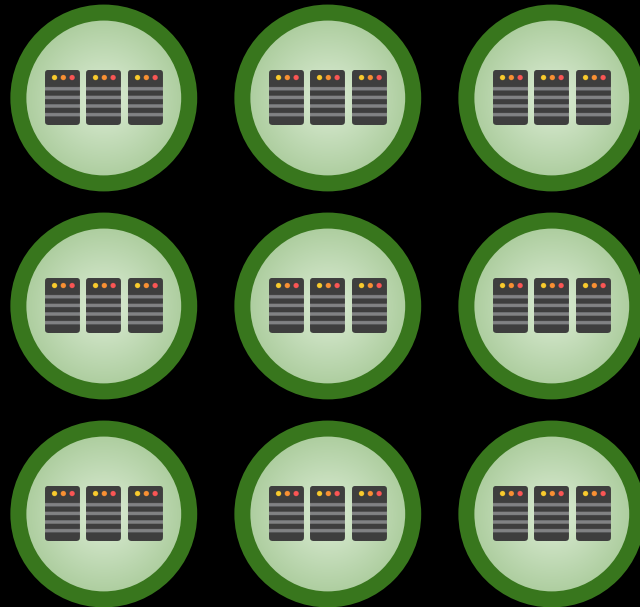


TCP Window
size, HTTP
keepalive



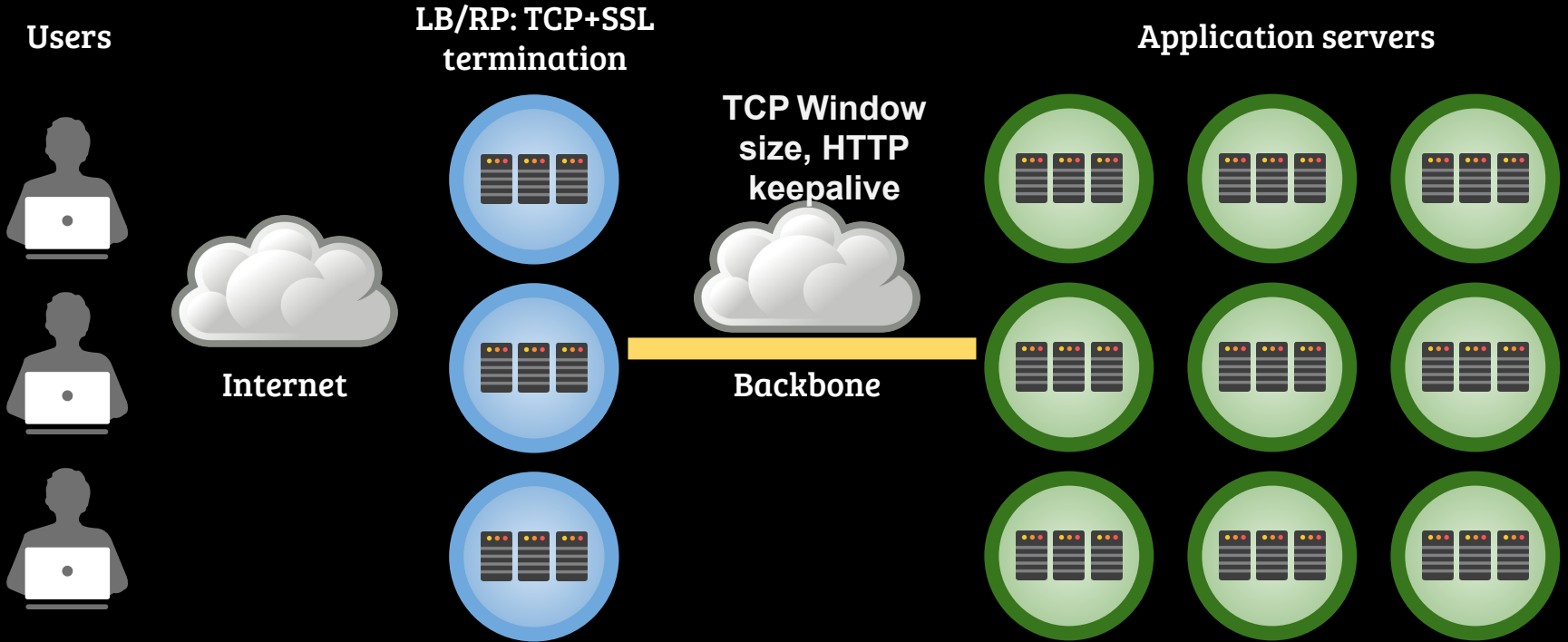
Internet

Application servers



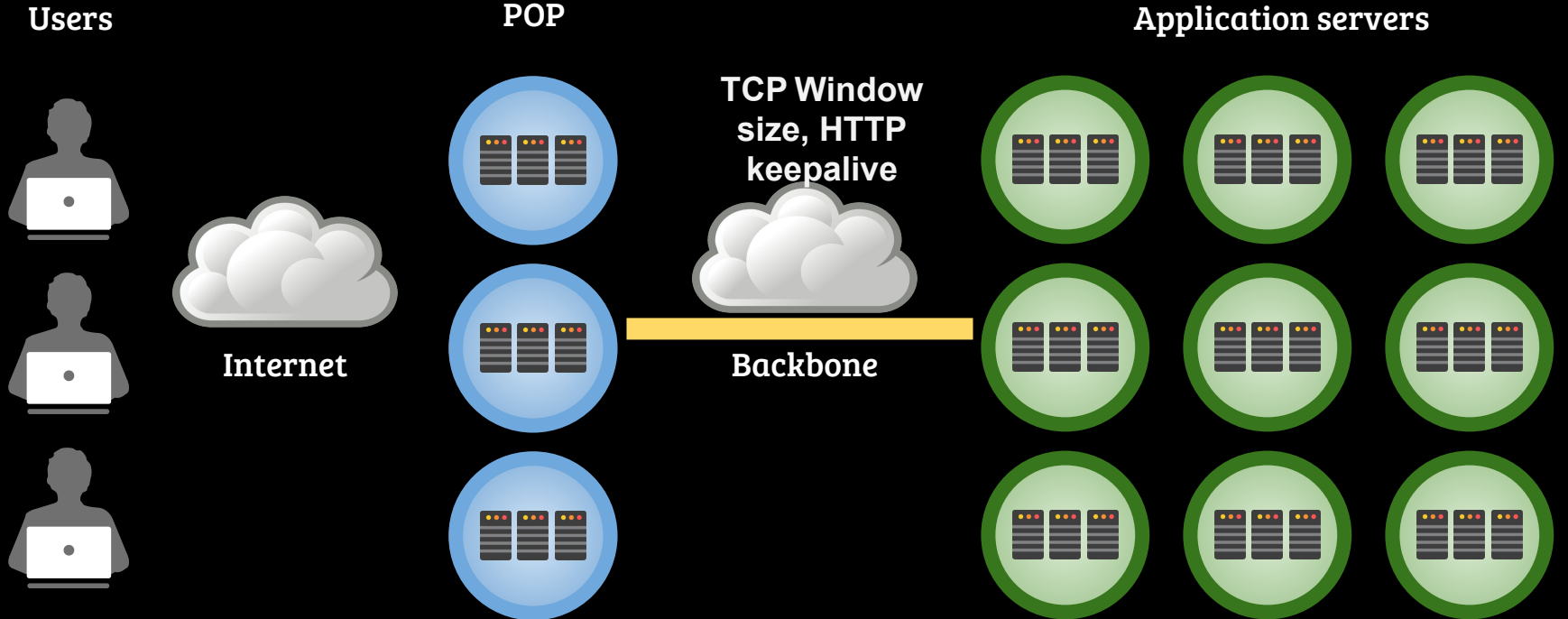
POP (Point of Presence)

Establish Backbone



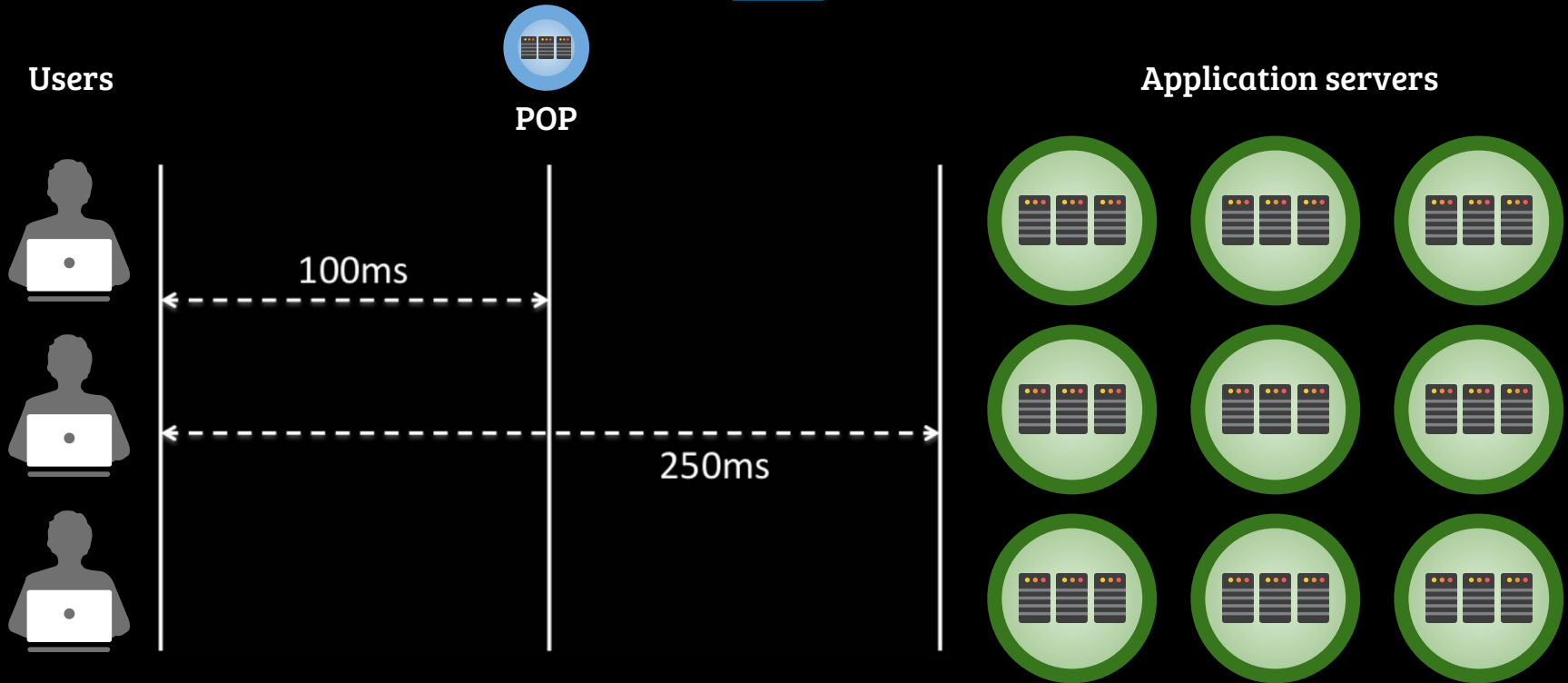
POP (Point of Presence)

LBs become POP



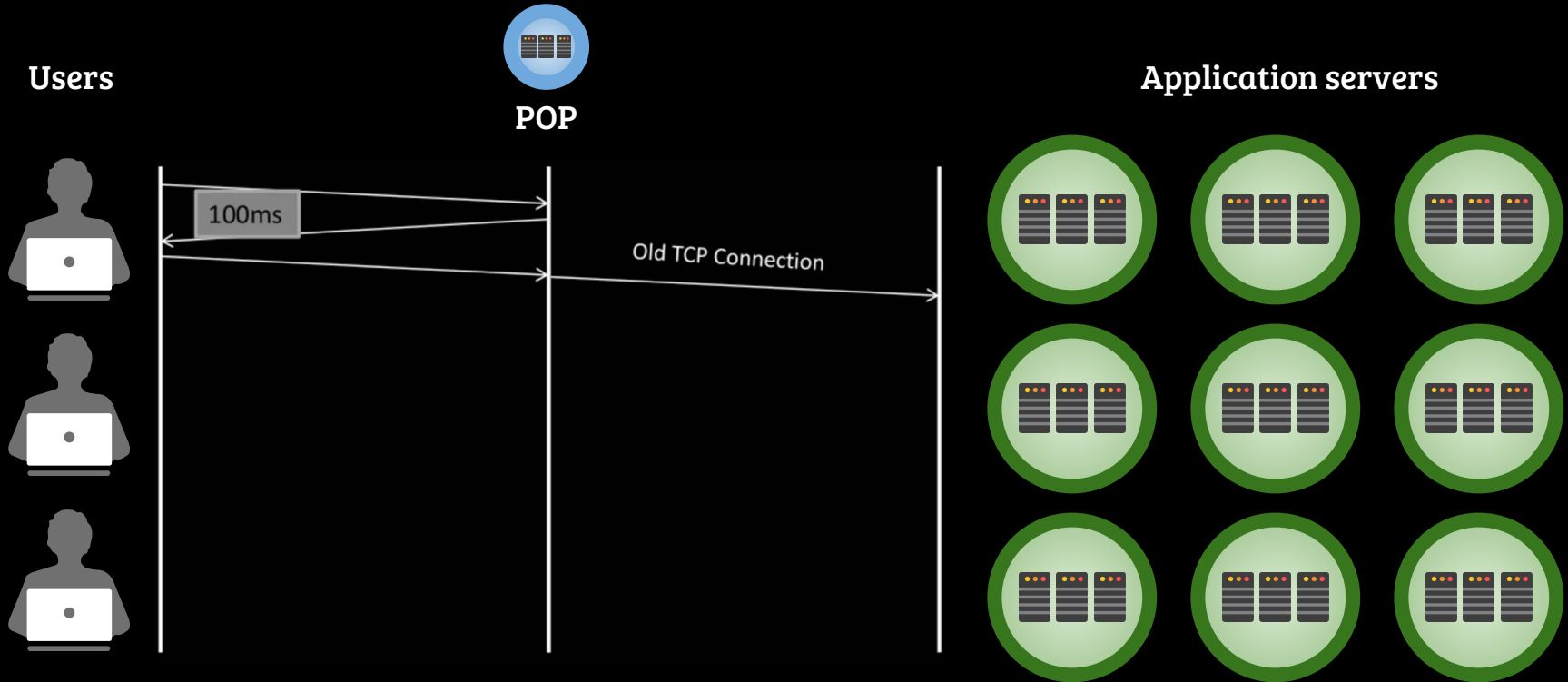
POP (Point of Presence)

LBs become POP



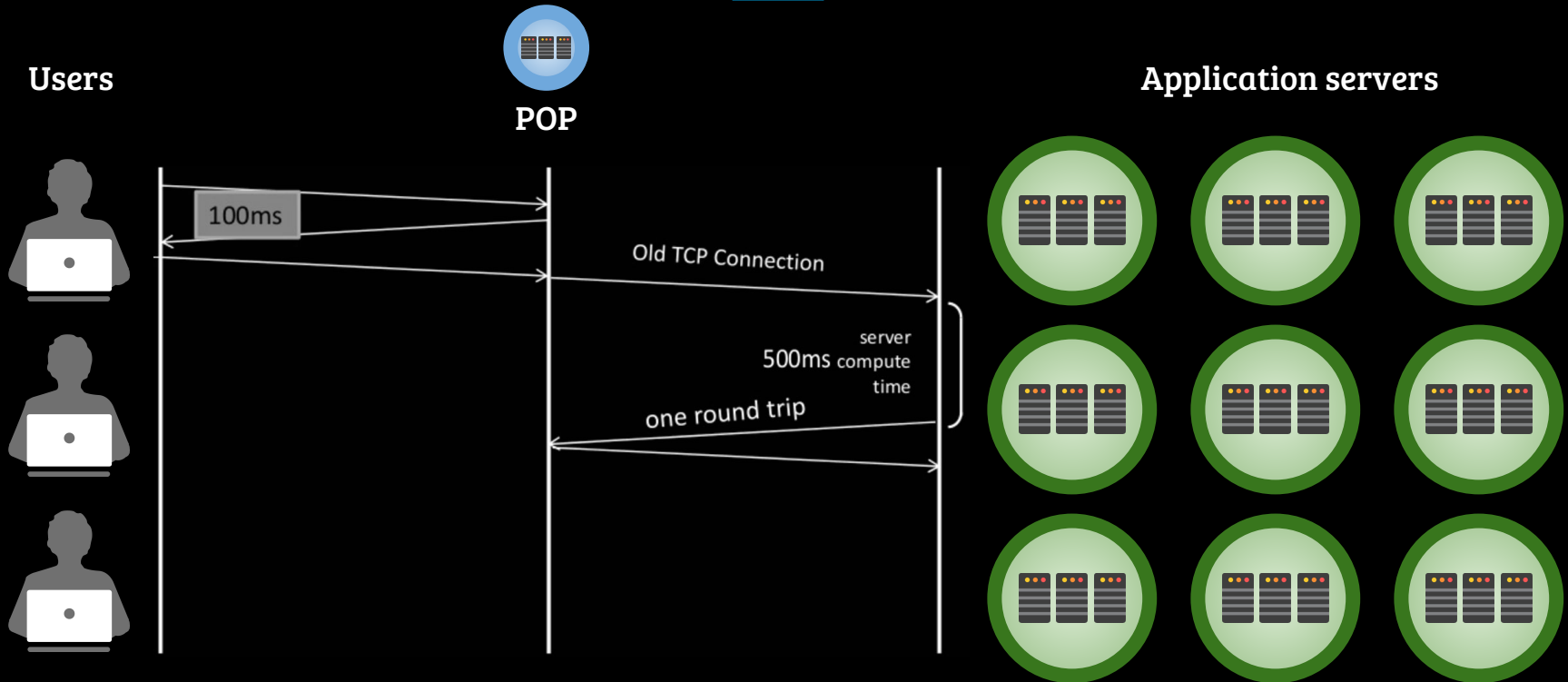
POP (Point of Presence)

