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Velocity

Web Performance
and Operations

CHINA

 Beijing, China

 Dec 4–5, 2012

velocity.oreilly.com.cn

Life on the Edge with ESI

Kit Chan (kichan@yahoo-inc.com)

Custom Branded Experiences

Yahoo!

World Cup Penalty Shootout

World Cup 2010 | South Af... x

http://g.sports.yahoo.com/soccer/world-cup/penalty-shootout?yu=1

Hi, Shu Kit | Sign Out | Help

Make Y! My Homepage

Yahoo! Mail My

YAHOO! SPORTS

COVERAGE OF THE 2010 WORLD CUP SOUTH AFRICA

Home NFL MLB NBA NHL NCAAF NCAAB NASCAR Golf UFC Boxing World Cup Tennis Action Sports More Shop Fantasy

Coverage Home Matches & Schedule Teams News Blog Photos Video Mobile Fantasy Shop Play to Win

Share this Page

0 13 0

Click to place your kick.
A more complete circle is better.

Striker Shu Kit C. 2825 VS Rivaldino Y. 11907100 Goalie

Forfeit Game

What is Penalty Shootout? [Official Rules »](#)

Yahoo! Penalty Shootout is a free online game which lets you challenge friends and fans from around the world in a virtual penalty shootout. The top 2 point leaders at the end of the online

Play World Soccer 2010
Pick the winning World Cup teams. Compete amongst friends or join a group.

YAHOO! FANTASY SPORTS 2010 more »

Time remaining to play Penalty Shootout

014 | 08 : 45 : 01
DAYS HOURS MINS SECS

Royal Wedding

BRIDESMAIDS

MAY 13

The Royal Wedding

Sponsored by
BRIDESMAIDS
SAVE THE DATE
MAY 13, 2011



John Stillwell/Associated Press

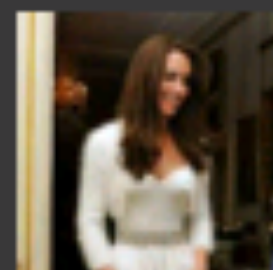
Video recap: the royal wedding of Will & Kate

Watch the best moments of Prince William's fairytale wedding to Kate Middleton from her dress reveal to their balcony kiss. [Watch the best bits »](#)



Experts love the dress

Fashion experts weigh in on what they thought of Kate Middleton's dress. [Dazzling gown »](#)



Royal dress, take two

Kate's wears a second white frock -- and it's also Alexander McQueen! [See the second look »](#)

You're Invited

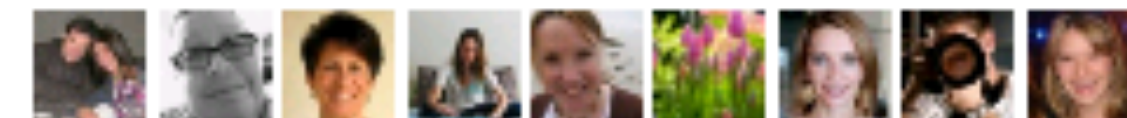
The big day has arrived!

[SIGN THE GUESTBOOK](#)

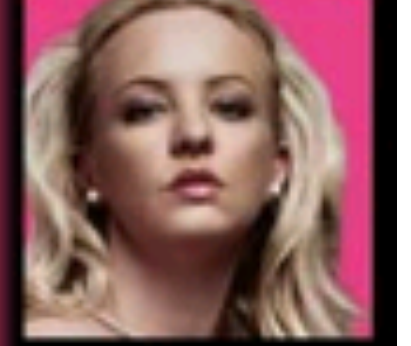
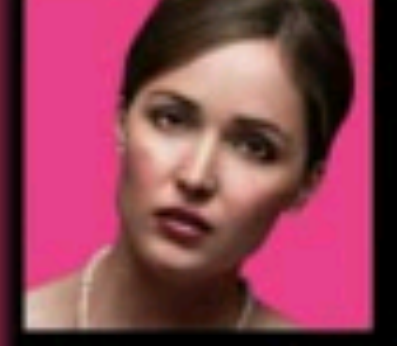
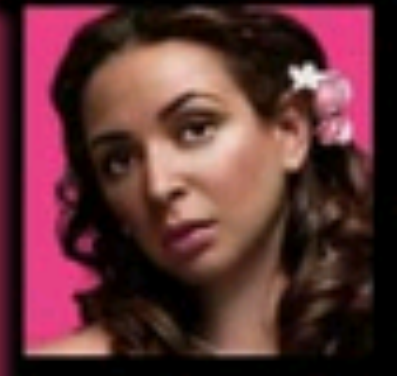
[Watch the wedding replay](#)

✓ Like

f Sam Silverstein, Glen Campbell and 365,323 others like this.



Ad Choices



[more editor's picks](#)

Cybergeddon

32K

2K

DOWNLOAD THE FREE
CYBERGEDDON GAME

ANTHONY E. ZUIKER'S

CYBERGEDDON

▶ CHAPTER 1

▶ TRAILER

THERE IS NO

ESC

HOME

CHAPTERS

CHARACTERS

PHOTOS

ALL ACCESS

COMMUNITY

NORTON

▼

▼

▼

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▼

Life on the Edge



Source: <http://img.shockblast.net/2012/01/ShockBlast-4-803109.jpg>

Agenda

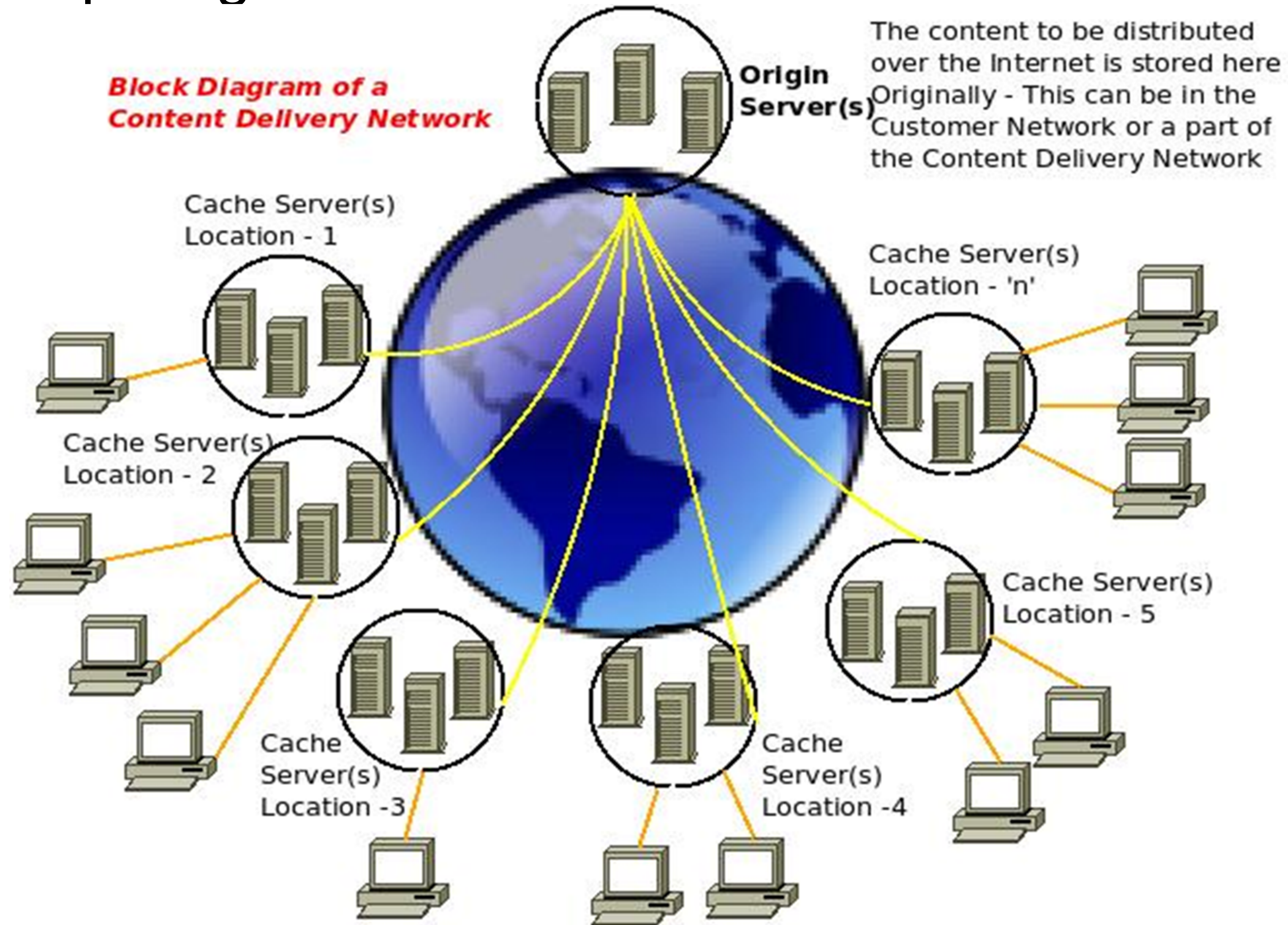
- Introduction
- Use Cases
- Performance Characteristics
- Future
- Q&A

Agenda

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Edge Computing/CDN

Source: <http://www.excitingip.com/wp-content/uploads/2011/01/contentdeliverynetworkblockdiagram.jpeg>



Edge Computing in Yahoo!