LBs become POP



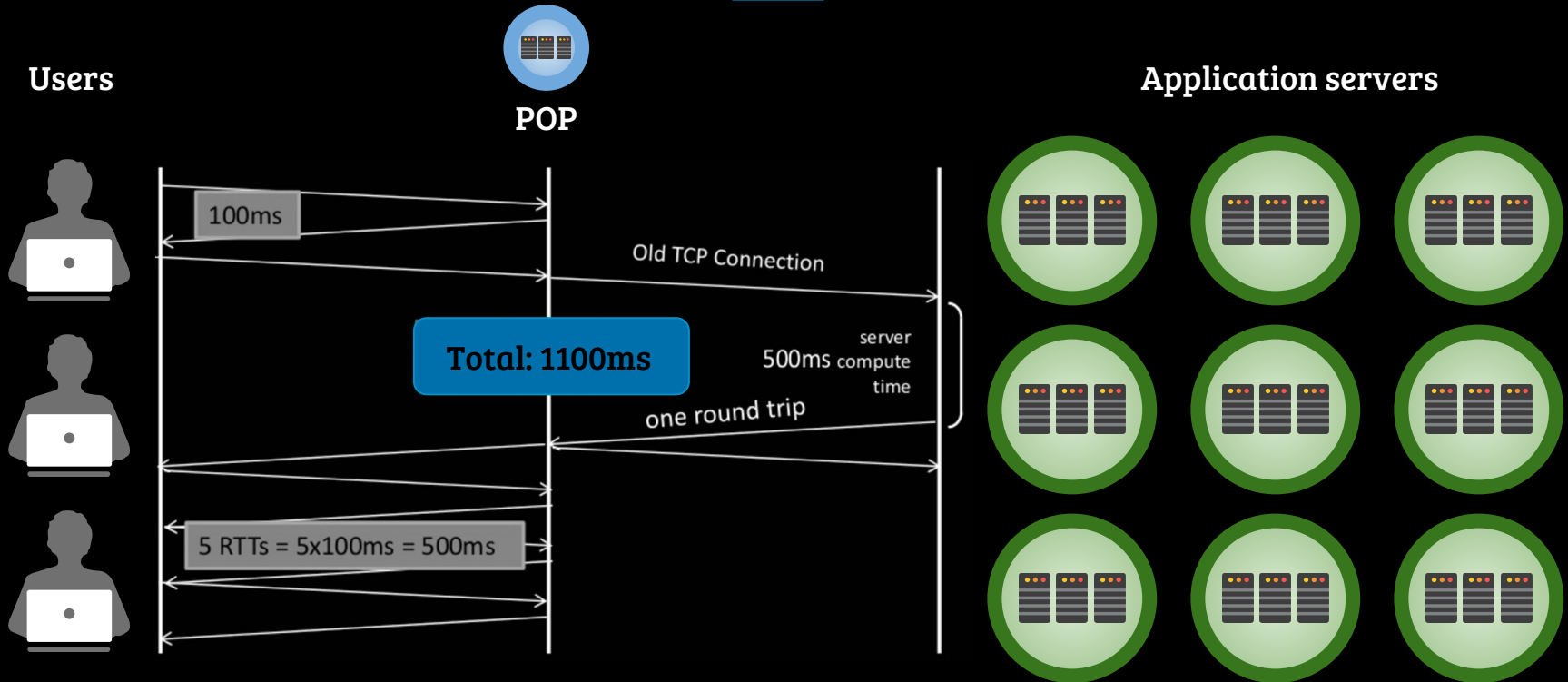
POP (Point of Presence)

LBs become POP



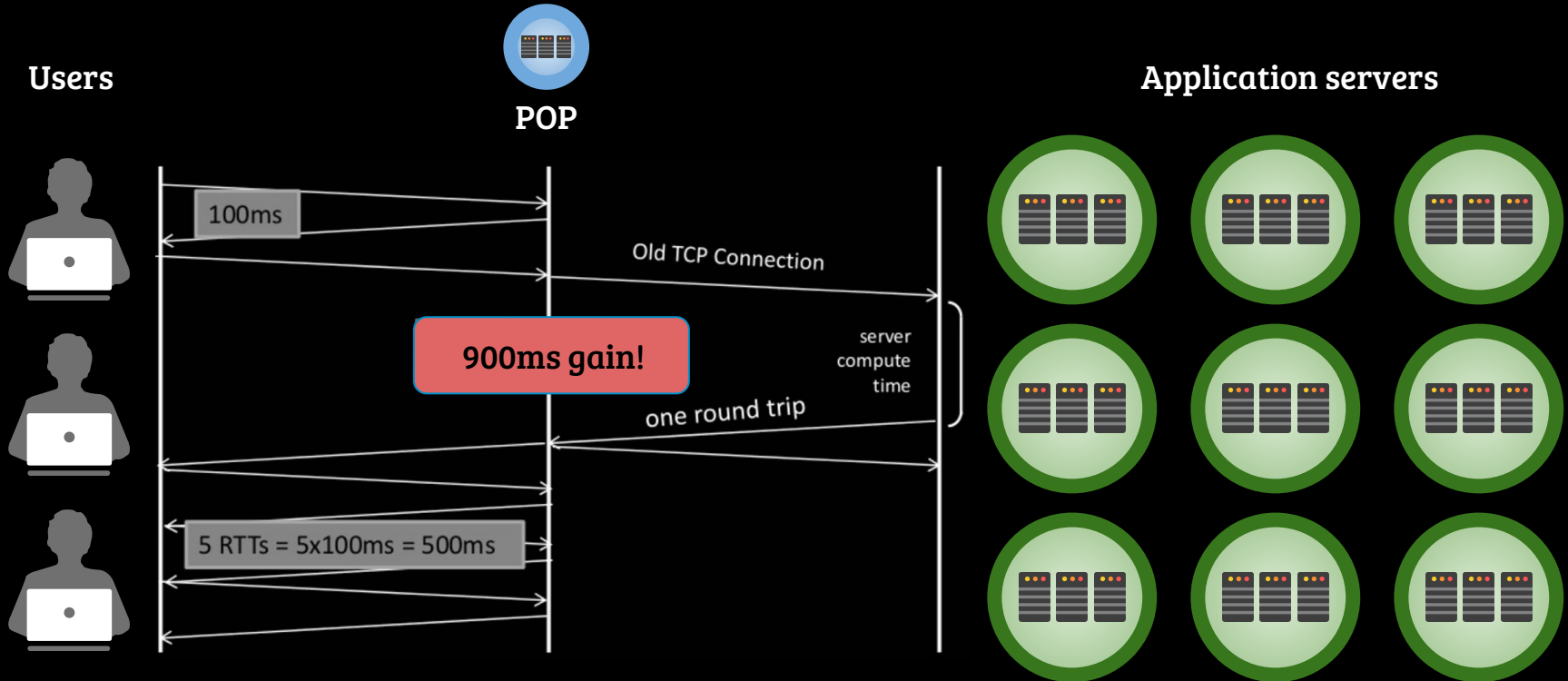
POP (Point of Presence)

LBs become POP



POP (Point of Presence)

LBs become POP

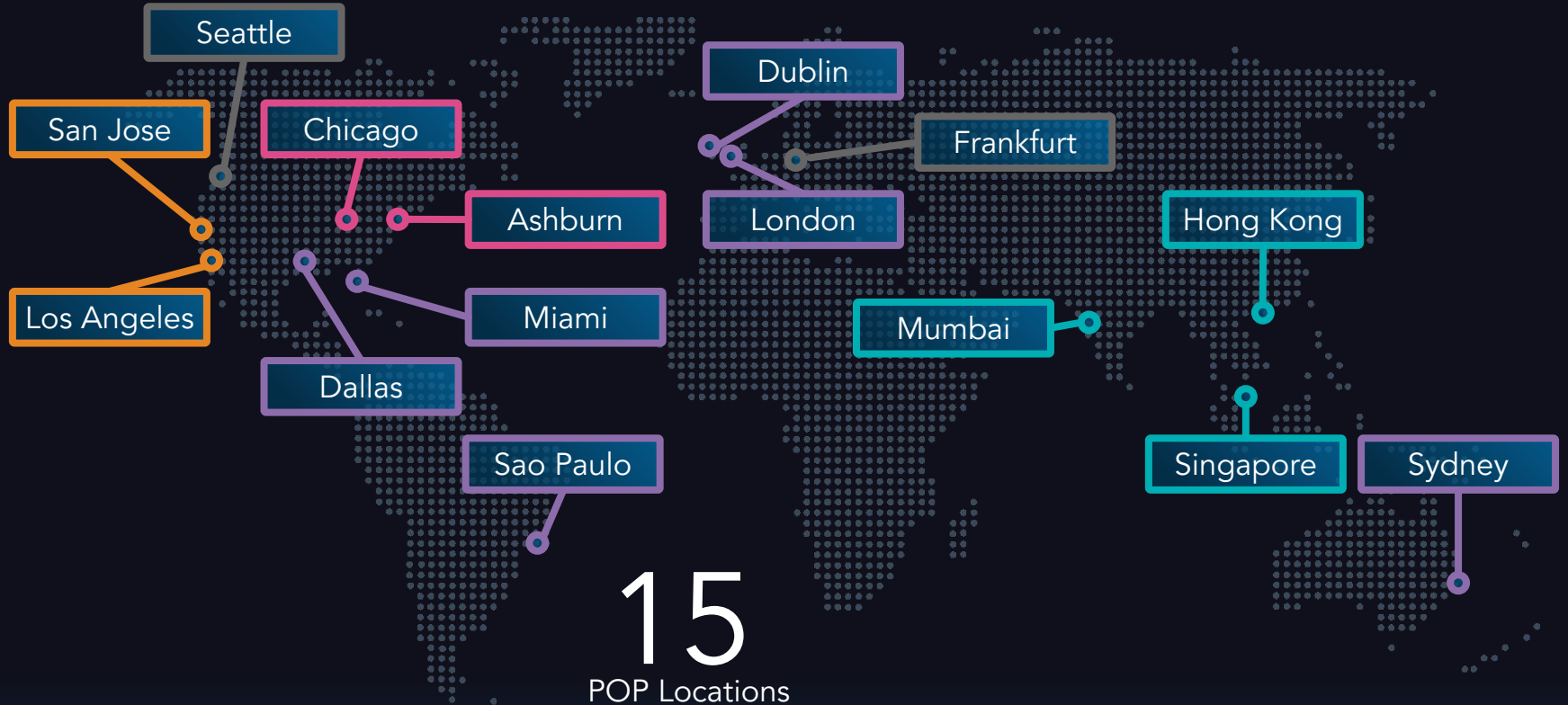


POP (Point of Presence)

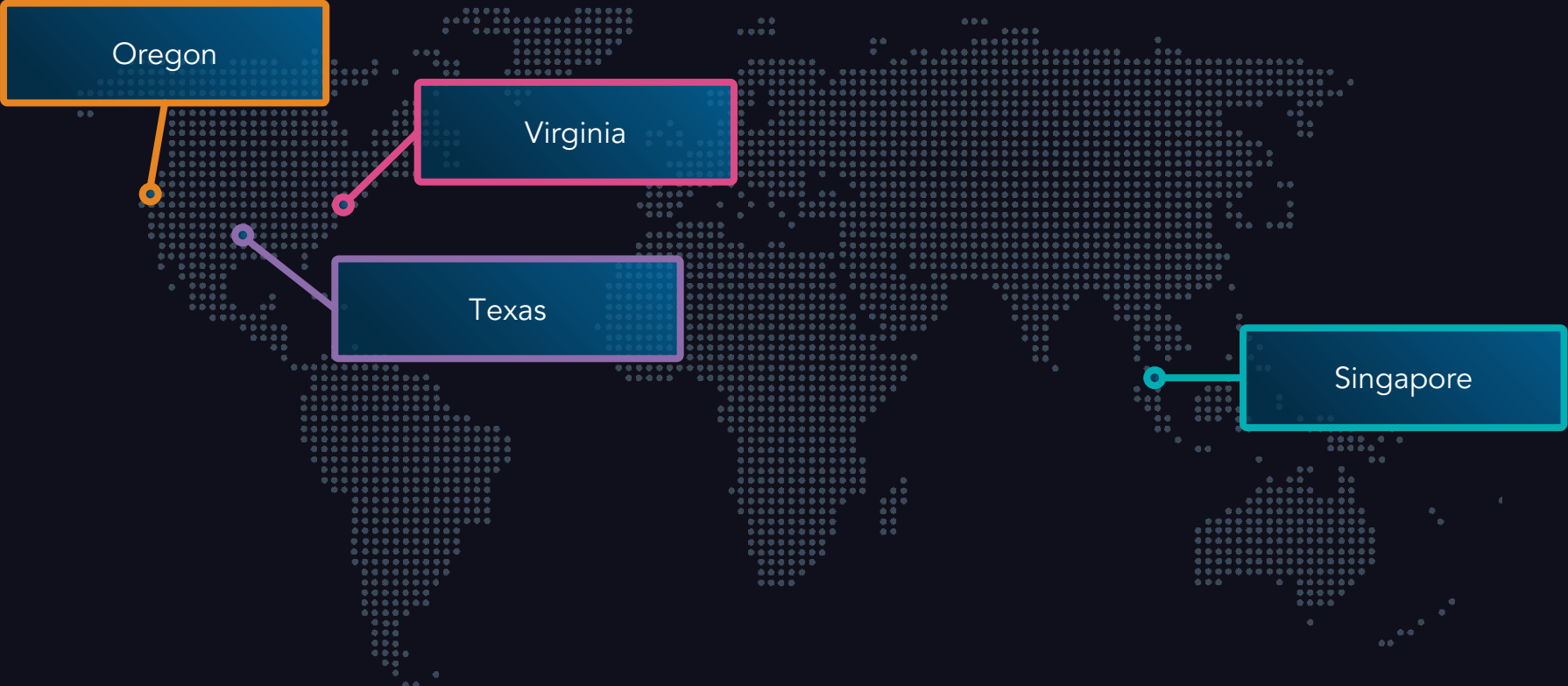
Cost effective



LinkedIn POP Footprint

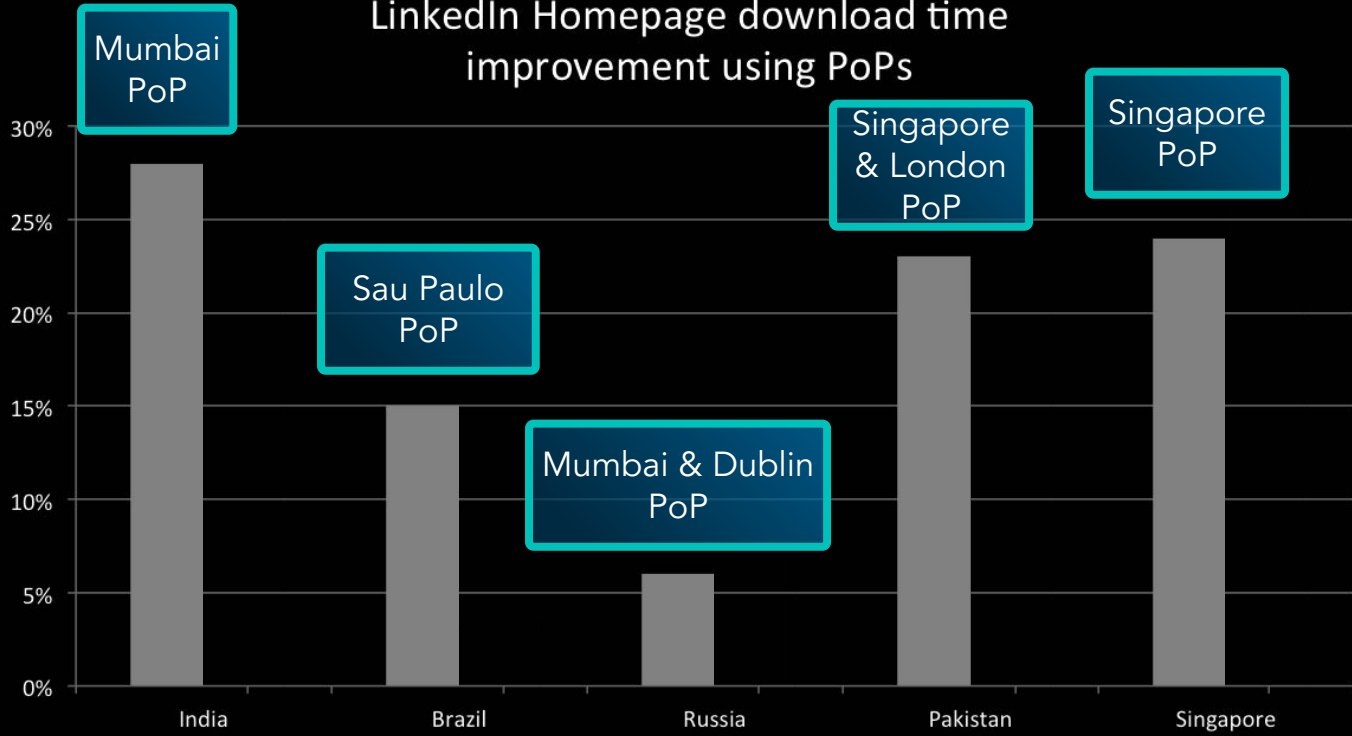


LinkedIn DataCenter Footprint



POP Benefit

LinkedIn Homepage download time improvement using PoPs



Agenda



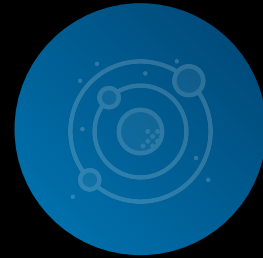
CDN strategy



POP Strategy



RUM Steering



Tooling

Multi DNS Root Servers

```
$ dig +short +noshort NS linkedin.com | sort
```

```
linkedin.com.      58808   IN      NS      dns1.p09.nsone.net.  
linkedin.com.      58808   IN      NS      dns2.p09.nsone.net.  
linkedin.com.      58808   IN      NS      dns3.p09.nsone.net.  
linkedin.com.      58808   IN      NS      dns4.p09.nsone.net.  
linkedin.com.      58808   IN      NS      ns1.p43.dynect.net.  
linkedin.com.      58808   IN      NS      ns2.p43.dynect.net.  
linkedin.com.      58808   IN      NS      ns3.p43.dynect.net.  
linkedin.com.      58808   IN      NS      ns4.p43.dynect.net.
```

NSOne

DynDNS

```
$
```

Multi DNS

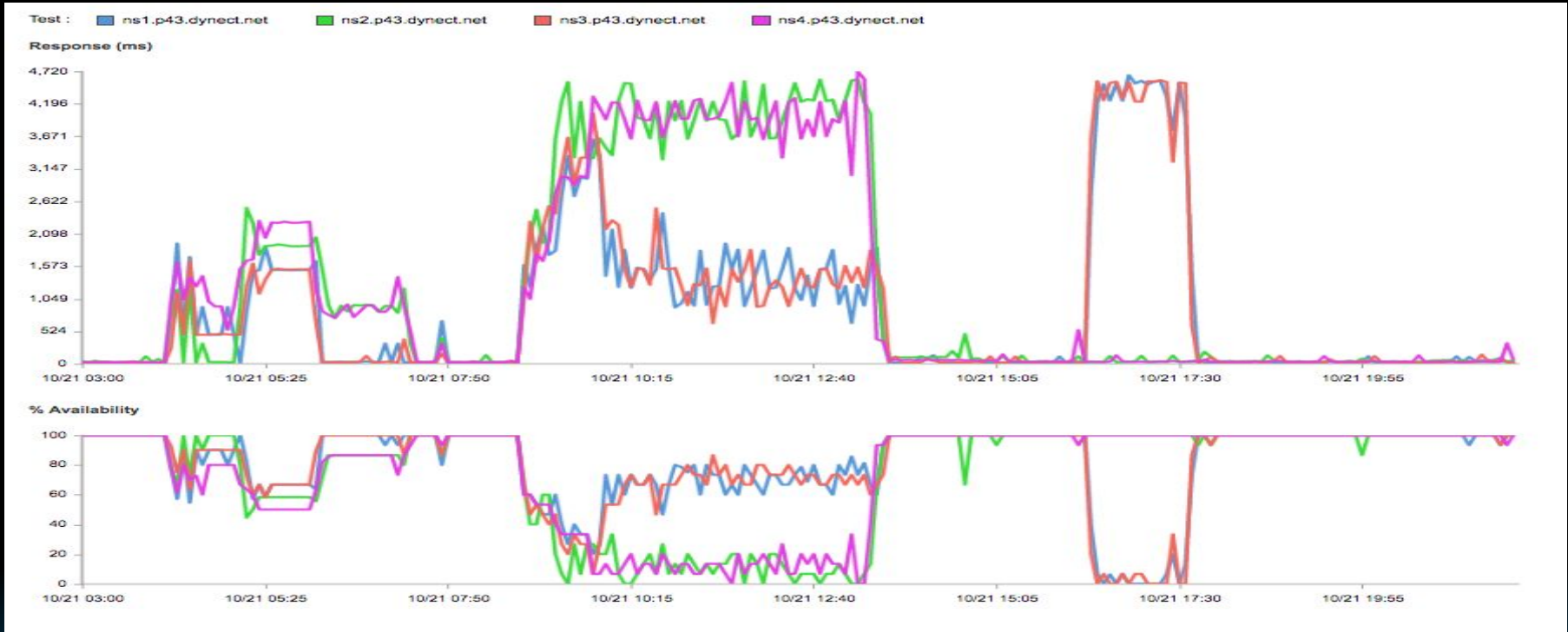
Benefits

2 DNS is better than 1



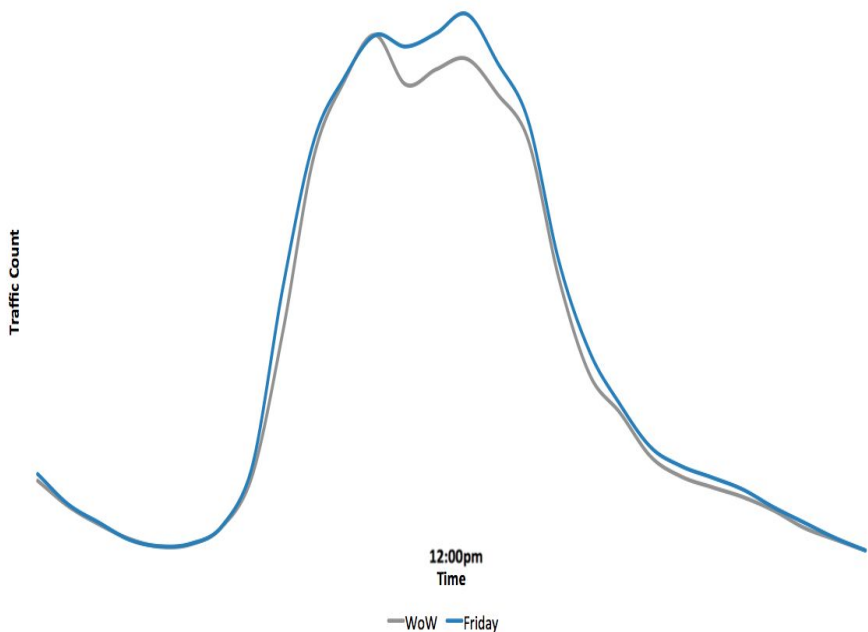
- Performance
- Availability

Multi DNS Dyn DDOS

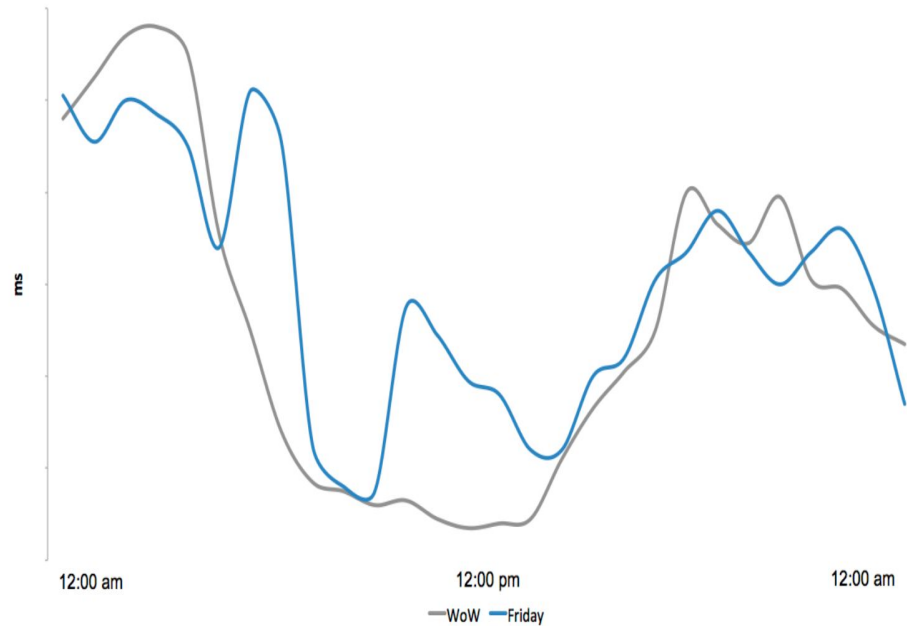


Multi DNS Dyn DDOS

Traffic count on Friday Oct 21st 2016



90th non-zero DNS times on Friday Oct 21st 2016



Traffic Steering

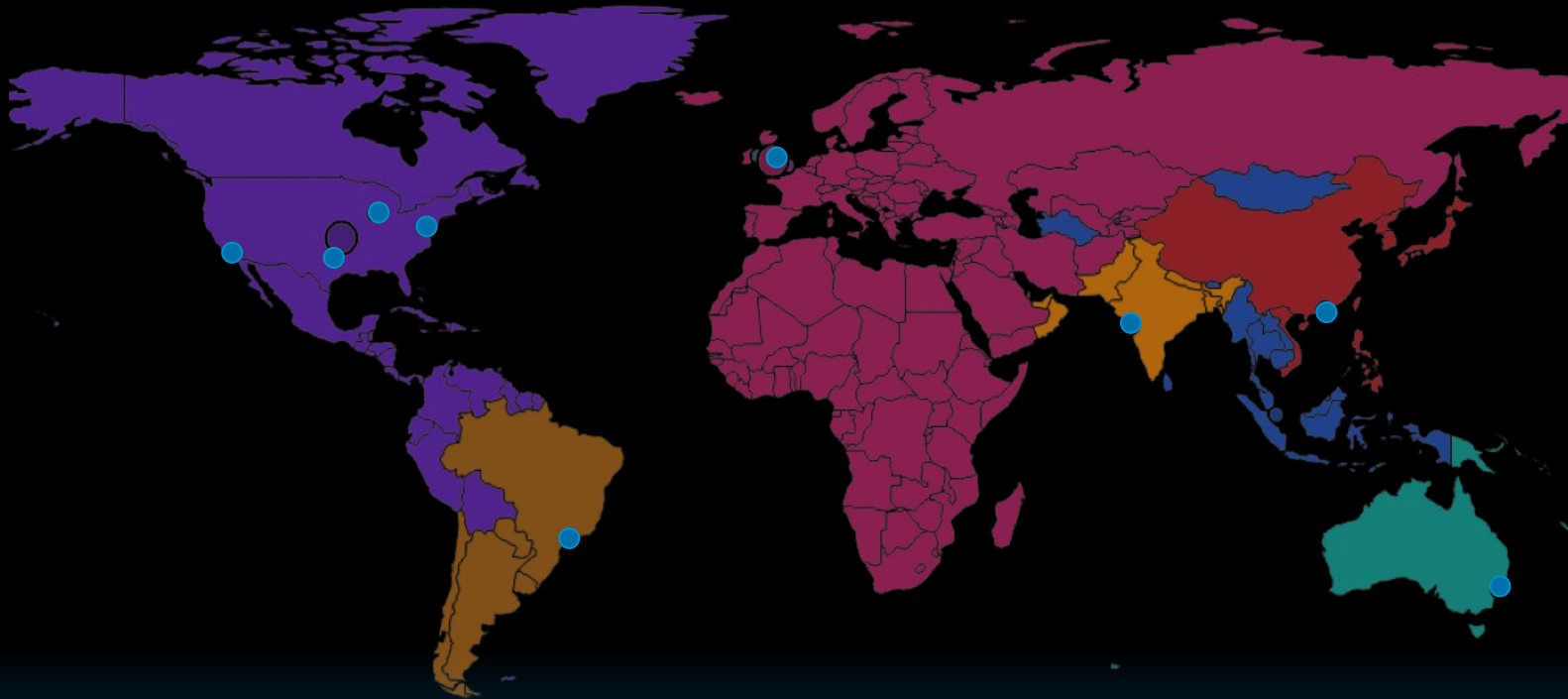


How to select the best POP and CDN ?



Traffic Steering

GeoDNS



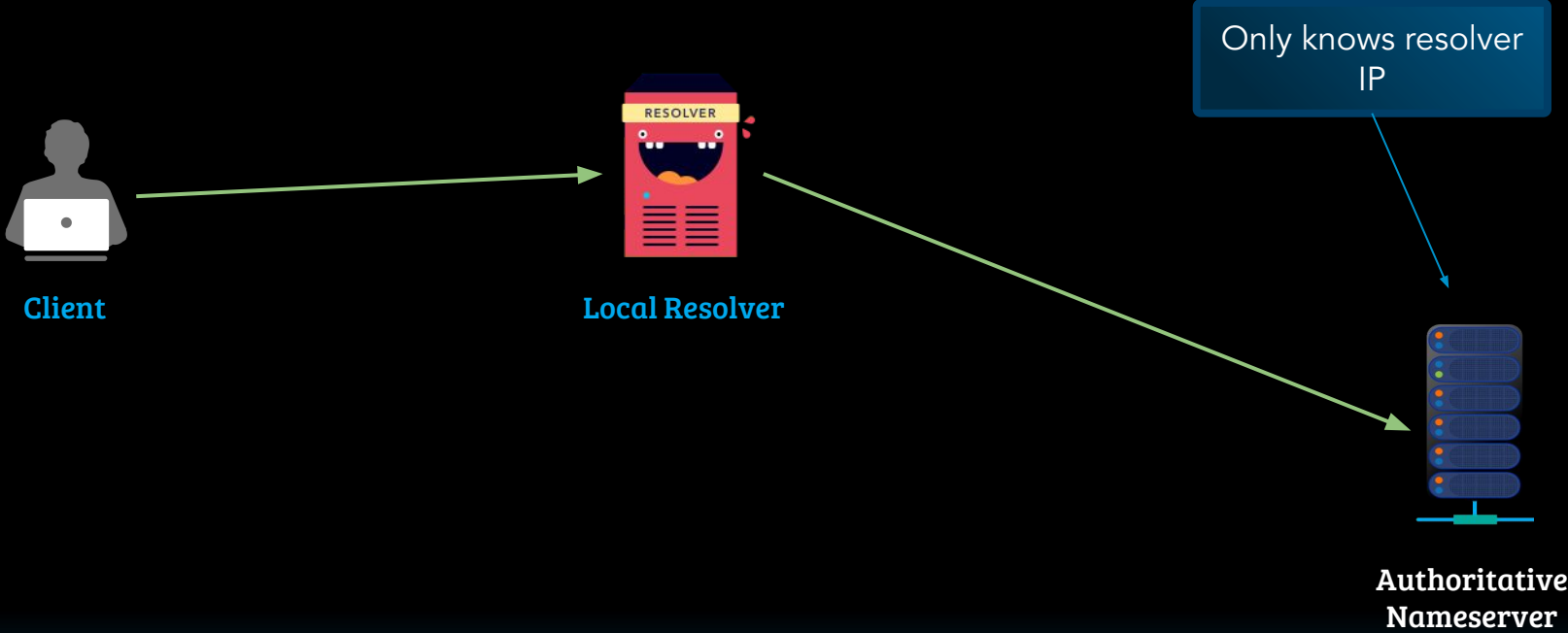
Traffic Steering

GeoDNS

RECORD GROUPS		Add Group
—	APAC	Add Record to this Group
Regions, Countries, States and/or Provinces: Australia; Brunei Darussalam; Cambodia; Hong Kong; Indonesia; Japan; Korea, Republic of; Lao People's Democratic Republic; Macao; Malaysia; Myanmar; Philippines; Singapore; Sri Lanka; Taiwan; Thailand; Vietnam		
Address: glb-ap.media.licdn.com.		CNAME TTL: 300 sec
—	EU	Add Record to this Group
Regions, Countries, States and/or Provinces: Aland Islands; Albania; Andorra; Austria; Belarus; Belgium; Bosnia and Herzegovina; Bulgaria; Croatia; Czech Republic; Denmark; Estonia; Faroe Islands; Finland; France; France, Metropolitan; Germany; Gibraltar; Greece; Guernsey; Holy See (Vatican City State); Hungary; Iceland; Ireland; Isle of Man; Italy; Jersey; Latvia; Liechtenstein; Lithuania; Luxembourg; Macedonia; Malta; Moldova, Republic of; Monaco; Montenegro; Norway; Poland; Portugal; Romania; San Marino; Serbia; Slovakia; Slovenia; Spain; Svalbard and Jan Mayen; Switzerland; United Kingdom		
Address: glb-eu.media.licdn.com.		CNAME TTL: 300 sec
—	EU NETHERLANDS	Add Record to this Group
Regions, Countries, States and/or Provinces: Netherlands		
Address: glb-eu-nl.media.licdn.com.		CNAME TTL: 300 sec
—	EU SWEDEN	Add Record to this Group
Regions, Countries, States and/or Provinces: Sweden		
Address: glb-eu-se.media.licdn.com.		CNAME TTL: 300 sec
—	NORAM	Add Record to this Group
Regions, Countries, States and/or Provinces: Canada; Alabama; Alaska; Arizona; Arkansas; California; Colorado; Connecticut; Delaware; District of Columbia; Florida; Georgia; Hawaii; Idaho; Indiana; Iowa; Kansas; Kentucky; Louisiana; Maine; Maryland; Massachusetts; Michigan; Minnesota; Mississippi; Missouri; Montana; Nebraska; Nevada; New Hampshire; New Jersey; New Mexico; New York; North Carolina; North Dakota; Ohio; Oklahoma; Oregon; Pennsylvania; Rhode Island; South Carolina; South Dakota; Tennessee; Texas; Utah; Vermont; Virginia; Washington; West Virginia; Wisconsin; Wyoming		
Address: glb-na.media.licdn.com.		CNAME TTL: 300 sec
—	NORAM ILLINOIS	Add Record to this Group

Traffic Steering

GeoDNS



Traffic Steering

GeoDNS

EDNS Client Subnet (rfc7871)

```
# Ireland IP subnet
> dig +short +noshort @dns1.p09.nsone.net. +client=50.7.155.0/24 media-lcdn.licdn.com
media-lcdn.licdn.com. 300 IN CNAME pop-tln1.media-src.linkedin.com.

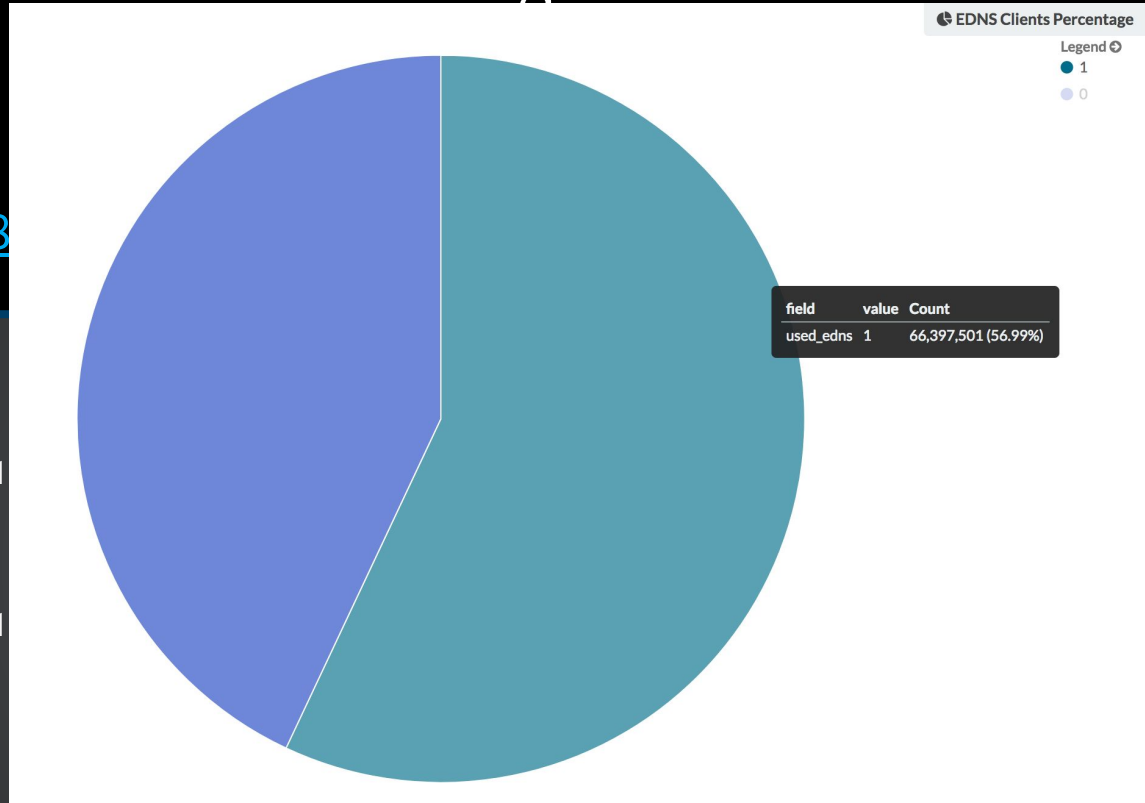
# India IP Subnet
> dig +short +noshort @dns1.p09.nsone.net. +client=183.82.18.0/24 media-lcdn.licdn.com
media-lcdn.licdn.com. 300 IN CNAME pop-tmu1.media-src.linkedin.com.
```