User Location	Latency - 100K file in US	Through Y! Edge
California, USA	0.2s	0.02s
Singapore	2s	0.02s
Korea	1.3s	0.02s
Ireland	1.2s	0.2s
Switzerland	1.0s	0.2s

- Pages: avg 120K req/s, 16% cache ratio
- Assets: avg 20Gb/s, 95% cache ratio

Edge Computing in Yahoo!

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ESI can help!

ESI Support in Proxy Server – Proven & Popular

traffic●●●server™



ESI Support in Proxy Software – New or Unproven



ESI Support in CDN Vendor



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Use Case 1 - Content Assembly

- Markup in Response

<esi:include src=<http://xyz.com/content.html>>

Content Assembly – Error Handling

- Can handle response error and timeout

```
<esi:try><esi:attempt>
```

```
  <esi:include src=http://xyz.com/content.html/>
```

```
</esi:attempt><esi:except>
```

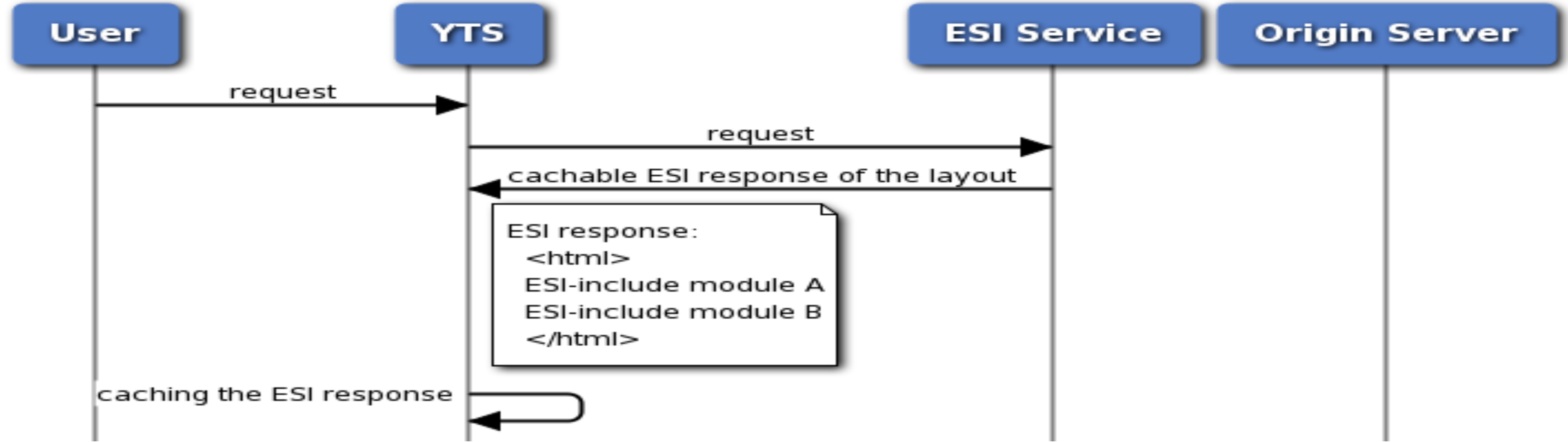
```
  Sorry there is an error!
```

```
</esi:except></esi:try>
```

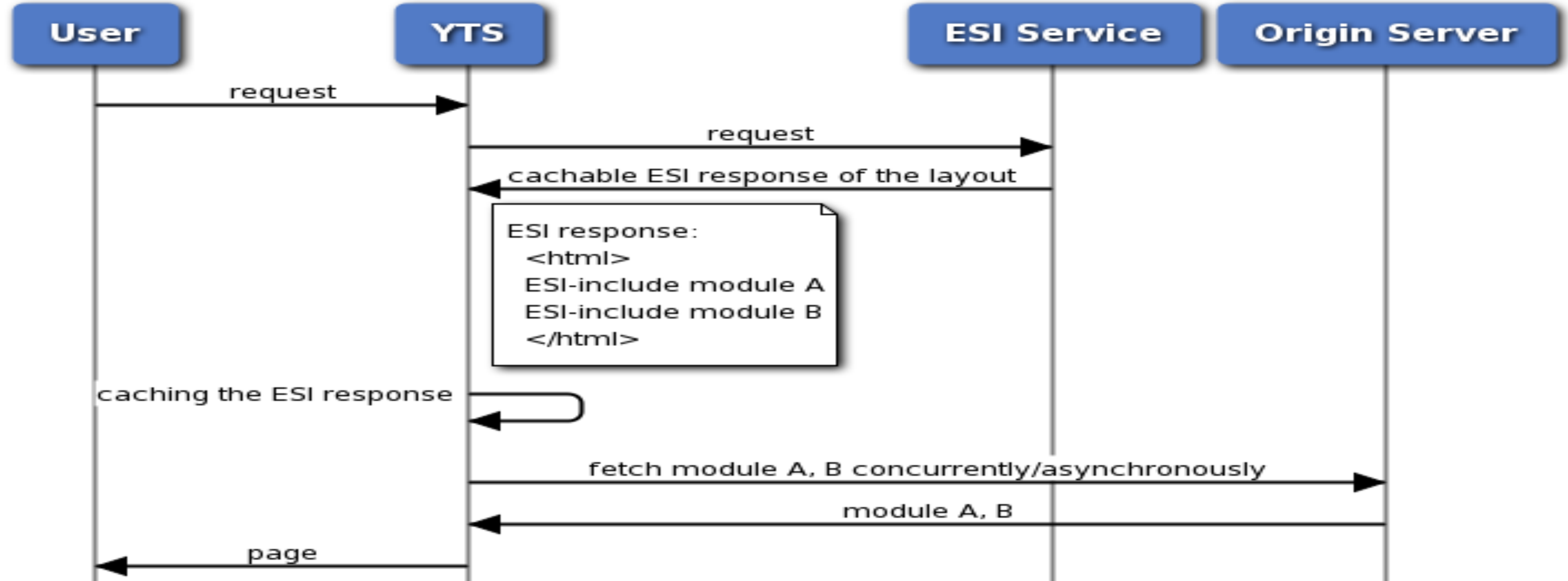

Content Assembly



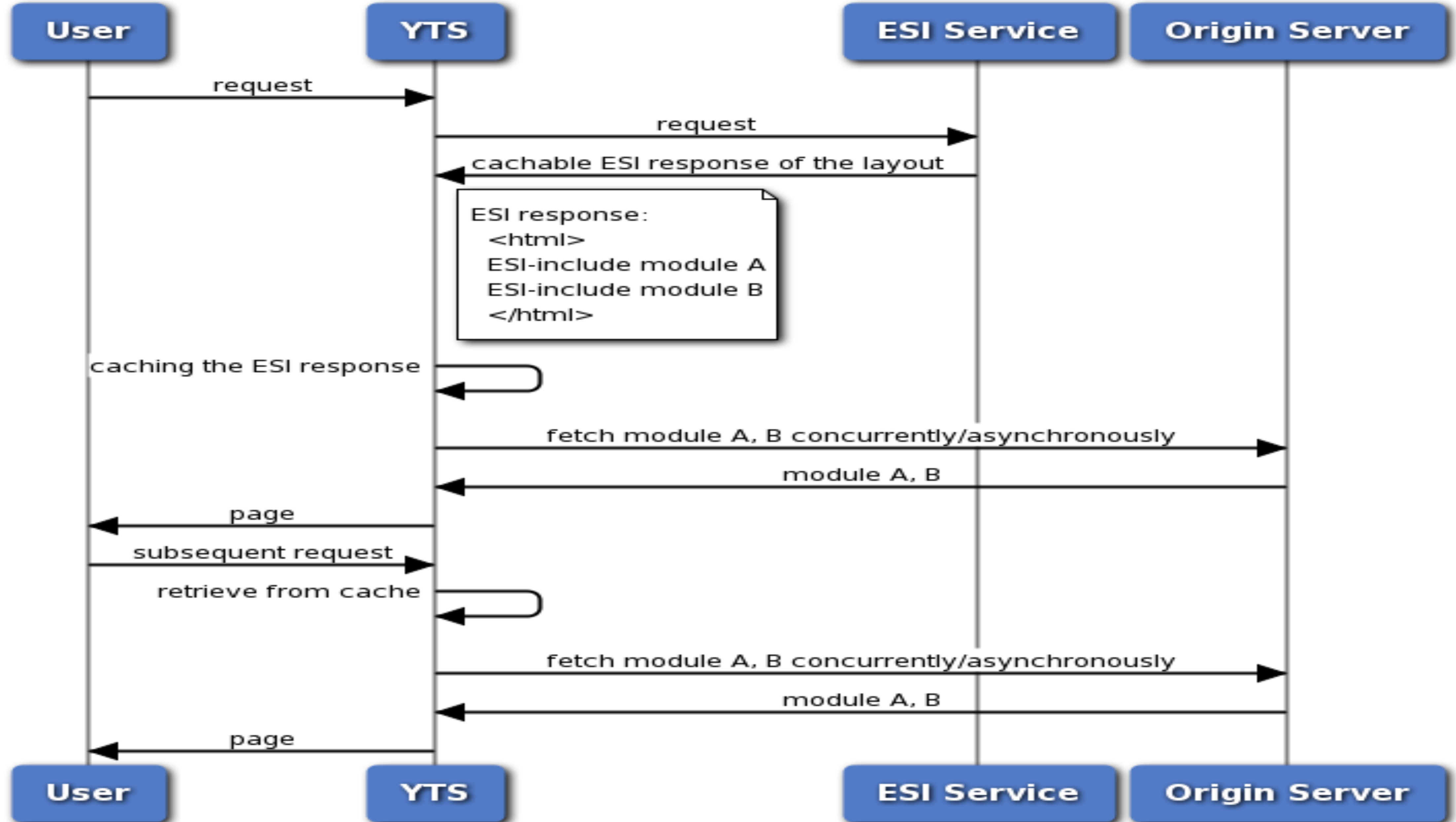
Content Assembly



Content Assembly



Content Assembly



Why? Performance!