Traffic Steering

EDNS Client Subnet (rfc78)

```
# Ireland IP subnet
> dig +short +noSHORT @dns1
media-lcdn.licdn.com. 300

# India IP Subnet
> dig +short +noSHORT @dns1
media-lcdn.licdn.com. 300
```



Traffic Steering

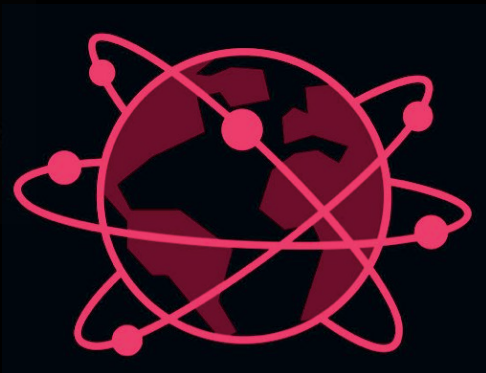
Anycast



ANYCAST

Traffic Steering

Anycast



ANYCAST

Region/Country	Performance
Illinois	+20%
Florida	+22%
Georgia	+18%
Pennsylvania	+10%

Traffic Steering

Anycast



ANYCAST

Region/Country	Performance
Illinois	+20%
Florida	+22%
Georgia	+18%
Pennsylvania	+10%
Arizona	-21%
Brazil	-55%
New York	-3%

Traffic Steering

Anycast



ANYCAST

Least # of hops != Least latency

Region/Country	Performance
Illinois	+20%
Florida	+22%
Georgia	+18%
Pennsylvania	+10%
Arizona	-21%
Brazil	-55%
New York	-3%

Traffic Steering

RUM (Real User Measurements) DNS

RUM DNS



The customer is always right

Public DNS with RUM

Microsoft Azure



cedexis



DynSM

NS1.



TurboBytes



amazon
web services

Traffic Steering

RUM DNS



RUM Steering

2 Phases



Measure



Steer

RUM Steering

Measurement Phase

0. Visitor



<http://linkedin.com>



RUM Steering

Measurement Phase

0. Visitor



`http://linkedin.com`

`Site HTML: xx.css + yy.js + rum.js`



RUM Steering

Measurement Phase

0. Visitor

1. Identify



`http://linkedin.com`



Site HTML: `xx.css + yy.js + rum.js`

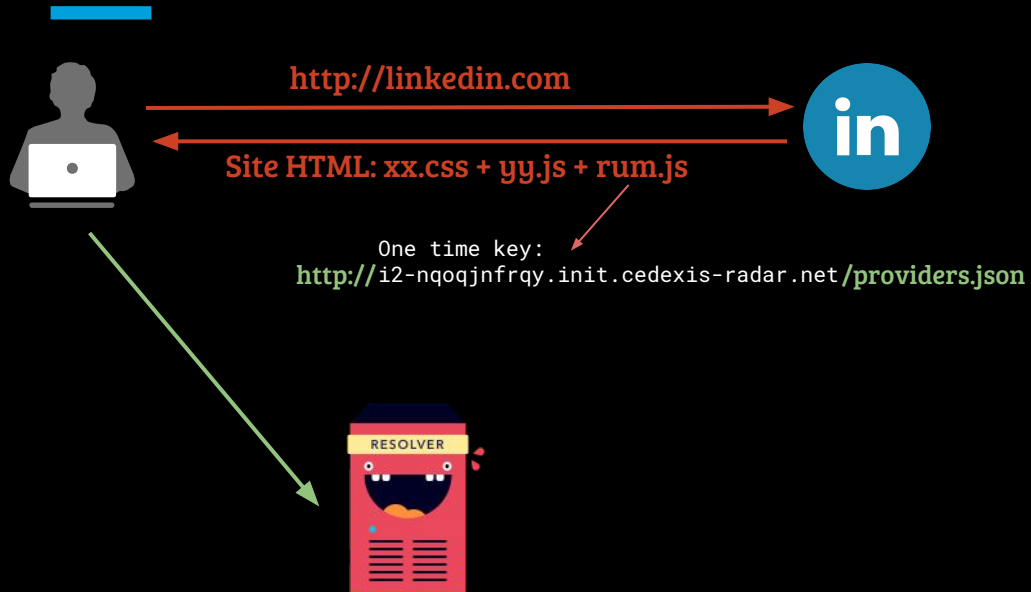
One time key:
`i2-nqoqjnfrqy.init.cedexis-radar.net`

RUM Steering

Measurement Phase

0. Visitor

1. Identify

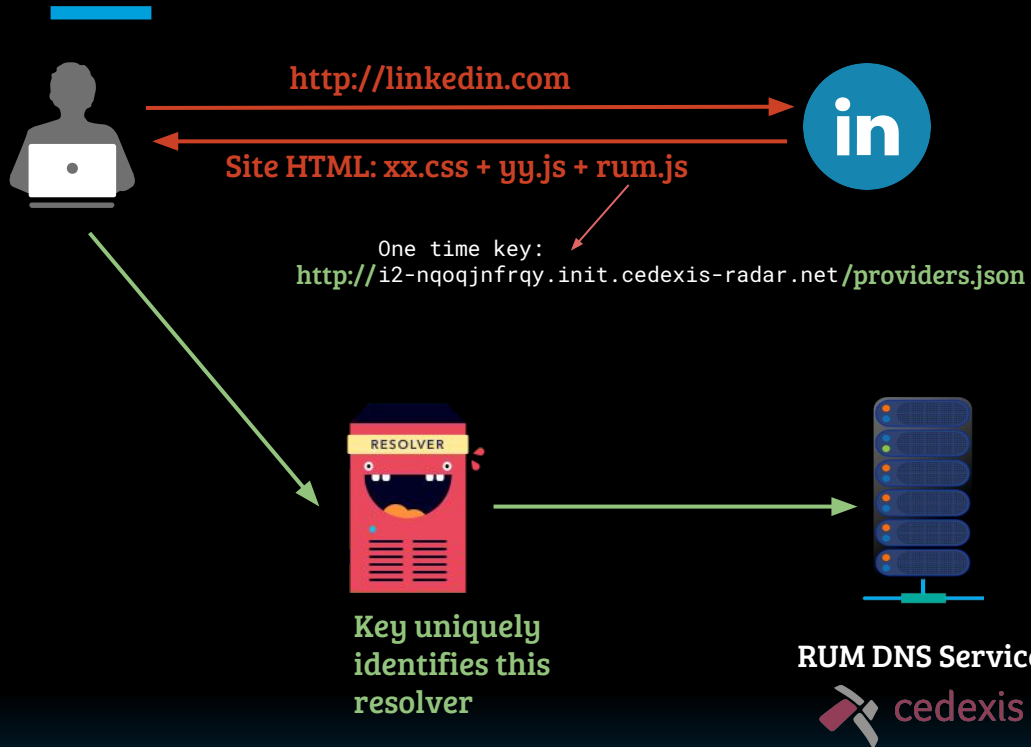


RUM Steering

Measurement Phase

0. Visitor

1. Identify

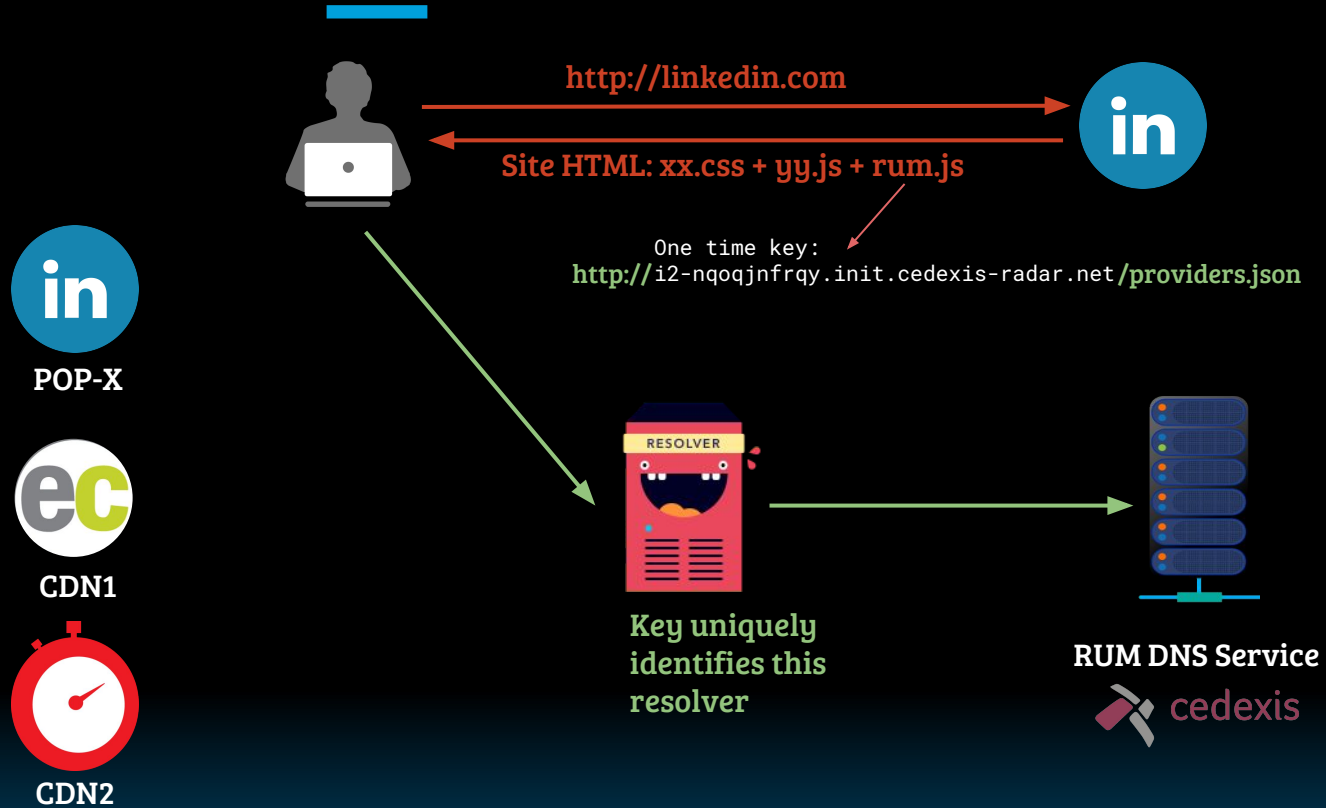


RUM Steering

Measurement Phase

0. Visitor

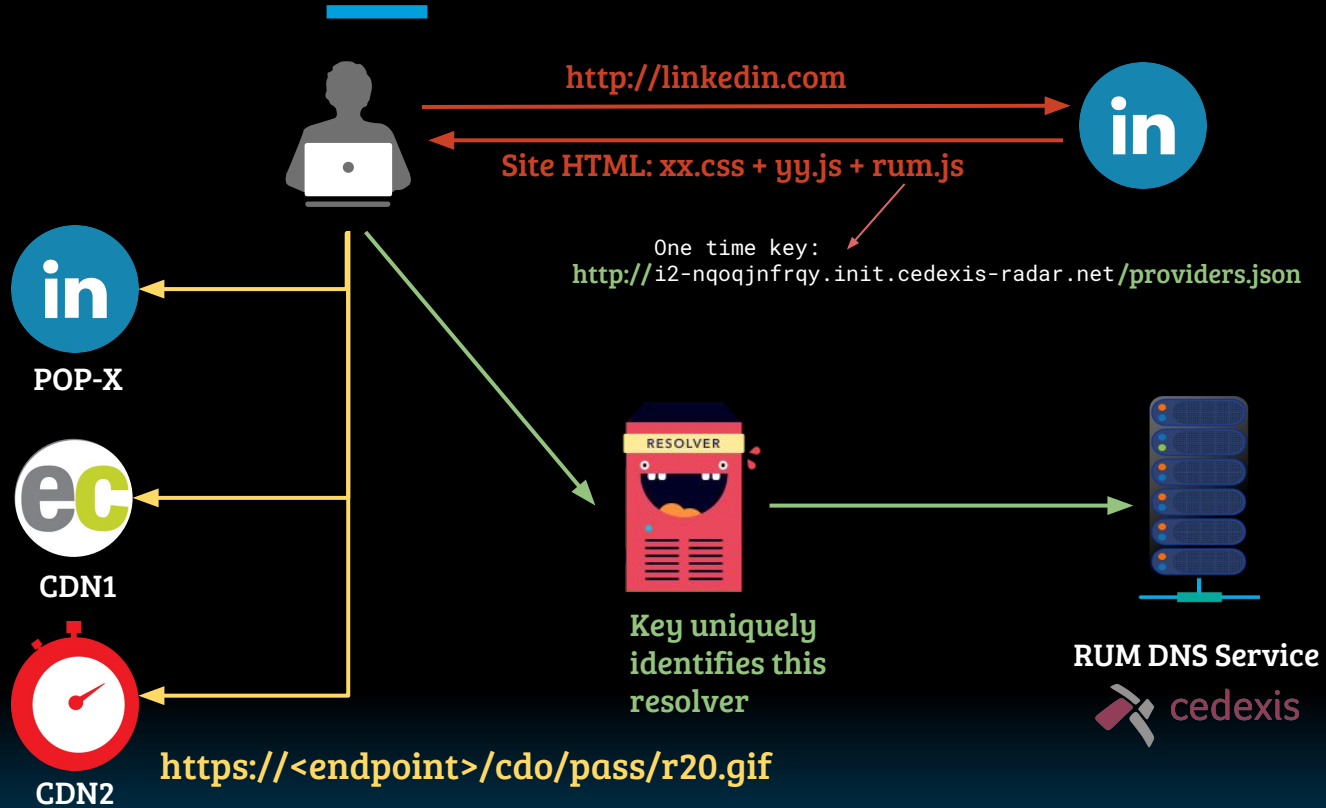
1. Identify



RUM Steering

Measurement Phase

- 0. Visitor
- 1. Identify
- 2. Measure



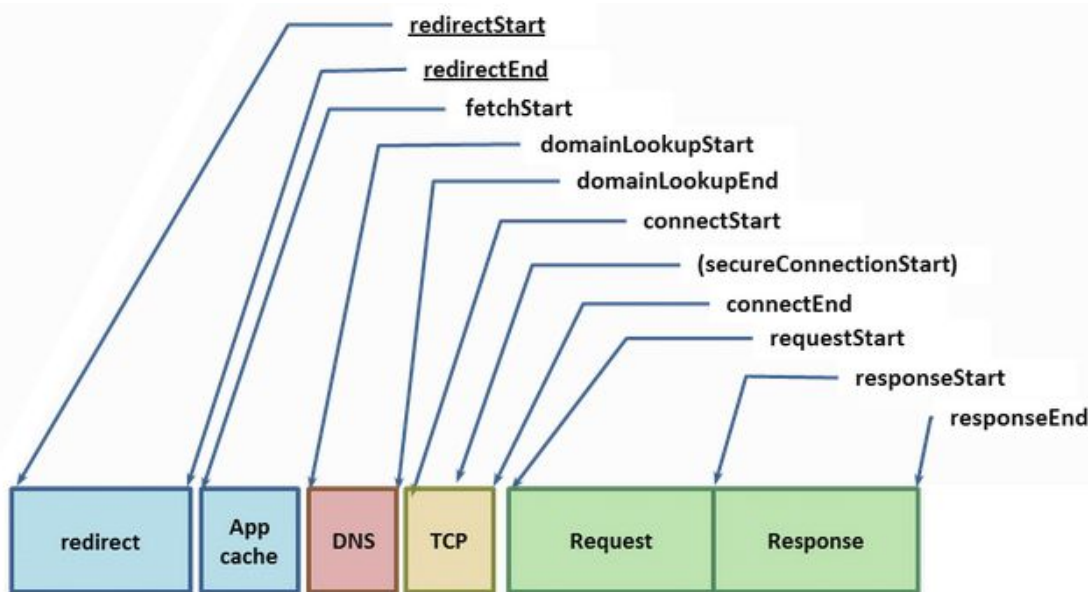
RUM Steering

Measurement Phase

0. Visito

1. Identifi

2. Measu



ar.net/providers.json



RUM DNS Service



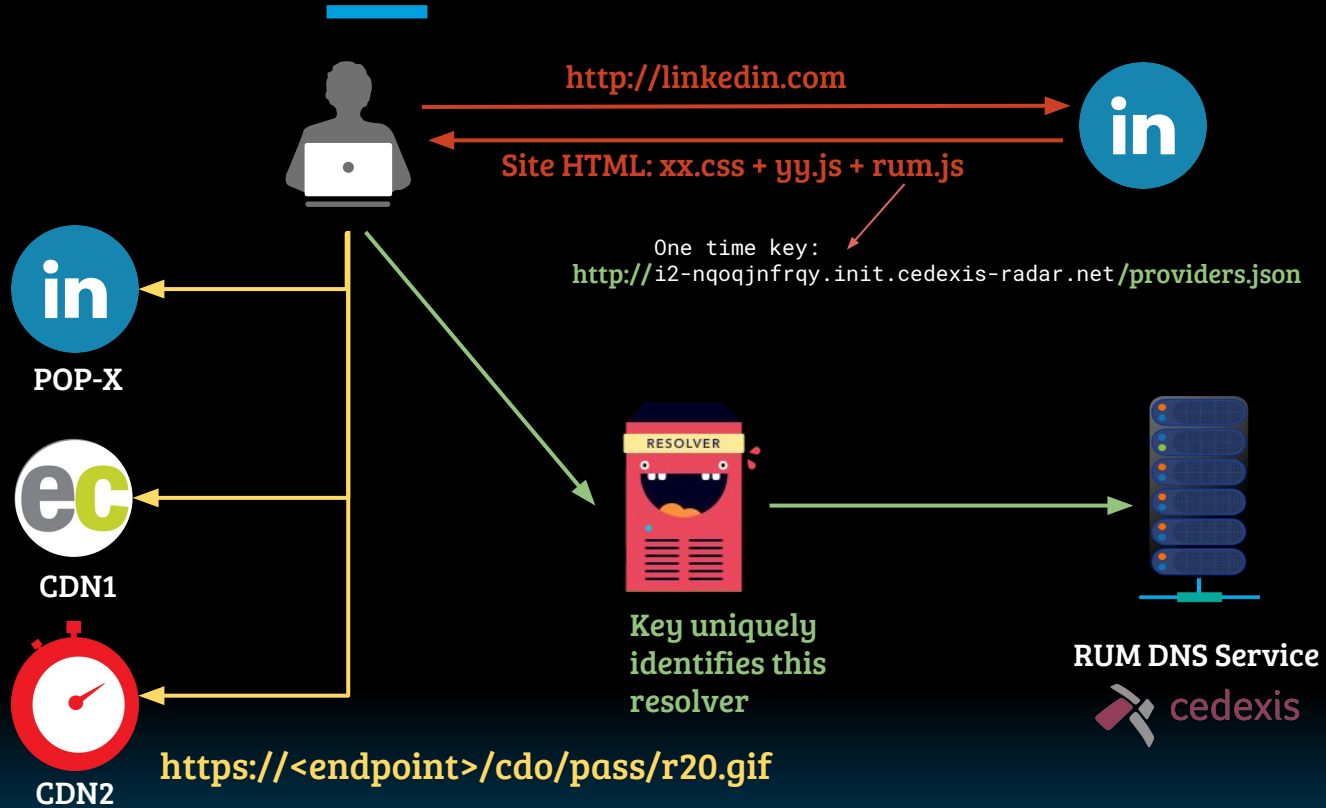
CDN2

<https://<endpoint>/cdo/pass/r20.gif>

RUM Steering

Measurement Phase

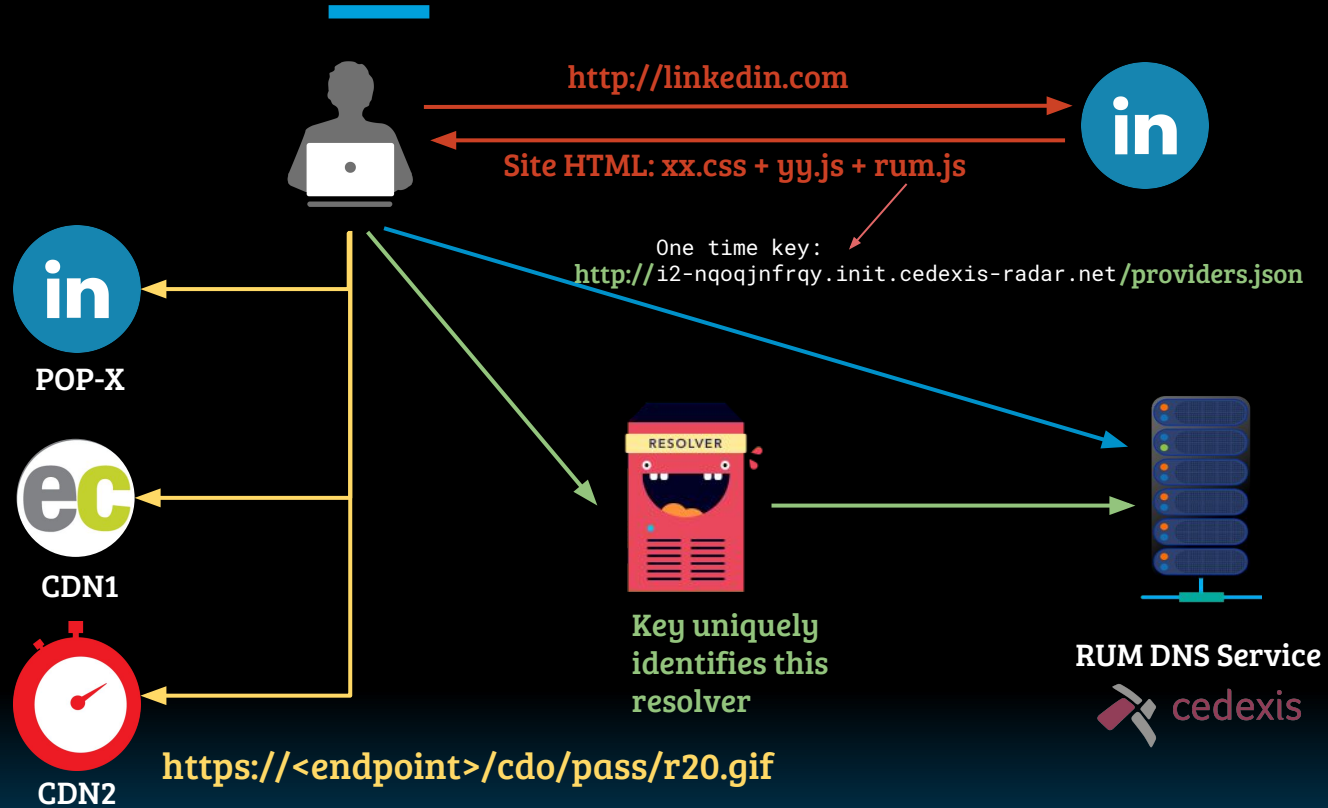
- 0. Visitor
- 1. Identify
- 2. Measure



RUM Steering

Measurement Phase

- 0. Visitor
- 1. Identify
- 2. Measure
- 3. Report



RUM Steering

Measurement Phase

0.

<http://linkedin.com>



1.

- Client's IP address

- ASN
- Geolocation

2.

- Performance data for client (reporting/aggregation)

3.

- Client's resolver IP address
 - Various clients/ASNs behind this resolver
 - Performance data for various clients behind this resolver

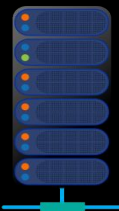
Site HTML: `xx.css + yy.js + rum.js`

One time key:

<http://i2-nqoqjnfrqy.init.cedexis-radar.net/providers.json>



Key uniquely identifies this resolver



RUM DNS Service



CDN2

<https://<endpoint>/cdo/pass/r20.gif>

RUM Steering

Measurement Phase



Name	Status	Protocol	Domain	Type	Initiator	Size
radar.html	302	http/1.1	radar.cedexis.com		c14k9d6r773pni5e61nlqxoif...	396B
radar.html?customer-id=11326	200	http/1.1	radar.cedexis.com	document	radar.cedexis.com/1/11326/...	17.3KB
providers.json?imagesok=1&n=1&p=1&r=1&t=1	200	http/1.1	i2-nqoqjnrqyqvtbmsxsrzyoya...	xhr	radar.html?customer-id=113...	1017B
0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B

RUM Steering

Measurement Phase



Name	Status	Protocol	Domain	Type	Initiator	Size
<input type="checkbox"/> radar.html	302	http/1.1	radar.cedexis.com		c14k9d6r773pni5e61nlqxoif...	396B
<input type="checkbox"/> radar.html?customer-id=11326	200	http/1.1	radar.cedexis.com	document	radar.cedexis.com/1/11326/...	17.3KB
<input type="checkbox"/> providers.json?imagesok=1&n=1&p=1&r=1&t=1	200	http/1.1	i2-nqoqjnrqyqvtbtmsxsrzyca...	xhr	radar.html?customer-id=113...	1017B
<input type="checkbox"/> 0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
<input type="checkbox"/> 0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
<input type="checkbox"/> 0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
<input type="checkbox"/> 0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
<input type="checkbox"/> 0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B

RUM Steering

Measurement Phase



Name	Status	Protocol	Domain	Type	Initiator	Size
radar.html	302	http/1.1	radar.cedexis.com		c14k9d6r773pni5e61nlqxoif...	396B
radar.html?customer-id=11326	200	http/1.1	radar.cedexis.com	document	radar.cedexis.com/1/11326/...	17.3KB
providers.json?imagesok=1&n=1&p=1&r=1&t=1	200	http/1.1	i2-nqoqjnrqyqvtbmsxsrzya...	xhr	radar.html?customer-id=113...	1017B
0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B

RUM Steering

Measurement Phase



Name	Status	Protocol	Domain	Type	Initiator	Size
<input type="checkbox"/> radar.html	302	http/1.1	radar.cedexis.com		c14k9d6r773pni5e61nlqxoif...	396B
<input type="checkbox"/> radar.html?customer-id=11326	200	http/1.1	radar.cedexis.com	document	radar.cedexis.com/1/11326/...	17.3KB
<input type="checkbox"/> providers.json?imagesok=1&n=1&p=1&r=1&t=1	200	http/1.1	i2-nqoqjnrqyqvtbmsxsrzya...	xhr	radar.html?customer-id=113...	1017B
<input type="checkbox"/> 0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
<input type="checkbox"/> 0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
<input type="checkbox"/> 0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
<input type="checkbox"/> 0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B
<input type="checkbox"/> 0	200	http/1.1	rpt.cedexis.com	xhr	radar.html?customer-id=113...	318B

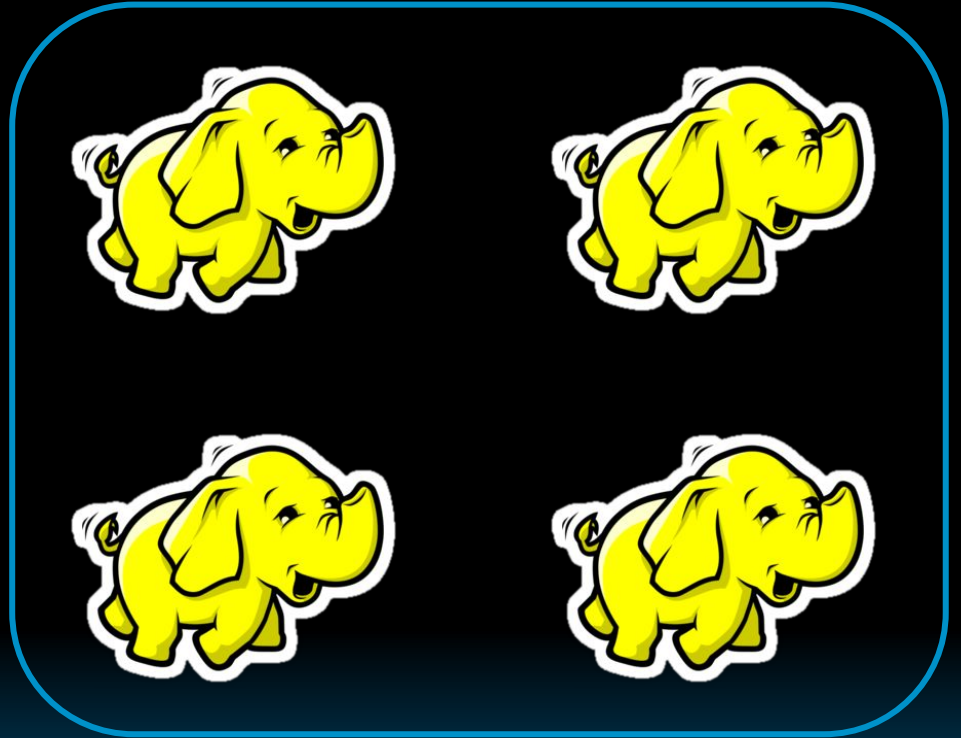
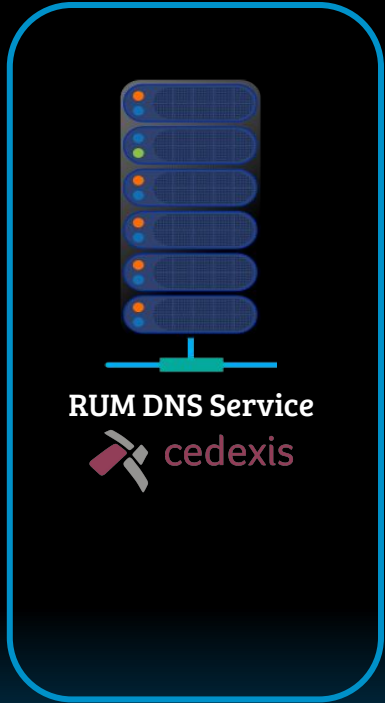
RUM Steering