	No server cache + No ESI	Server cache + No ESI	YTS Cache + ESI modules
<i>Scenario</i>	Origin Server Handling Full Page requests each time and executing every module every time.	Origin Server handling full page requests, only executing non cacheable modules	Origin Server only serving requests for non cacheable modules
<i>FE throughput per box</i>	45 queries per second	140 queries per second	190 queries per second
<i>Server latency</i>	900 ms per request	80 ms per page	55 ms per page

More on Availability

- Why it goes down?
 - Releases
 - Outage
- How ESI Help?
 - Template cached
 - Fallback for each ESI module



Why? Legacy Module Support

The screenshot shows the Yahoo! Screen interface for the movie 'Tom Hanks' Electric City'. A red circle highlights the top navigation bar, which includes the user greeting 'Hi, Shu Kit', links for 'Sign Out' and 'Help', the 'Make Y! My Homepage' option, a notification bell, a mail icon with a '4' badge, and links for 'My Y!' and 'Yahoo!'. Another red circle highlights the video player area, which features a large video frame, a progress bar at 0:44 / 5:58, and social media sharing buttons for Facebook (Recommend 10k), Twitter (1237), and a language selector set to 'ENGLISH'. The video player is also surrounded by a red circle. Other visible elements include a search bar with the text 'Search' and a 'Search Web' button, a 'CHARACTER GUIDE' section for 'Cleveland Carr' (A grid operative. More »), an 'ELECTRIC CITY TWEETS' section with a tweet from 'yahooscreen' about 'Super Nerd Girl', and an 'ELECTRIC CITY MAP' section with an 'Explore »' link.

Hi, Shu Kit | Sign Out | Help

Make Y! My Homepage

Y!screen

Search Search Web

TOM HANKS' **ELECTRIC CITY**

CHARACTER GUIDE See all characters »

Cleveland Carr
A grid operative. More »

0:44 / 5:58

Recommend 10k 1237 ENGLISH

ELECTRIC CITY TWEETS

yahooscreen Yahoo! Screen
It's an intellectual war of the worlds as "Super Nerd Girl" and her sidekick face off. <http://t.co/6eNd6cc2> @BlipTv
23 hrs ago Reply Retweet Favorite

ELECTRIC CITY MAP Explore »

Use Case 2 - Automatic Fallback

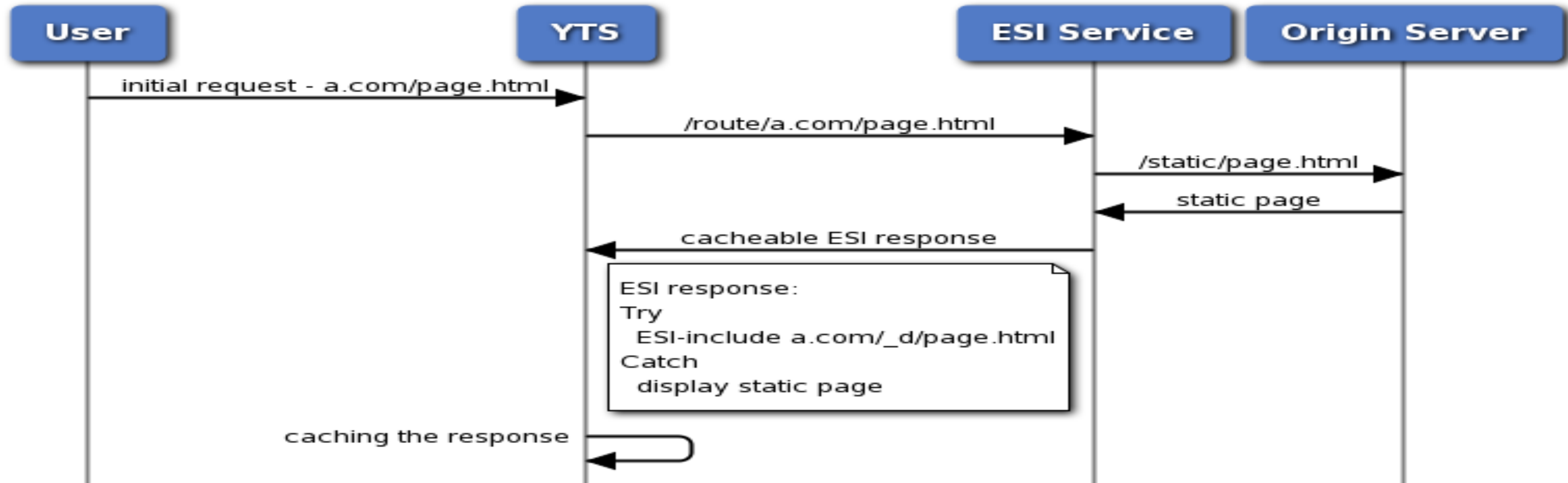
- “Always On” - 100% availability for “existing” pages
- Serve static pages when origin servers are down or too slow
- No change needed on origin servers



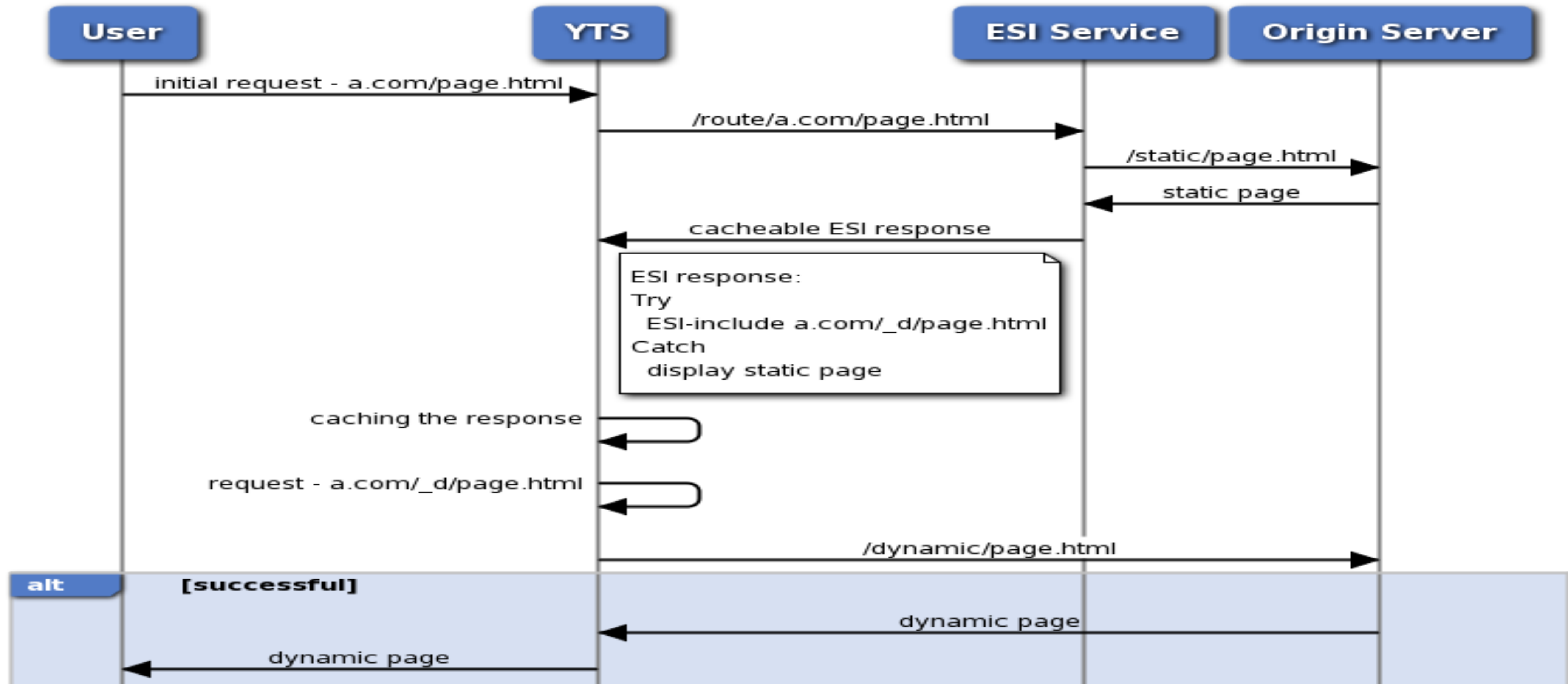
Automatic Fallback



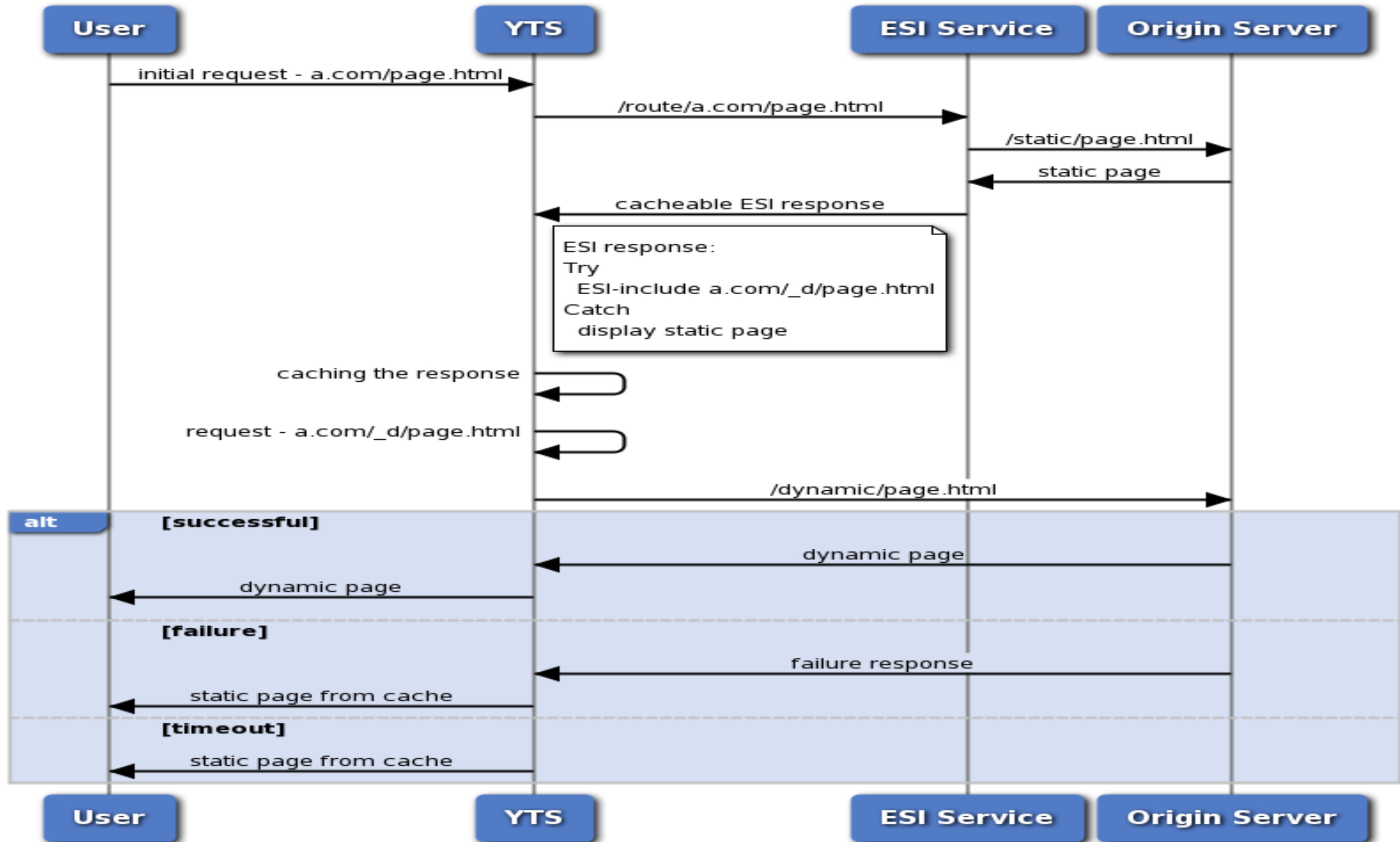
Automatic Fallback



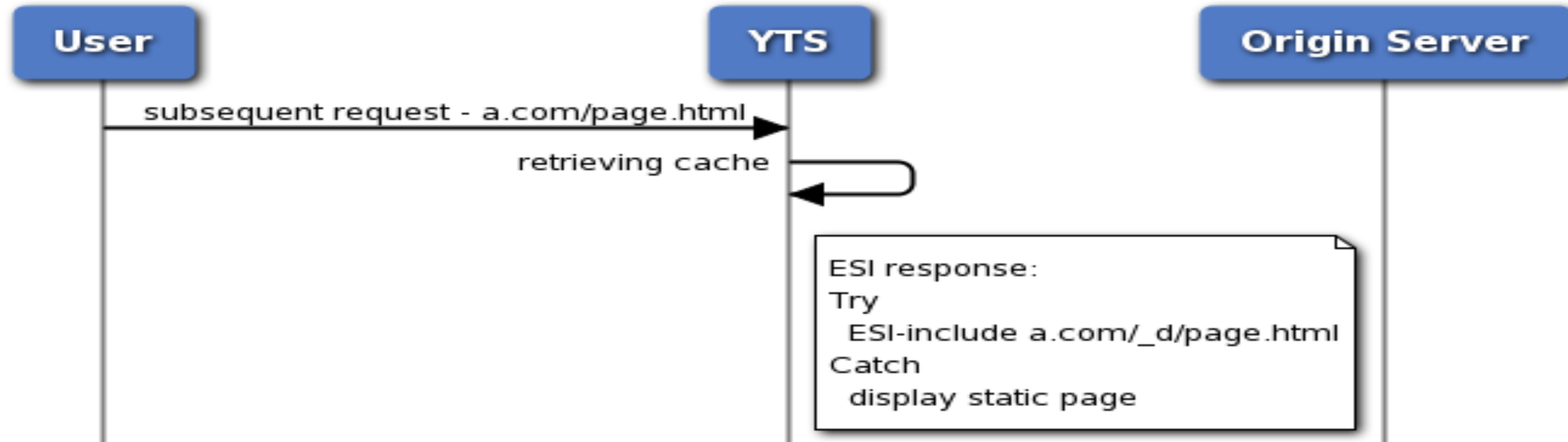
Automatic Fallback



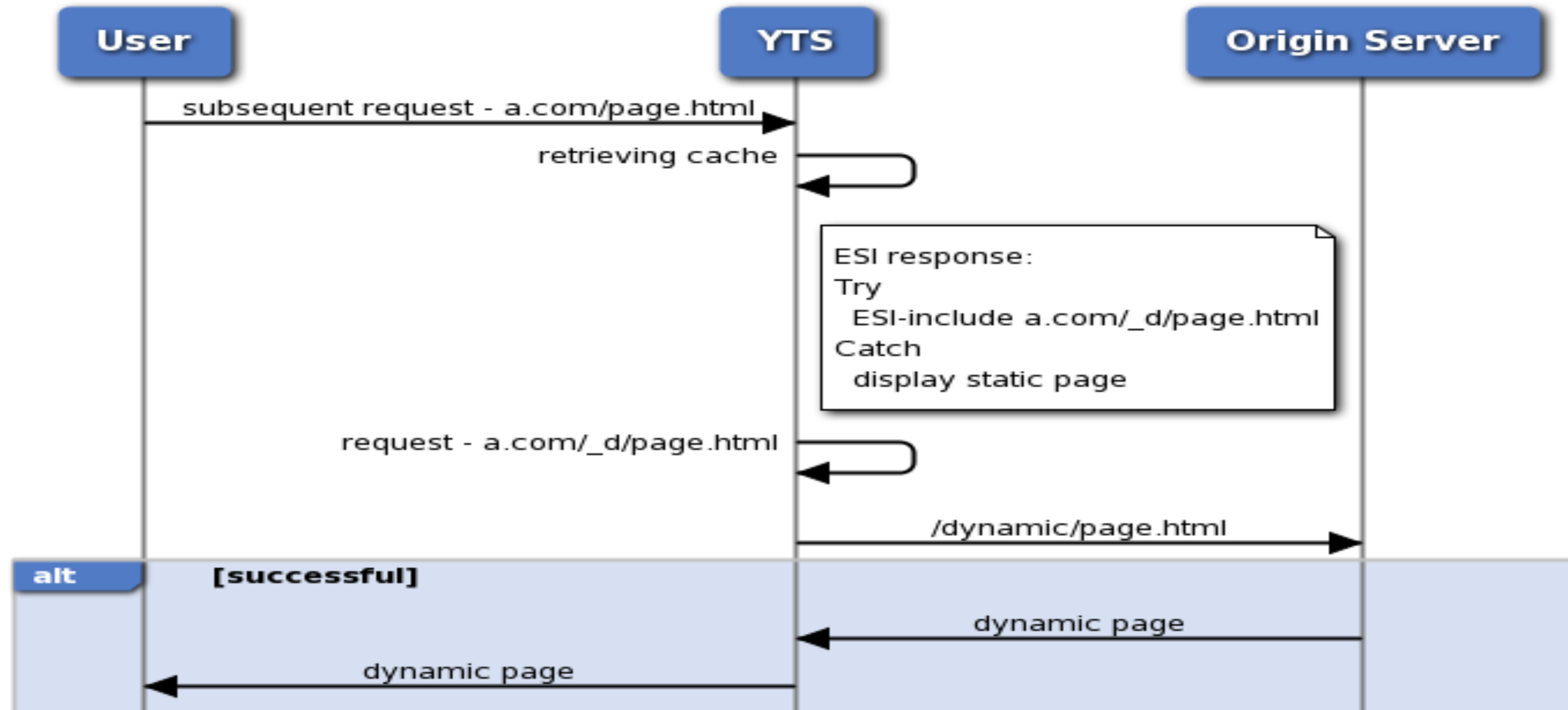
Automatic Fallback



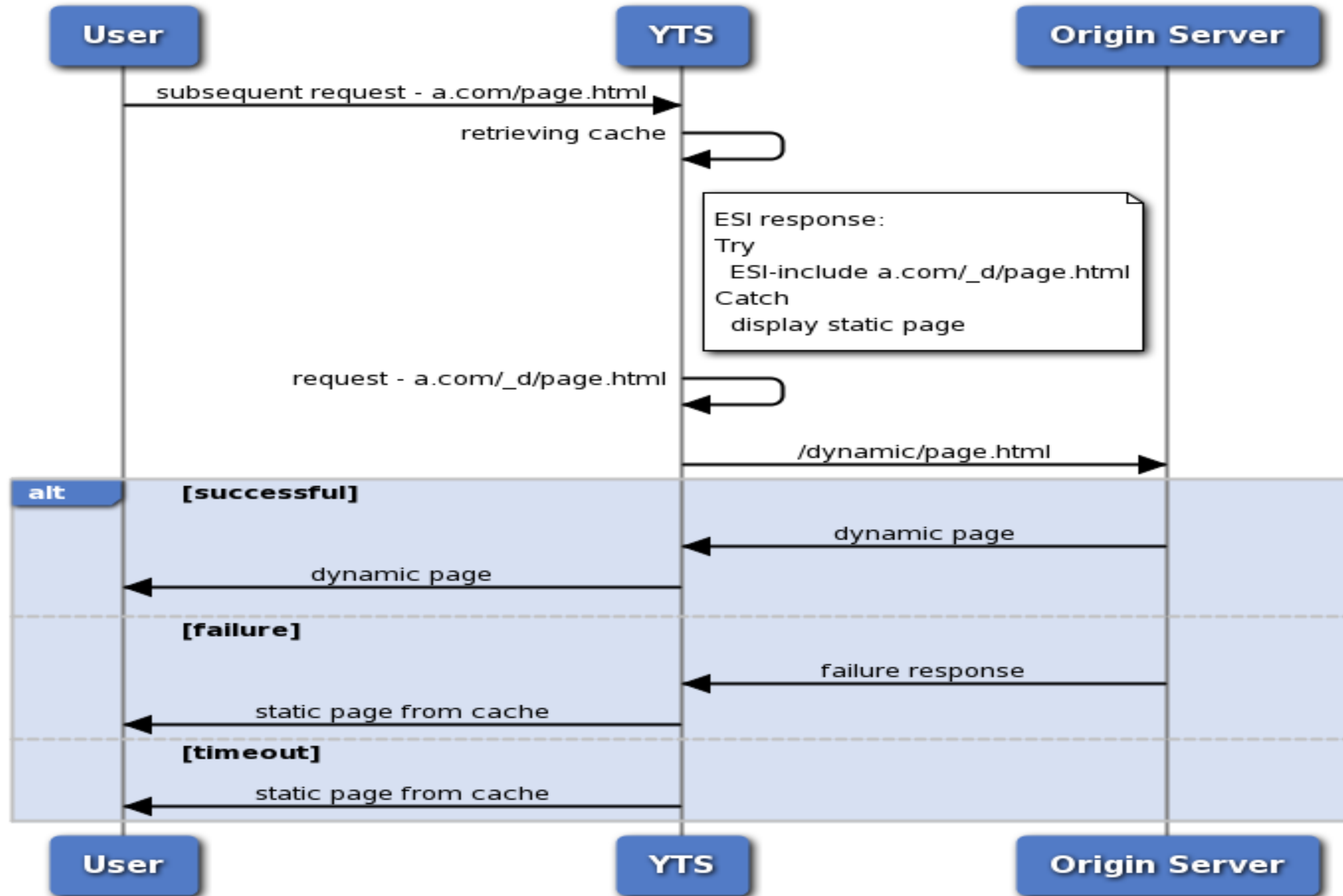
Automatic Fallback – Subsequent Request



Automatic Fallback – Subsequent Request



Automatic Fallback – Subsequent Request



Use Case 3 - Timely Launch



Before Launch

Hi, Anthony | Sign Out | Help

Make Y! My Homepage

Mail | My Y! | Yahoo!

Y!screen

Q Search

Search Web

SCREEN HOME

LIFESTYLE

SPORTS

TV SHOWS

MOVIES

COMEDY

GAMING

NEWS

FINANCE

YAHOO! ORIGINALS

Plugged In

Blue Ribbon Hunter

Chow Ciao!

Failure Club

Let's Talk About Love

Reluctantly Healthy

Ultimate Surprises

Daily Shot

More

Q Search Videos

Search Videos

ANTHONY E. ZUIKER'S

CYBERGEDDON

PREMIERES SEPT 25

RSVP on Facebook»