Measurement Phase



RUM Steering

Measurement Phase



RUM Steering

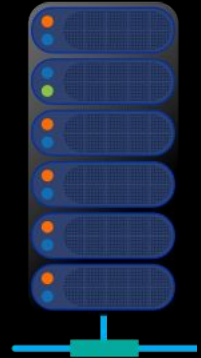
Steering Phase



RUM Steering

Steering Phase

1. DNS Request



RUM DNS Service



RUM Steering

Steering Phase

1. DNS Request



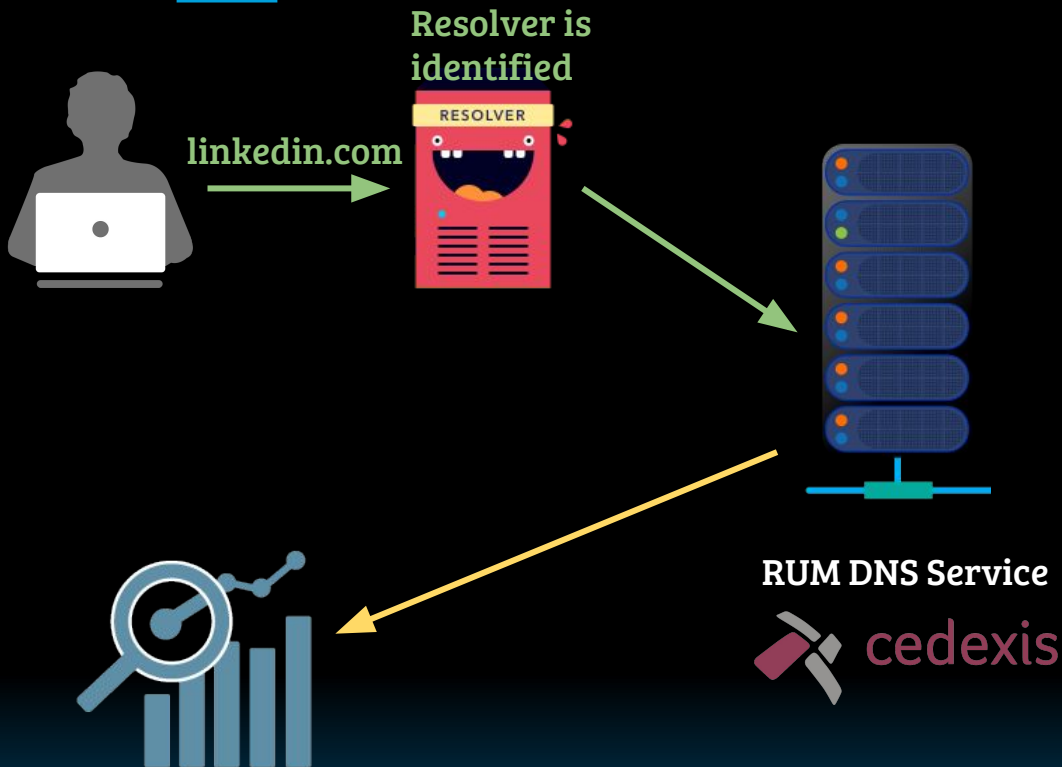
RUM DNS Service



RUM Steering

Steering Phase

1. DNS Request
2. Inspect RUM

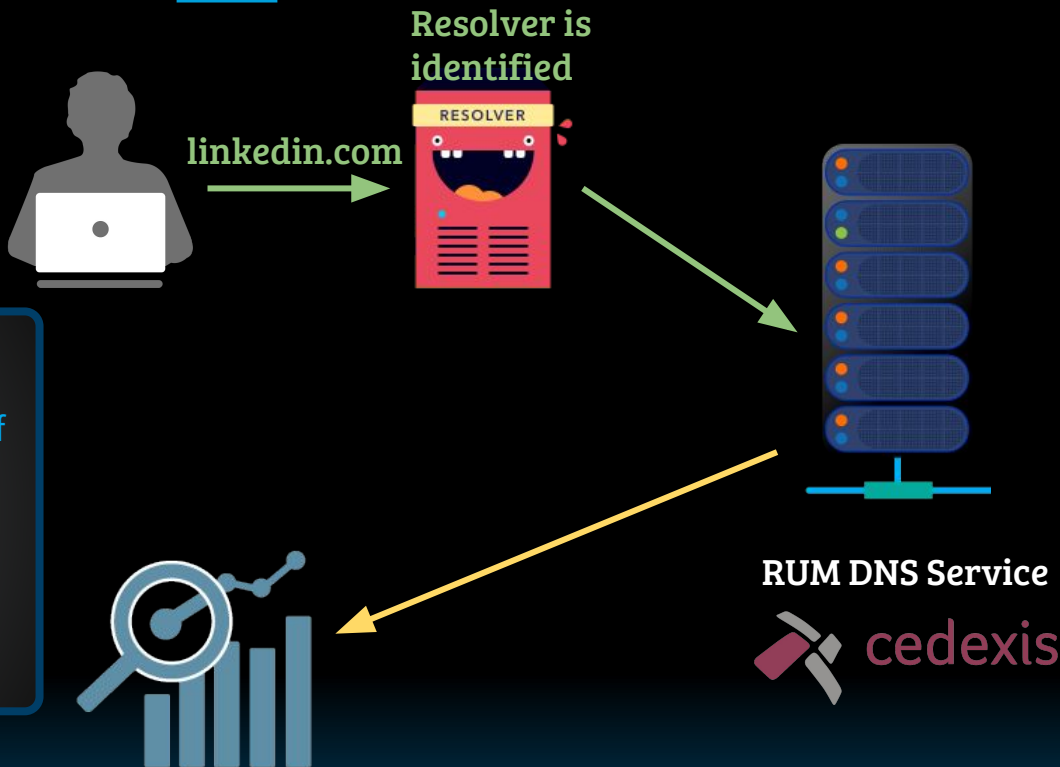


RUM Steering

Steering Phase

1. DNS Request

2. Inspect RUM

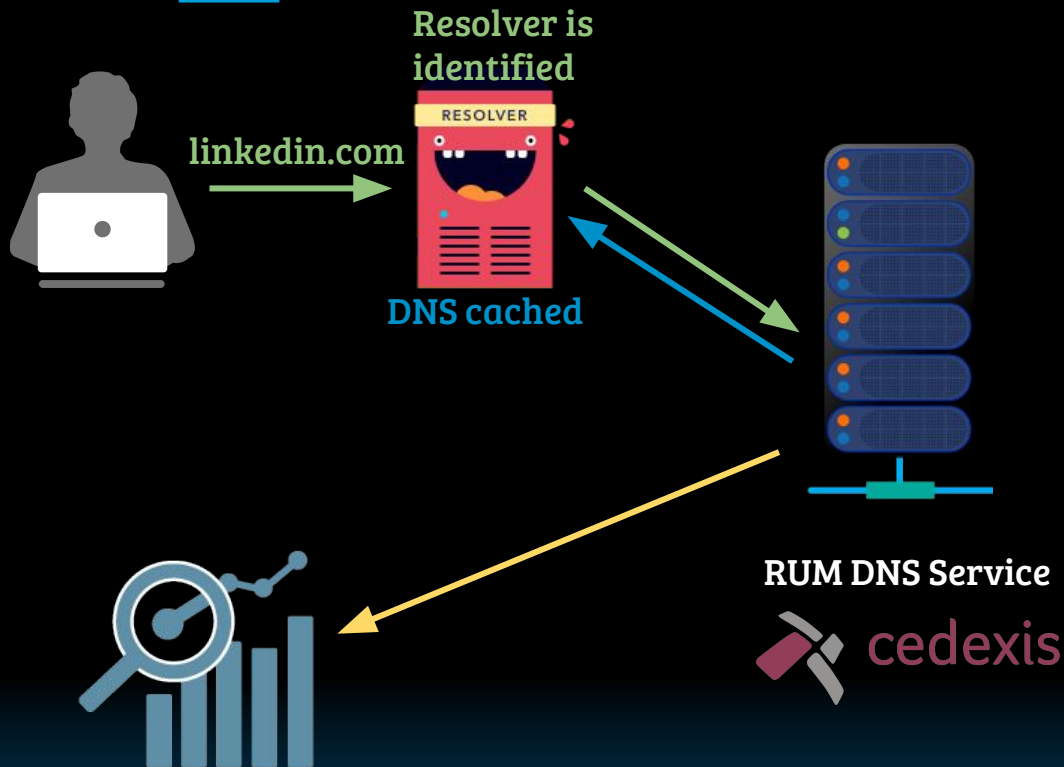


- If no ECS
 - DNS resolver IP
 - Aggregate performance data of ASNs behind that resolver
- If ECS
 - Subnet of client to return the right DNS response with high confidence score.

RUM Steering

Steering Phase

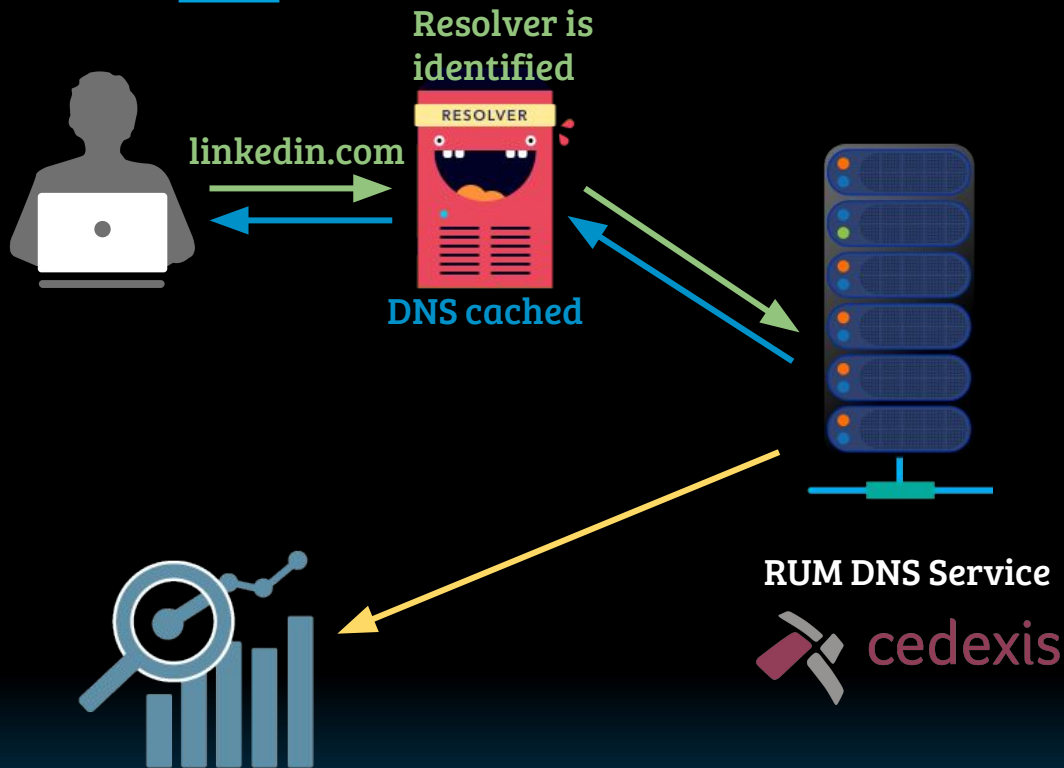
1. DNS Request
2. Inspect RUM
3. DNS Response



RUM Steering

Steering Phase

1. DNS Request
2. Inspect RUM
3. DNS Response



RUM Steering

RUM DNS at LinkedIn

```
$ dig +short +noshort static.licdn.com
```

What happens when a client resolves our LICDN domain

RUM Steering

RUM DNS at LinkedIn

```
$ dig +short +noshort static.licdn.com
```

```
static.licdn.com.          300    IN     CNAME  2-01-2c3e-003d.cdx.cedexis.net.
```

Cedexis owned CNAME belonging to our account

RUM Steering

RUM DNS at LinkedIn

```
$ dig +short +noauthoritative static.licdn.com
static.licdn.com.          300    IN     CNAME  2-01-2c3e-003d.cdx.cedexis.net.
2-01-2c3e-003d.cdx.cedexis.net. 300    IN     CNAME  cs627.wac.epsiloncdn.net.
```

Cedexis looks at RUM measurements and hands out the best from our CDNs

RUM Steering

RUM DNS at LinkedIn

```
$ dig +short +noshort static.licdn.com
```

```
static.licdn.com.          300  IN  CNAME  2-01-2c3e-003d.cdx.cedexis.net.  
2-01-2c3e-003d.cdx.cedexis.net. 300  IN  CNAME  cs627.wac.epsiloncdn.net.
```

Low TTL so that clients pick up response changes faster

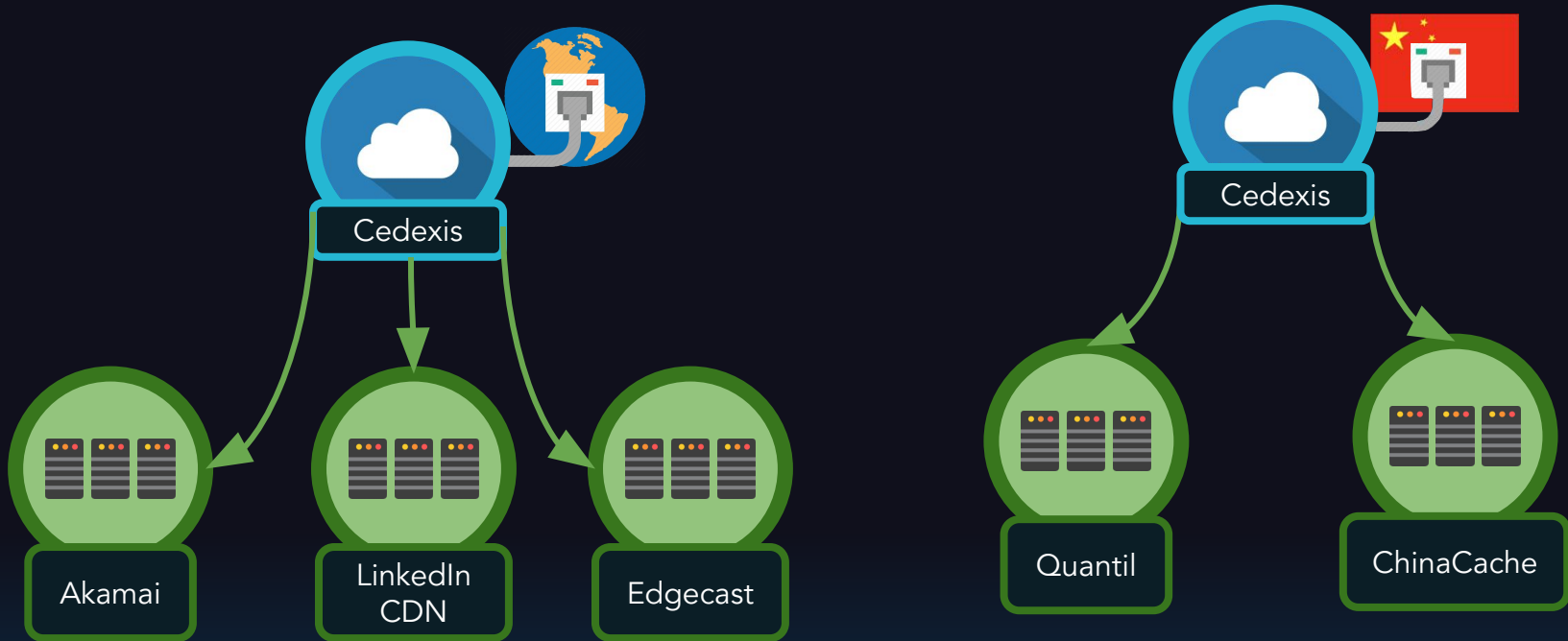
RUM Steering

RUM DNS at LinkedIn

```
$ dig +short +noshort static.licdn.com
static.licdn.com.          300  IN  CNAME  2-01-2c3e-003d.cdx.cedexis.net.
2-01-2c3e-003d.cdx.cedexis.net. 300  IN  CNAME  cs627.wac.epsiloncdn.net.
cs627.wac.epsiloncdn.net. 3600 IN  A      192.229.237.53
$
```

CDN owned CNAME then resolves to an IP

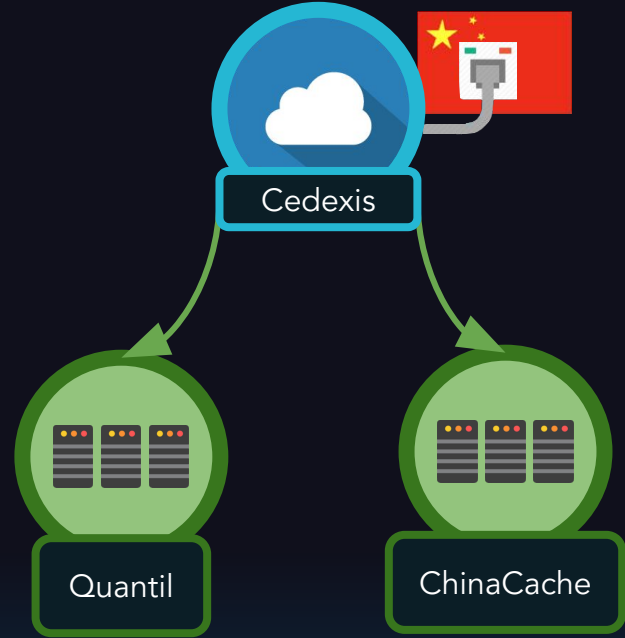
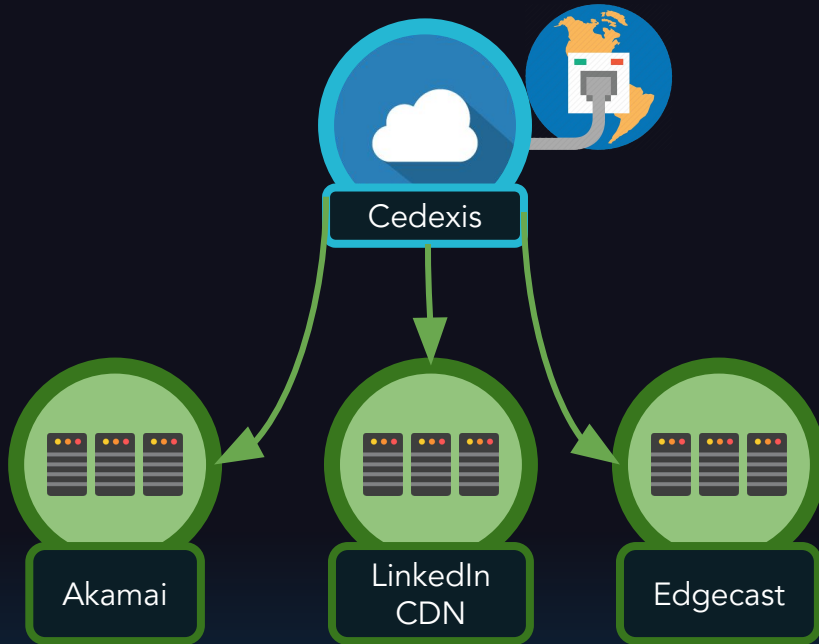
CDN RUM Steering



CDN RUM Steering

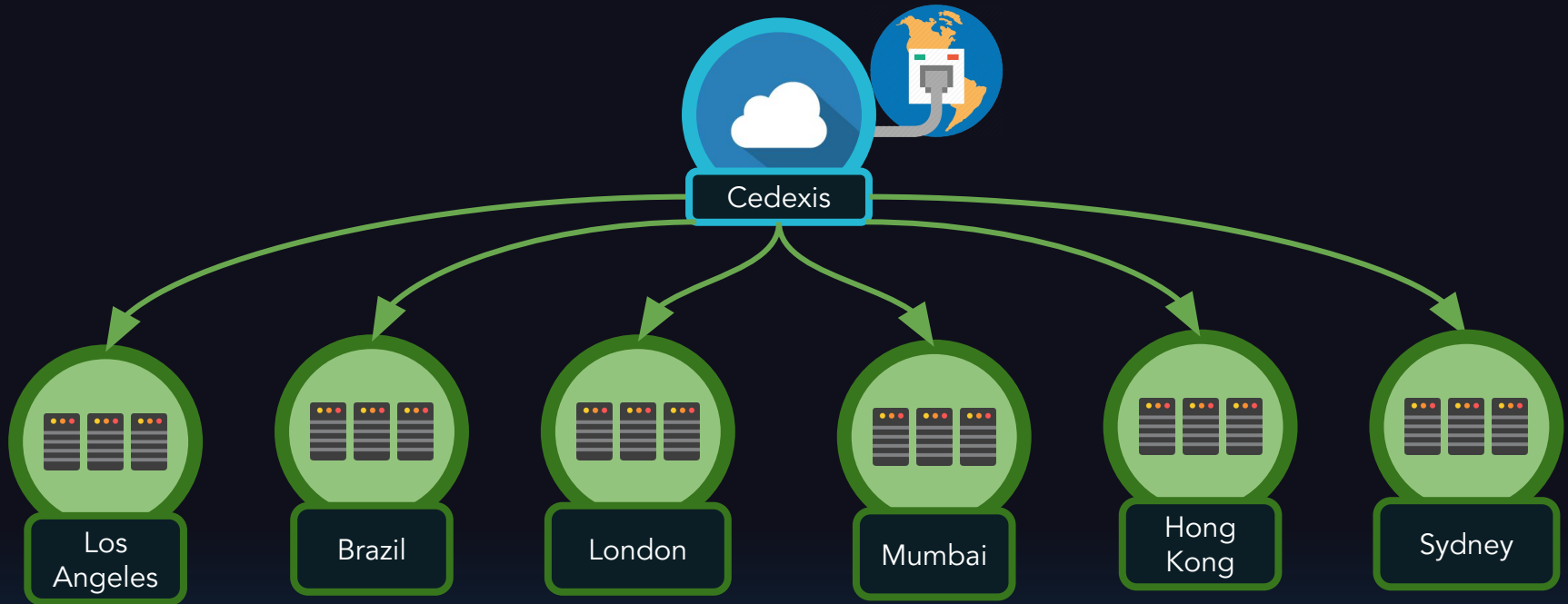
static.licdn.com. 300 IN CNAME 2-01-2c3e-003d.cdx.cedexis.net