SEPT 25



▶

1:03 / 3:23:03

HD





FOLLOW CYBERGEDDON

✓ Recommend

261

Tweet

103

13

16:04:12

DAYS HOURS MINS SECS

In partnership with



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After Launch



ANTHONY E. ZUIKER'S

CYBERGEDDON





32K



2K

HOME ●

CHAPTERS ●

CHARACTERS ●

PHOTOS ●

ALL ACCESS ●

COMMUNITY ●

NORTON ●



▶ CHAPTER 1



▶ TRAILER

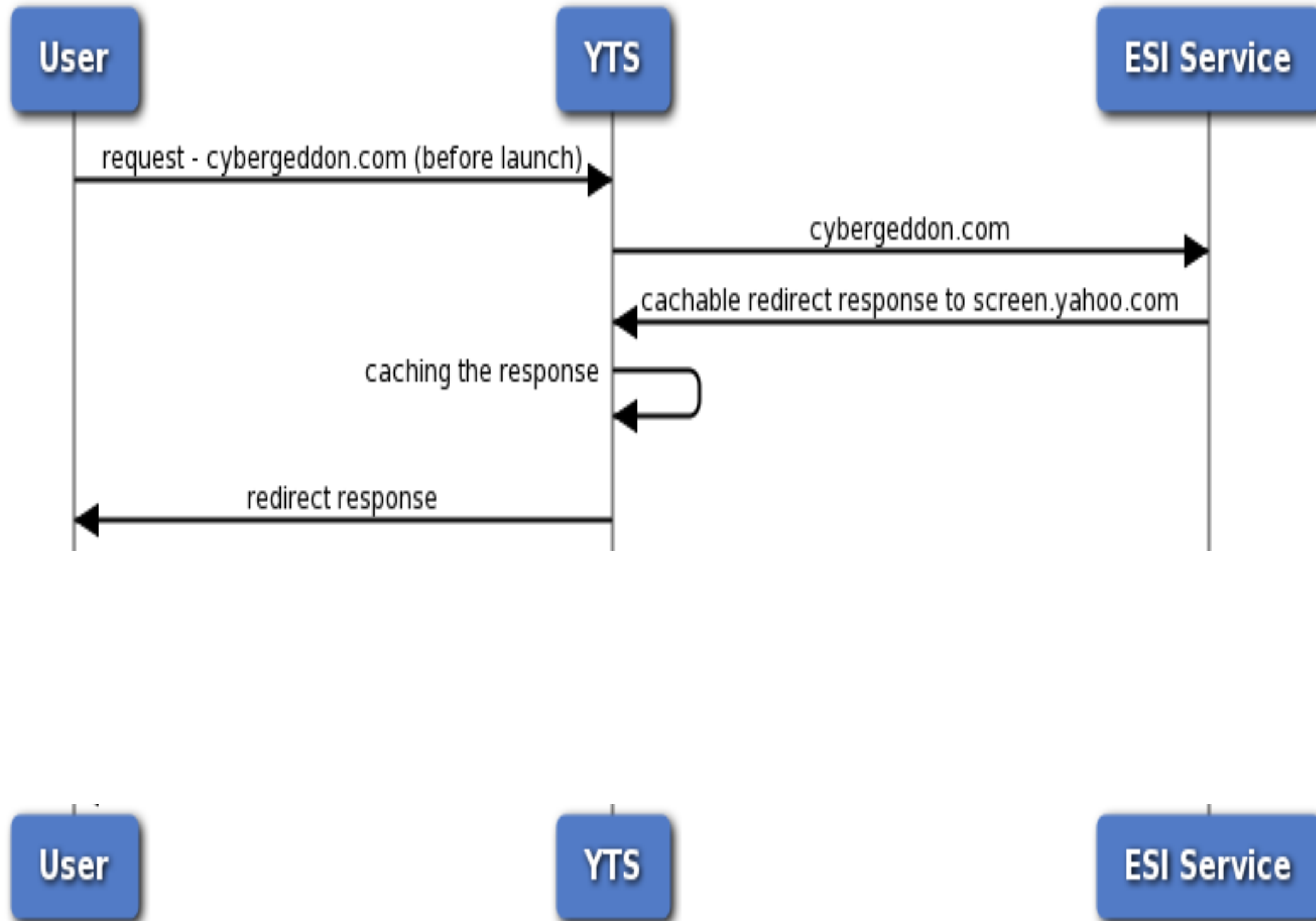


DOWNLOAD THE FREE
CYBERGEDDON GAME

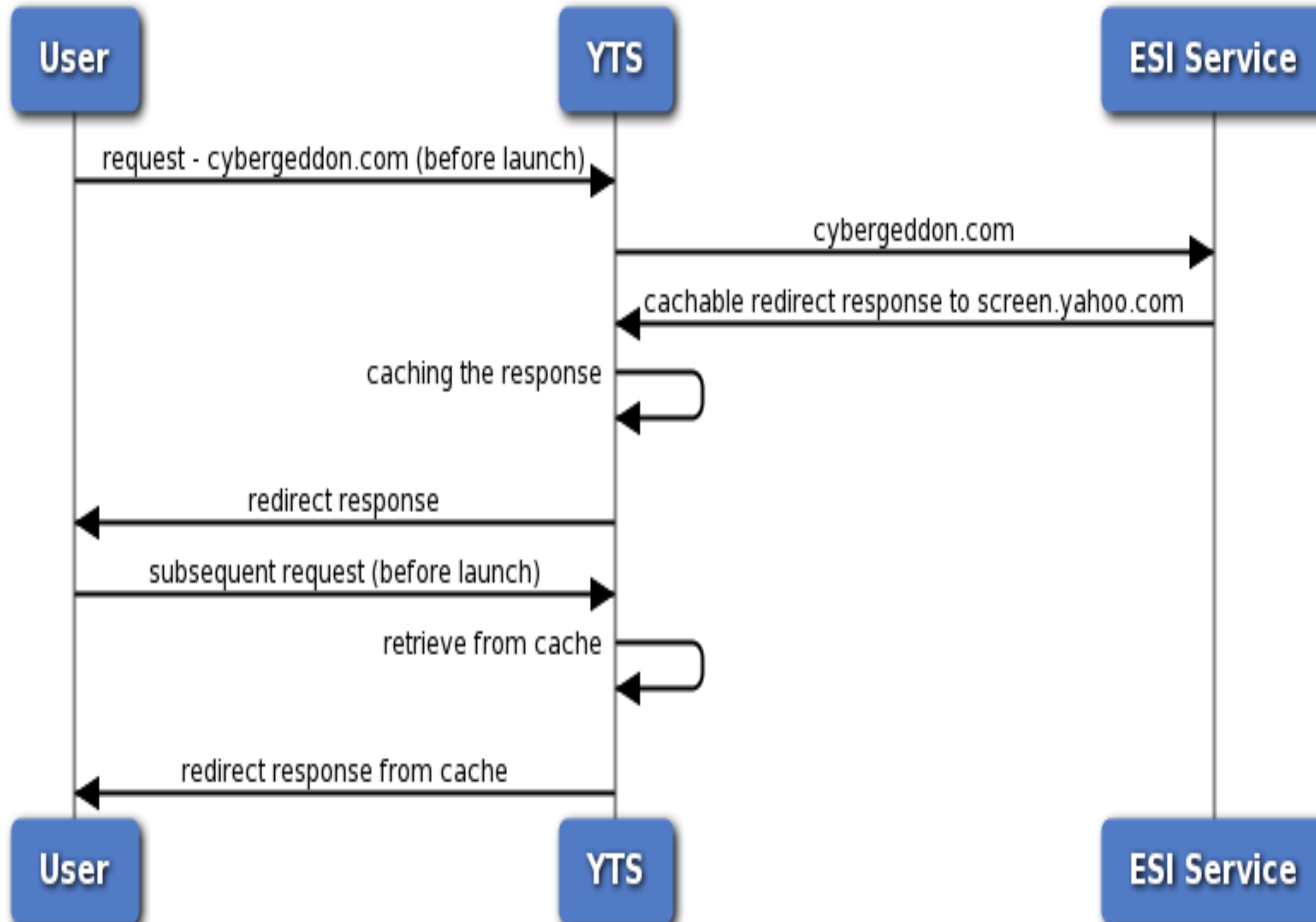