static.licdn.com. 300 IN CNAME 2-01-2c3e-0040.cdx.cdxcn.cn



POP RUM Steering

www.linkedin.com. 300 IN CNAME 2-01-2c3e-003c.cdx.cedexis.net



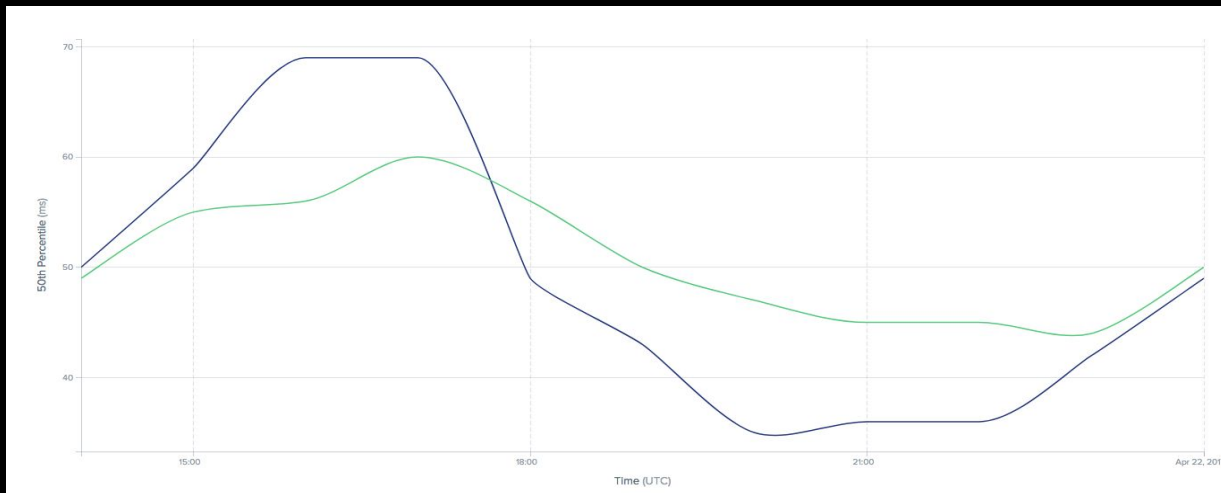
RUM Steering

Benefits of RUM DNS



RUM Steering

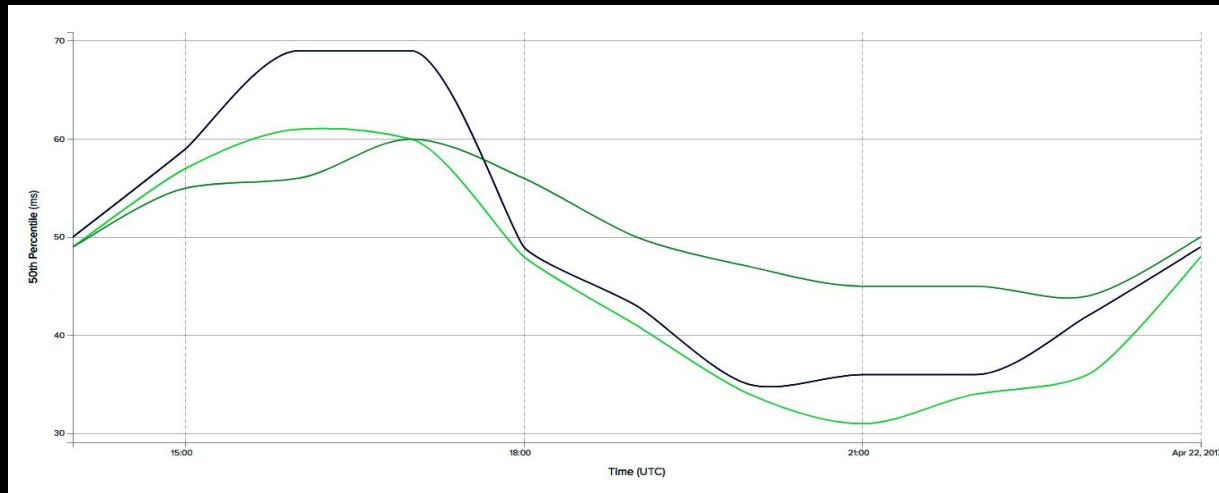
Benefits of RUM DNS



Two CDNs having opposite performance throughout the day

RUM Steering

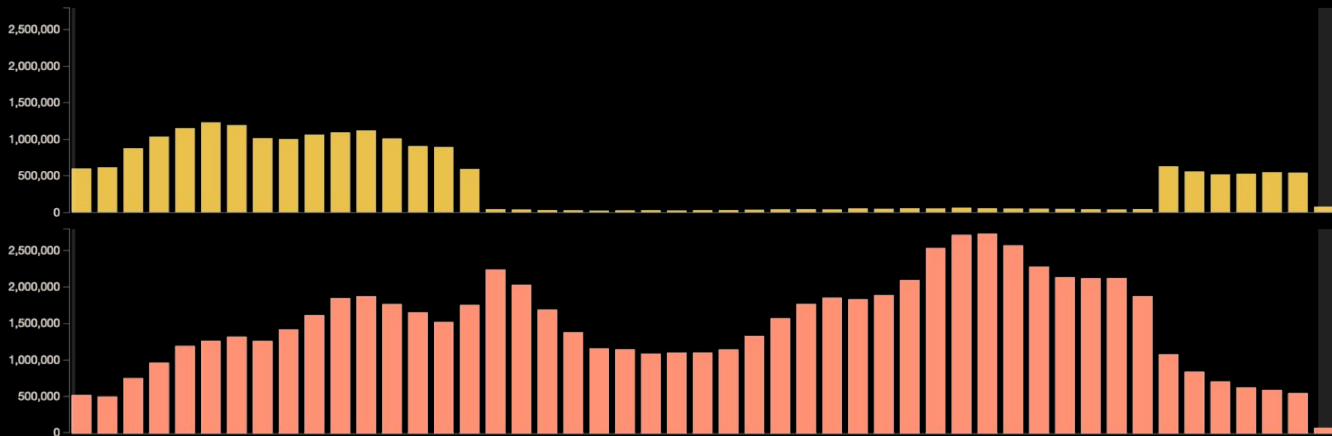
Benefits of RUM DNS



**RUM DNS always picks
the best of the two CDNs**

RUM Steering

Benefits of RUM DNS



**RUM DNS failing out
a CDN automatically
and shifting to
others**

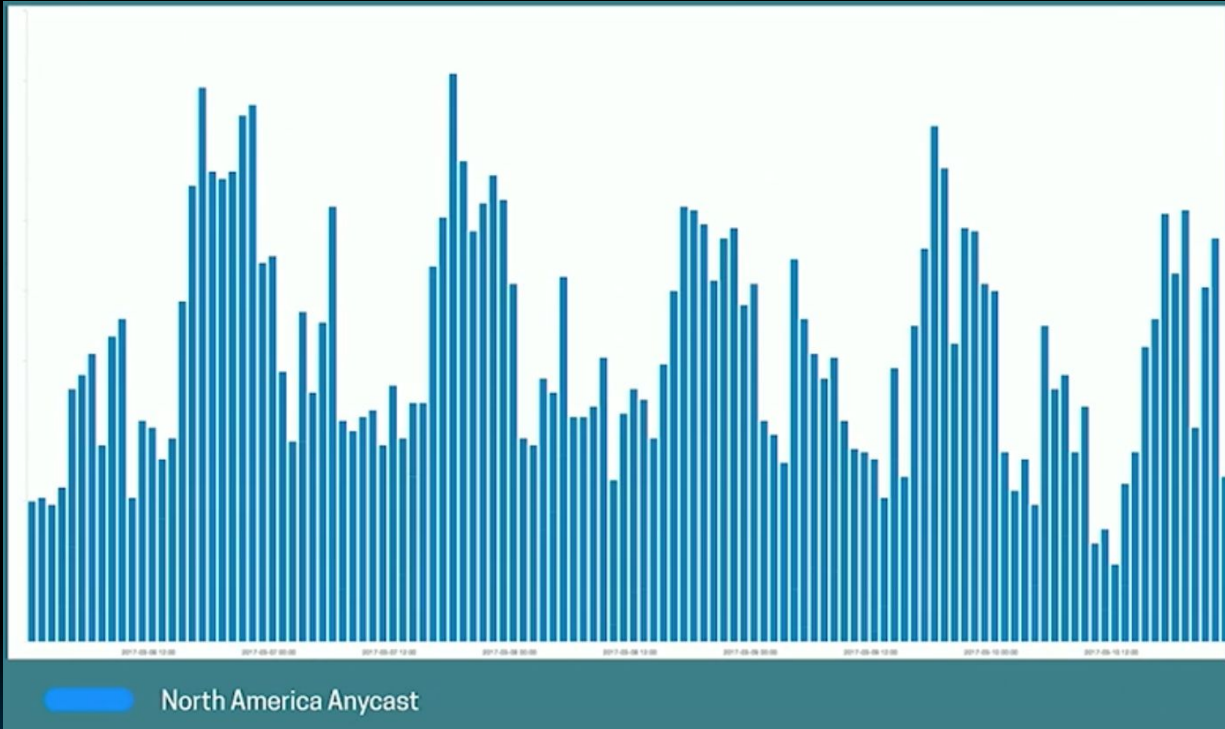
RUM Steering

RUM DNS vs GeoDNS



RUM Steering

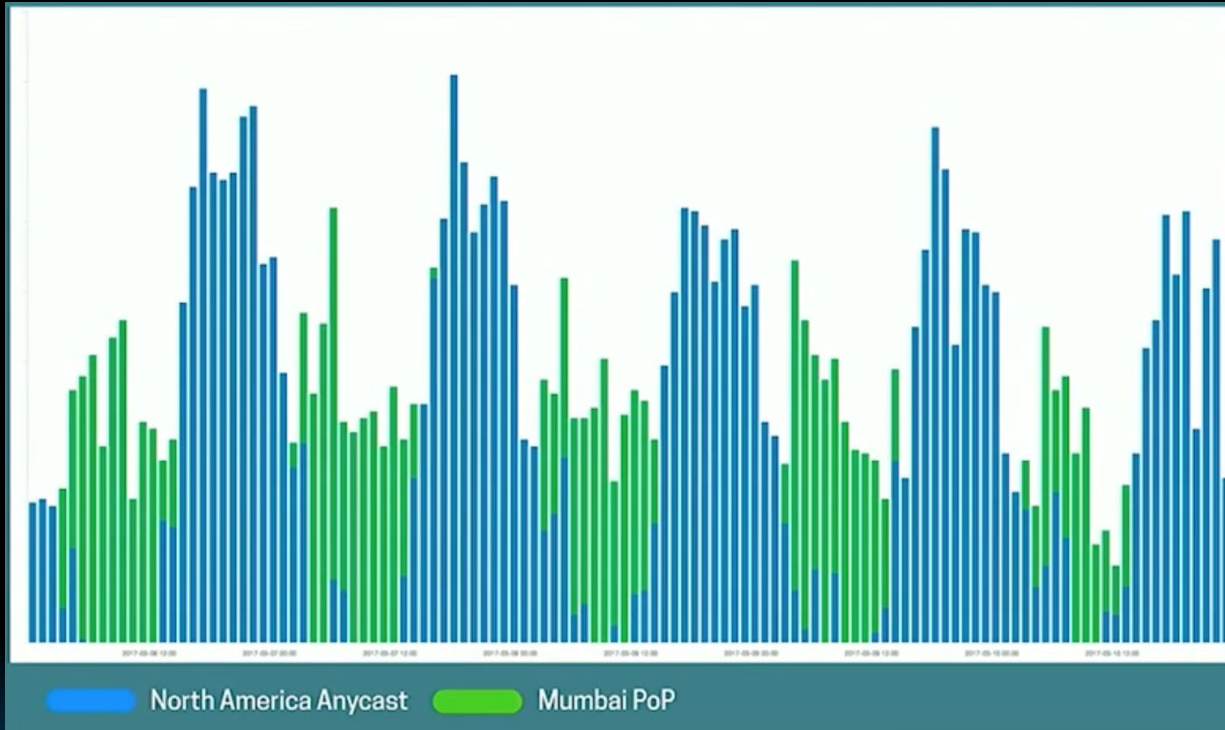
RUM DNS vs GeoDNS (DNS Resolver in US)



DNS Resolver of a large chip manufacturing company.

RUM Steering

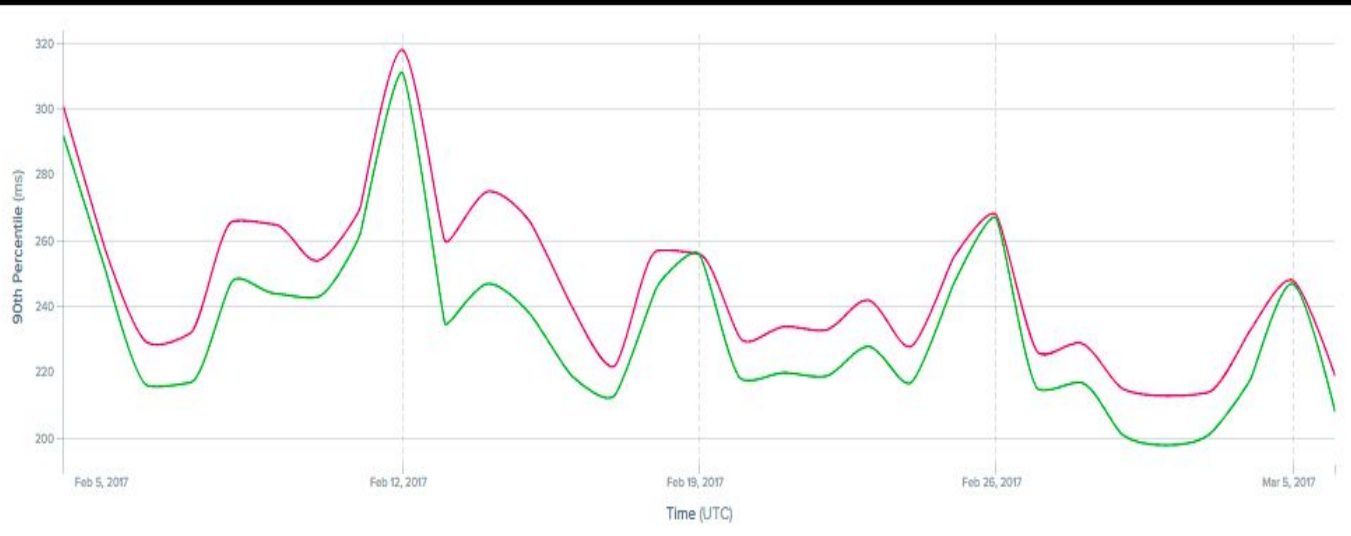
RUM DNS vs GeoDNS (DNS Resolver in US)



RUM Steering correctly to specific PoPs at different times.

RUM Steering

RUM DNS vs GeoDNS (India)



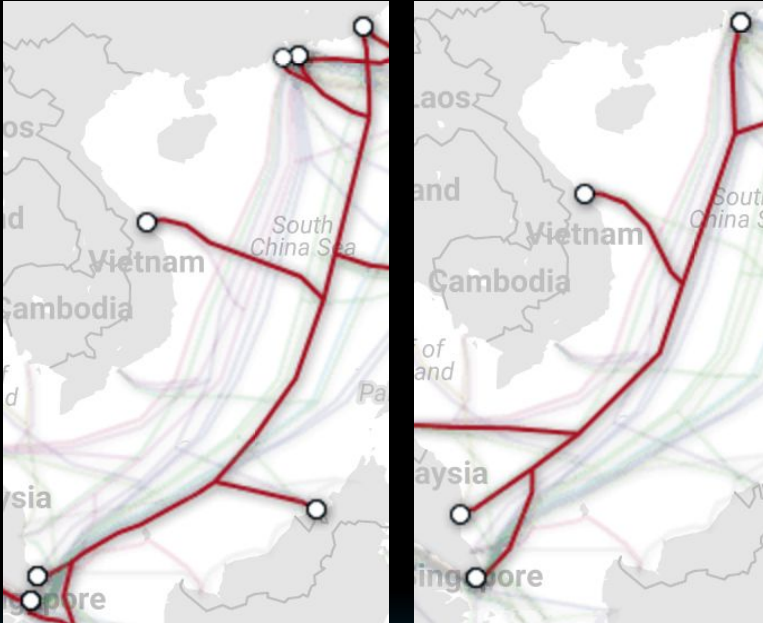
**RUM DNS
circumvents GeoIP
inaccuracies in
India**

GeoDNS

RUM DNS

RUM Steering

RUM DNS vs GeoDNS (Vietnam)




Vietnam equidistant
from **Hong Kong** and
Singapore


RUM Steering

RUM DNS vs GeoDNS (Vietnam)



**Vietnam correctly routed
to a blend of POPs**

 Singapore POP

 Hong Kong POP

RUM Steering

RUM DNS vs GeoDNS (Vietnam)



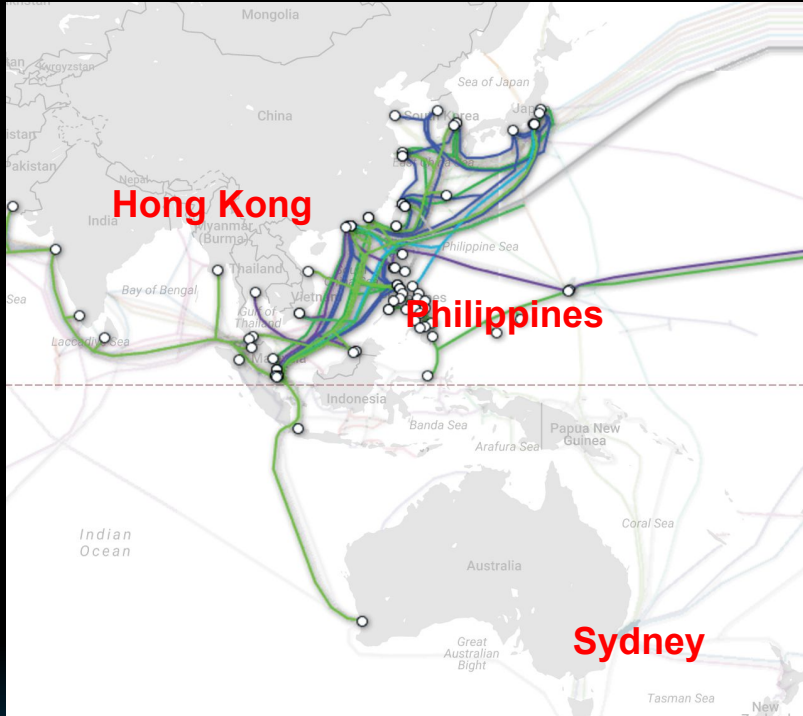
Viettel sees 50% latency improvement

 RUM DNS

 GeoDNS

RUM Steering

RUM DNS vs GeoDNS (Philippines)



Philippines closer to Hong Kong than Sydney.

RUM Steering

RUM DNS vs GeoDNS (Philippines)



Philippines Globe Telecom routed to the correct POP

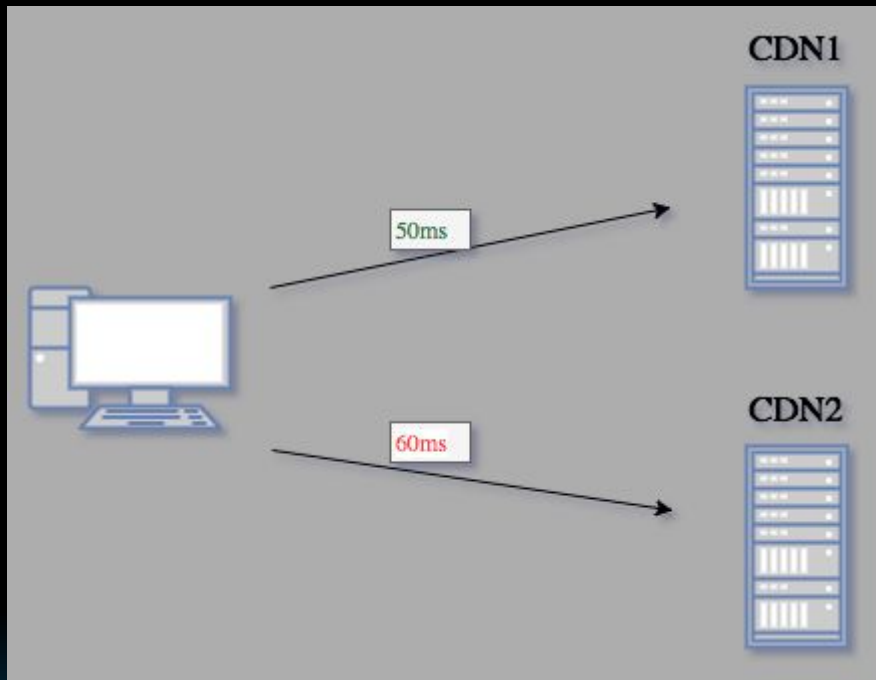
GeoDNS Hong Kong POP RUM DNS Sydney POP

RUM Steering

Closing thoughts: FLAWS



Cache hit ratio



RUM Steering

Closing thoughts: FLAWS

WORKAROUNDS

Cache hit ratio

CDN stickiness



RUM Steering

Closing thoughts: FLAWS

WORKAROUNDS

Cache hit ratio

CDN stickiness

Cache miss latency



RUM Steering

Closing thoughts: FLAWS

WORKAROUNDS

Cache hit ratio

CDN stickiness

Cache miss latency

Measure miss latency with 2nd object



RUM Steering

Closing thoughts: FLAWS

WORKAROUNDS

Cache hit ratio

CDN stickiness

Cache miss latency

Measure miss latency with 2nd object

POP load shedding



RUM Steering

Closing thoughts

WORKAROUNDS



Cache hit ratio

CDN stickiness

Cache miss latency

Measure miss latency with 2nd object

POP load shedding

Latency padding

Agenda



CDN strategy



POP Strategy



RUM Steering



Tooling

DNS Tool

in DNS Tool Home History Admin Advanced Search Samir Jafferli

Zone: Records Total: 125 New Record Review Changes

Record	TTL	Type	Value	Locked
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/> all
test-me-now-11111-555555.licdn-beta.com.	86400	A	7.7.7.7	Delete dn
test-one-last-time-said-the-person-yup.licdn-beta.com.	86400	A	4.4.4.4	Delete dn
test-right-now-yes-sir-reee.licdn-beta.com.	86400	A	33.3.3.3	Delete dn
test-something-now-1111-3444-22222.licdn-beta.com.	86400	A	9.9.9.9	Delete dn
test-test-test-0001.licdn-beta.com.	86400	A	3.3.3.3	Delete dn
test-test-test-121323123-test-11111.licdn-beta.com.	86400	A	3.3.3.3	Delete dn
test.cname.licdn-beta.com.	86400	CNAME	proddkim1024_domainkey.linkedin.com.	Locked dn
test.licdn-beta.com.	86400	TXT	222	Delete dn
test.licdn-beta.com.	86400	TXT	updated one more test	Delete dn
test001.licdn-beta.com.	86400	TXT	test003	Delete dn

- Single interface
- Auditing and logging
- Search records across zones
- Exposes API

CDN Regression tool

```
$ python regressor.py --cdn fstl --property static --protocol https
--TEST-- Certificate Validation Regression Suite
  [PASS] - Both hostnames listed in deployed cert: (static.licdn.com,
--TEST-- sc Regression Suite
  [PASS] - Verify Caching enabled: True
  [PASS] - Custom header X-CDN: FSTL matches expected values
  [PASS] - Cache-Key includes query-string, expected True
  [PASS] - Cache-key is case sensitive, assert True
  [PASS] - Cache-Key spans hostnames, assert True
  [PASS] - Compression Check: requested identity, received identity
  [PASS] - Compression Check: requested gzip, received gzip
  [PASS] - Compression Check: requested gzip,deflate, received gzip
  [PASS] - Compression Check: requested deflate, received identity
  [PASS] - Access-Control-Allow-Origin: * matched expected
  [PASS] - Context specific header Timing-Allow-Origin: * matches expe
  [PASS] - Context specific header Access-Control-Expose-Headers: X-CD
  [PASS] - Edge Cache-Control honors Origin Cache-Control, asserted Tr
  [PASS] - If-Modified-Since after Last-Modified, asserted True
  [PASS] - If-Modified-Since equals Last-Modified, asserted True
  [PASS] - If-Modified-Since before Last-Modified, asserted True
```

- SSL certificate
- Caching headers
- Compression
- honors origin cache headers

Purge Tool

Purge Request

Enter/Paste the Urls

(or)

Upload File

No file chosen

What would you like to do? Purge Invalidate

Choose the platforms to purge from:

Akamai Chinacache Quantil Fastly Edgecast Media Cache Ambry

Show 10 entries

Search:

Id	urls	Status	Submitted Time(PDT)
76	/mpr/mpr/shrinknp_400_400/p/3/005/00c/168/3106dbf.jpg	QUEUED	2017-04-20 06:51:21

Task Type: purge

Environment: prod_secure

property: media

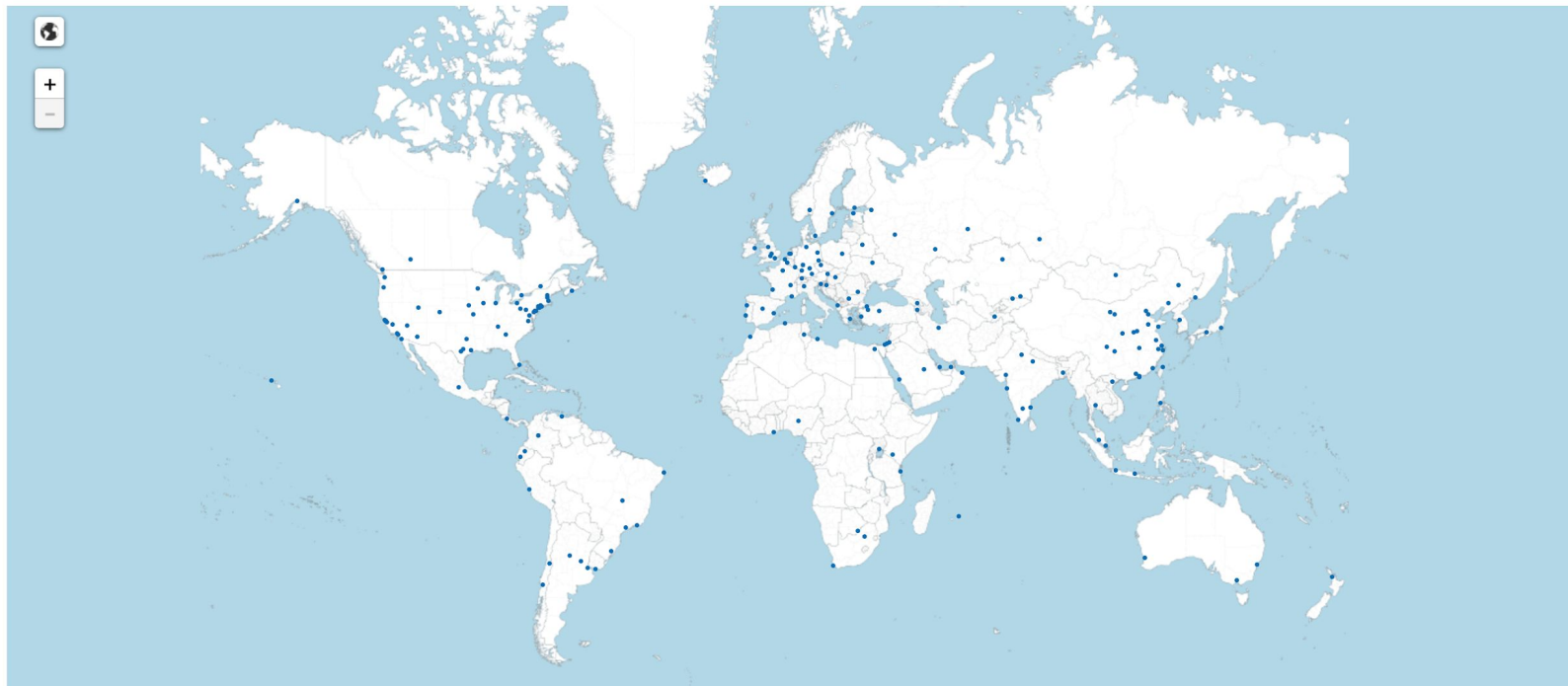
url	ambry	qtil	ccih	fstl	mediacache	akam	cdn	ecst
/mpr/mpr/shri...	N/A	N/A	N/A	QUEUED	N/A	QUEUED	N/A	QUEUED

- Self service
- Purge status tracking
- 5 minute SLA for site-wide purge



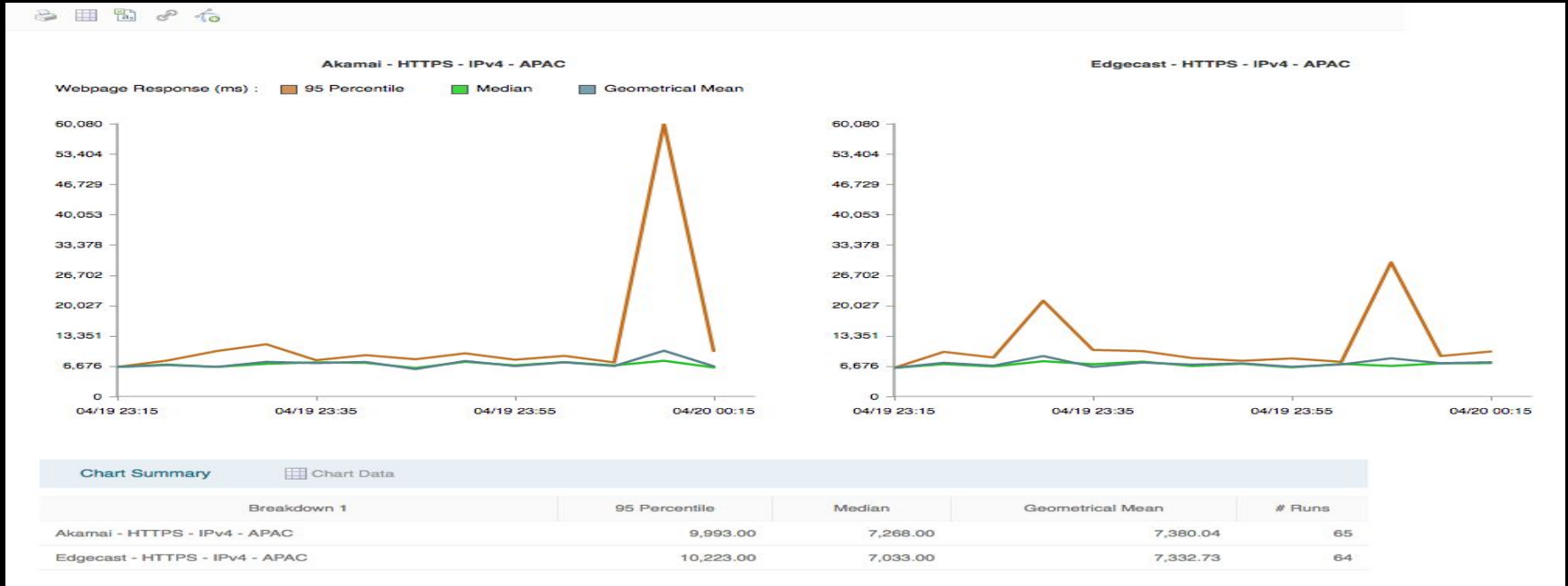
Synthetic Monitoring | Catchpoint @ LinkedIn

Node Information

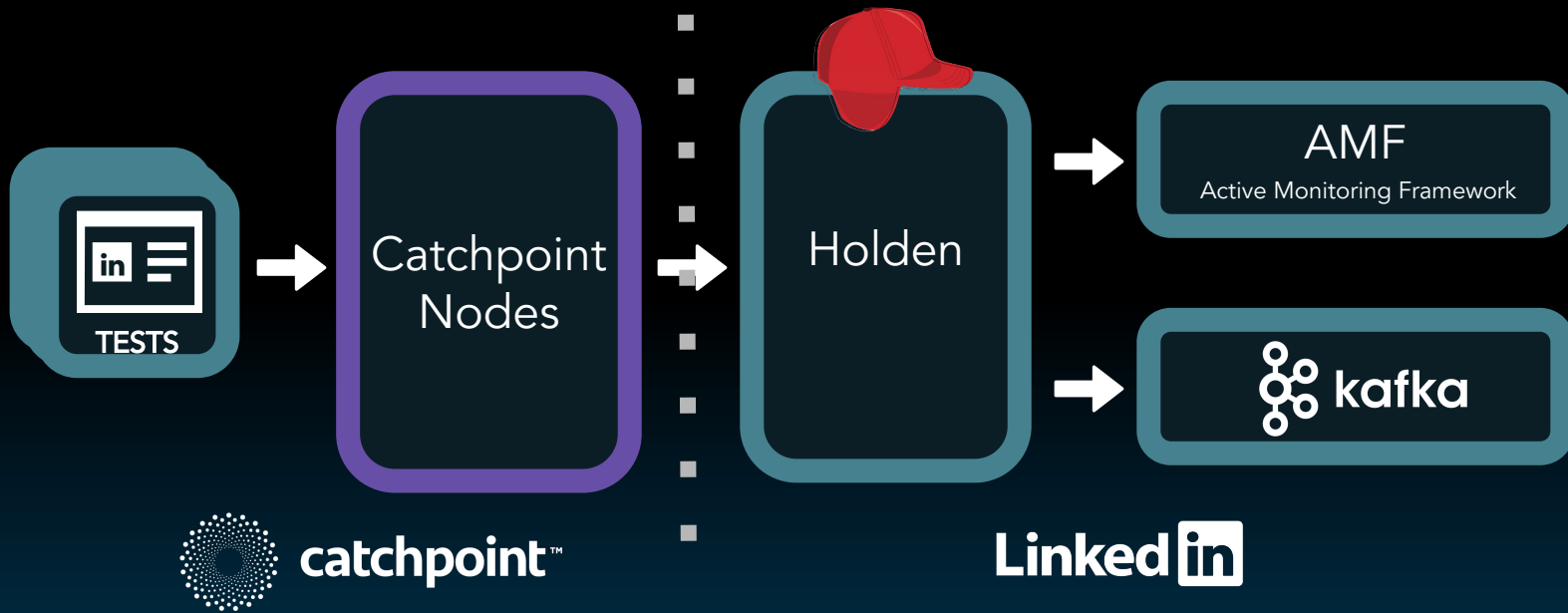


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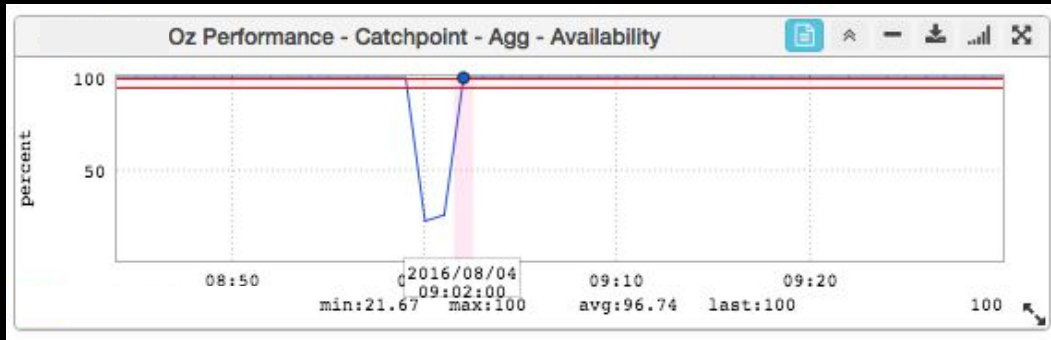
Synthetic Monitoring Akamai vs Edgecast



Catchpoint LinkedIn



Synthetic Monitoring Holden - CDN Availability



- Catchpoint Push API scales better
- Reduced time to detect issues
- Reduced time to recover from issues

Closing thoughts

Closing thoughts

- Build even more POPs

Closing thoughts

- Build even more POPs
- Don't depend on one provider

Closing thoughts

- Build even more POPs
- Don't depend on one provider
- Regionalize & reevaluate your vendors

Closing thoughts

- Build even more POPs
- Don't depend on one provider
- Regionalize & reevaluate your vendors
- Clients are your measurement agents

Closing thoughts

- Build even more POPs
- Don't depend on one provider
- Regionalize & reevaluate your vendors
- Clients are your measurement agents
- Don't stop your analysis

Closing thoughts

- Build even more POPs
- Don't depend on one provider
- Regionalize & reevaluate your vendors
- Clients are your measurement agents
- Don't stop your analysis
- Automate when you onboard itself

ANY
QUESTIONS
?