THERE IS NO **ESC**



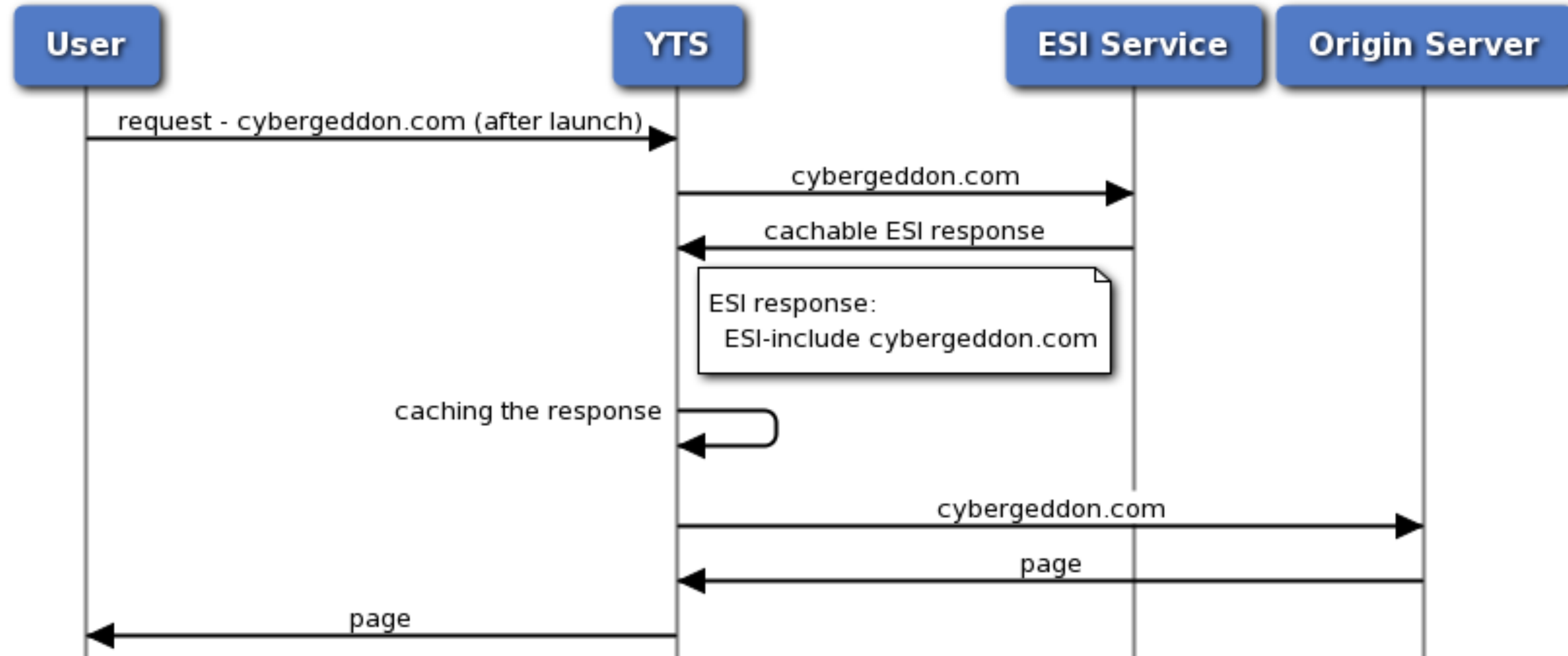
Timely Launch – Before Launch



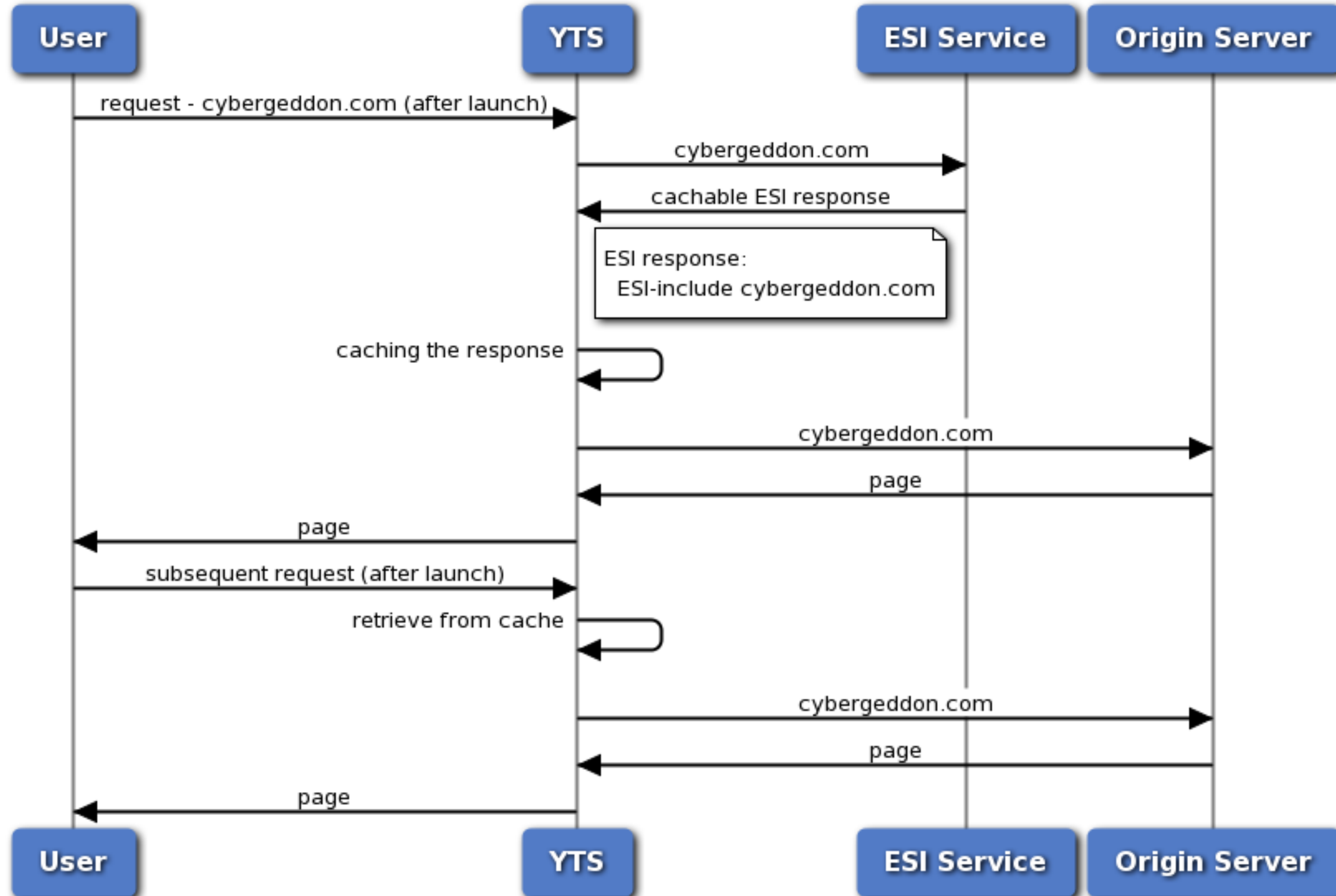
Timely Launch – Before Launch



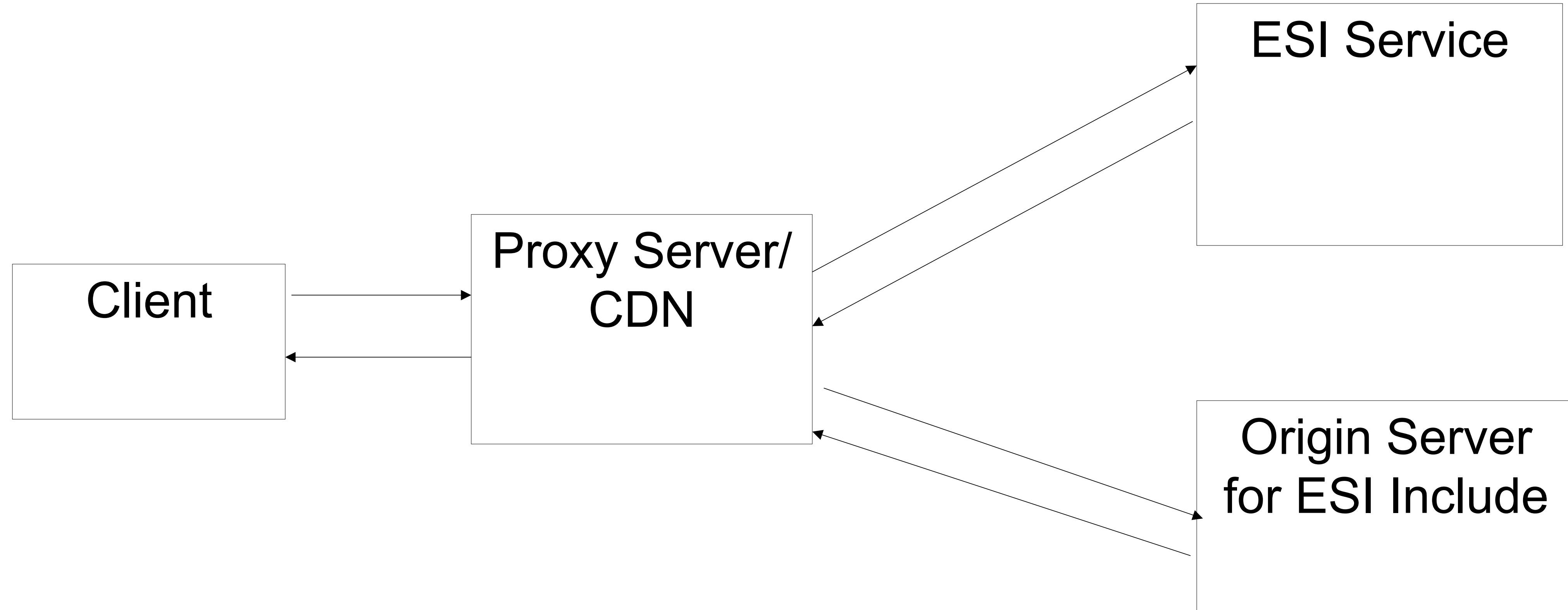
Timely Launch – After Launch



Timely Launch – After Launch



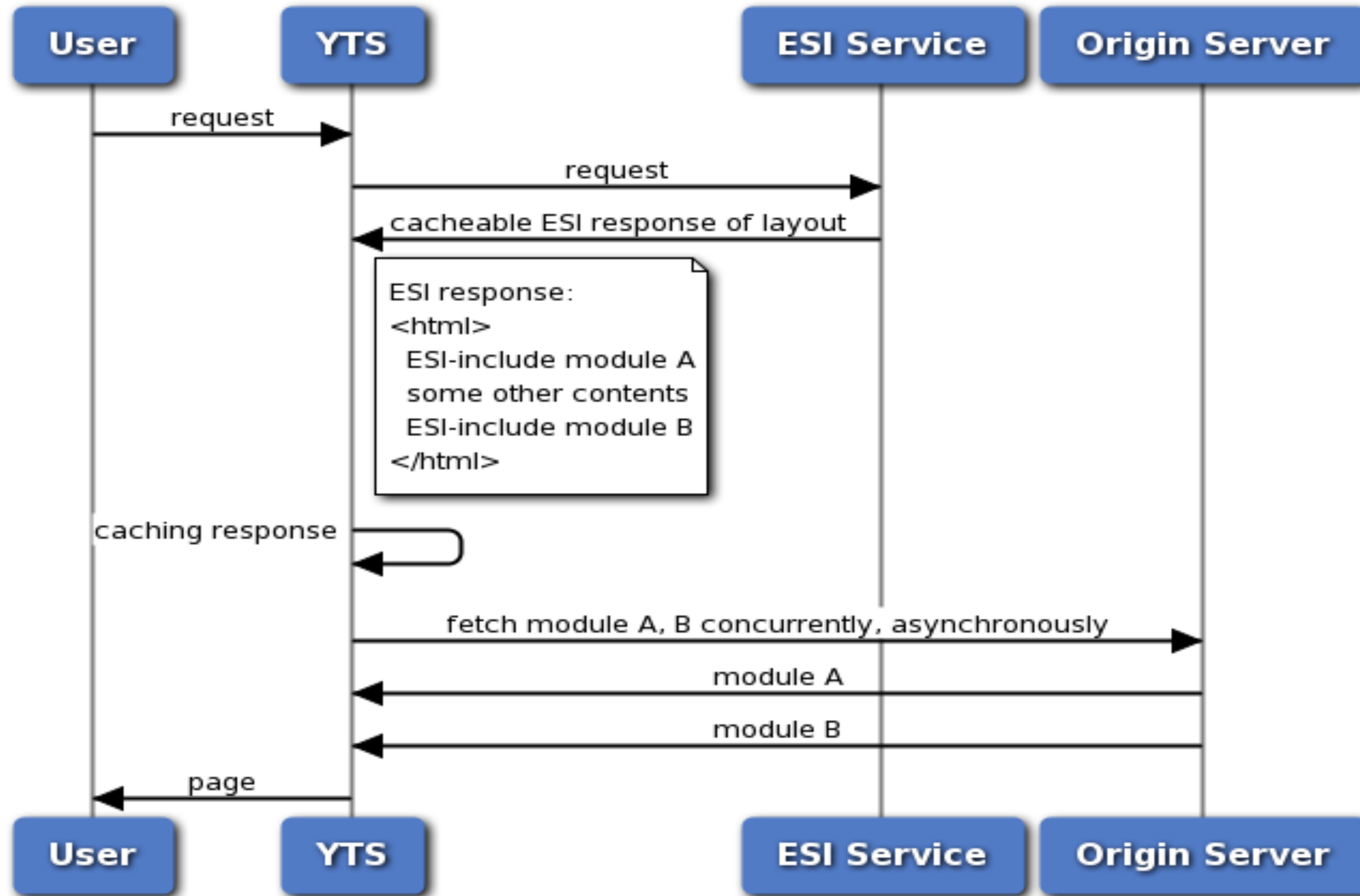
Conclusion - Usage Pattern



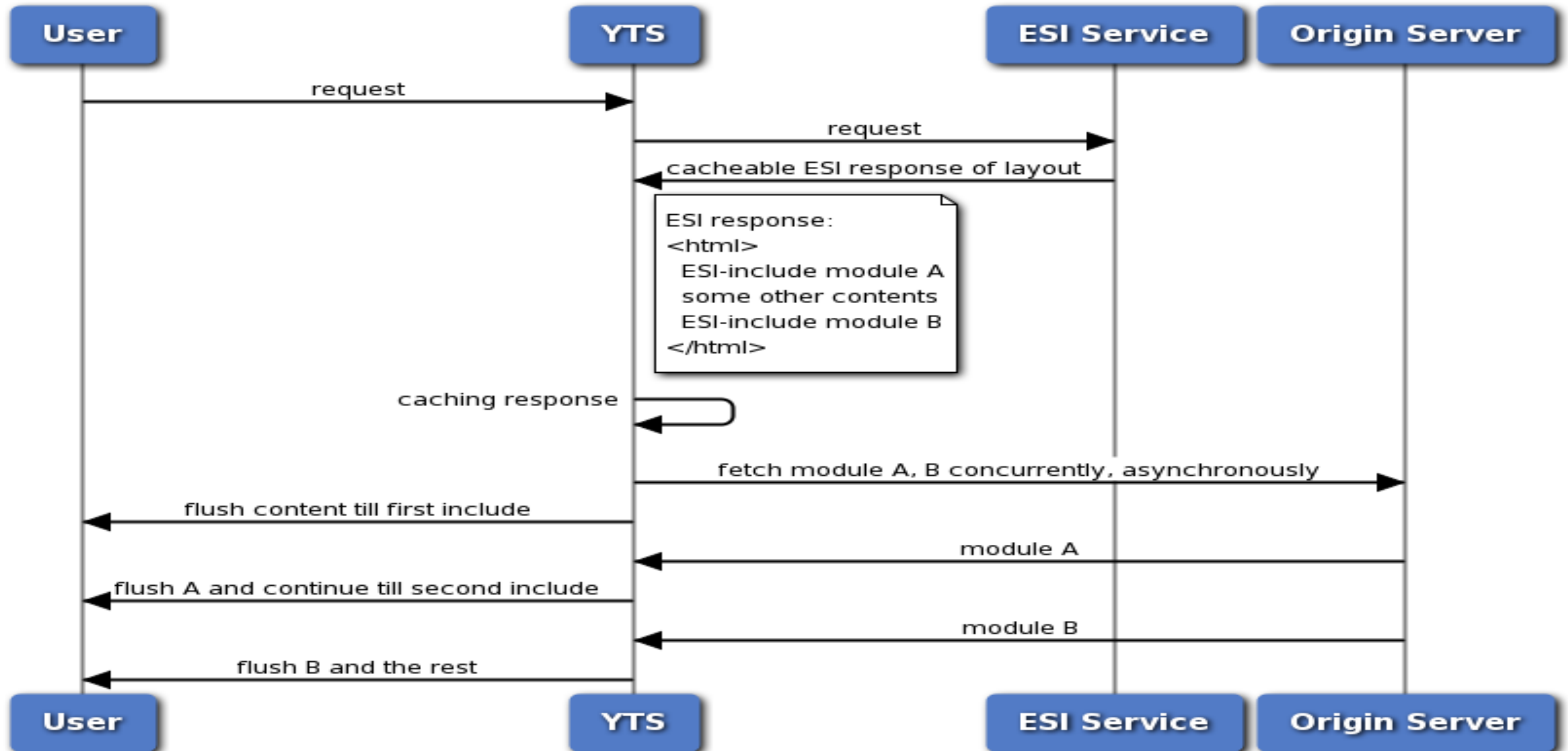
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Concurrent Requests



First Byte Flush



ESI Support in Varnish

- No concurrent requests for includes
- First Byte Flush Support



ESI Support in Apache Traffic Server

- Concurrent requests for includes
- No First Byte Flush Support (Coming soon)

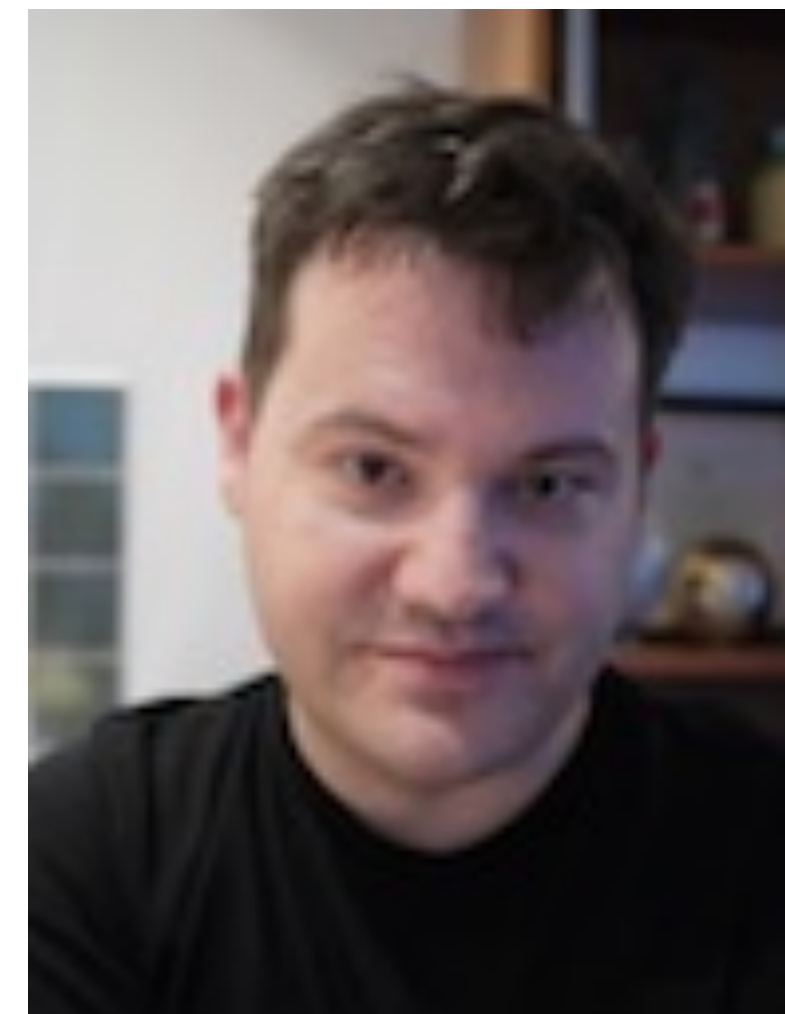


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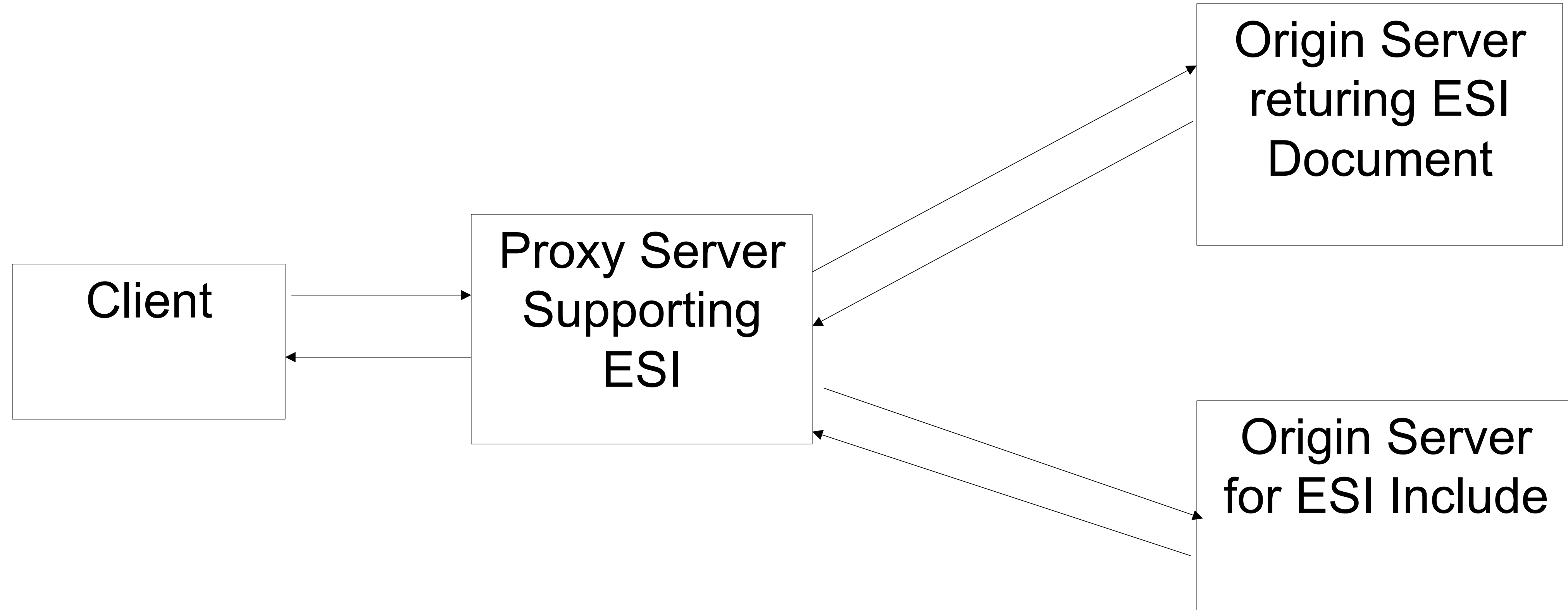
Future

- The spec (ESI 1.0) is published over 10 years ago.
 - W3C spec
 - Editor - Mark Nottingham from Akamai

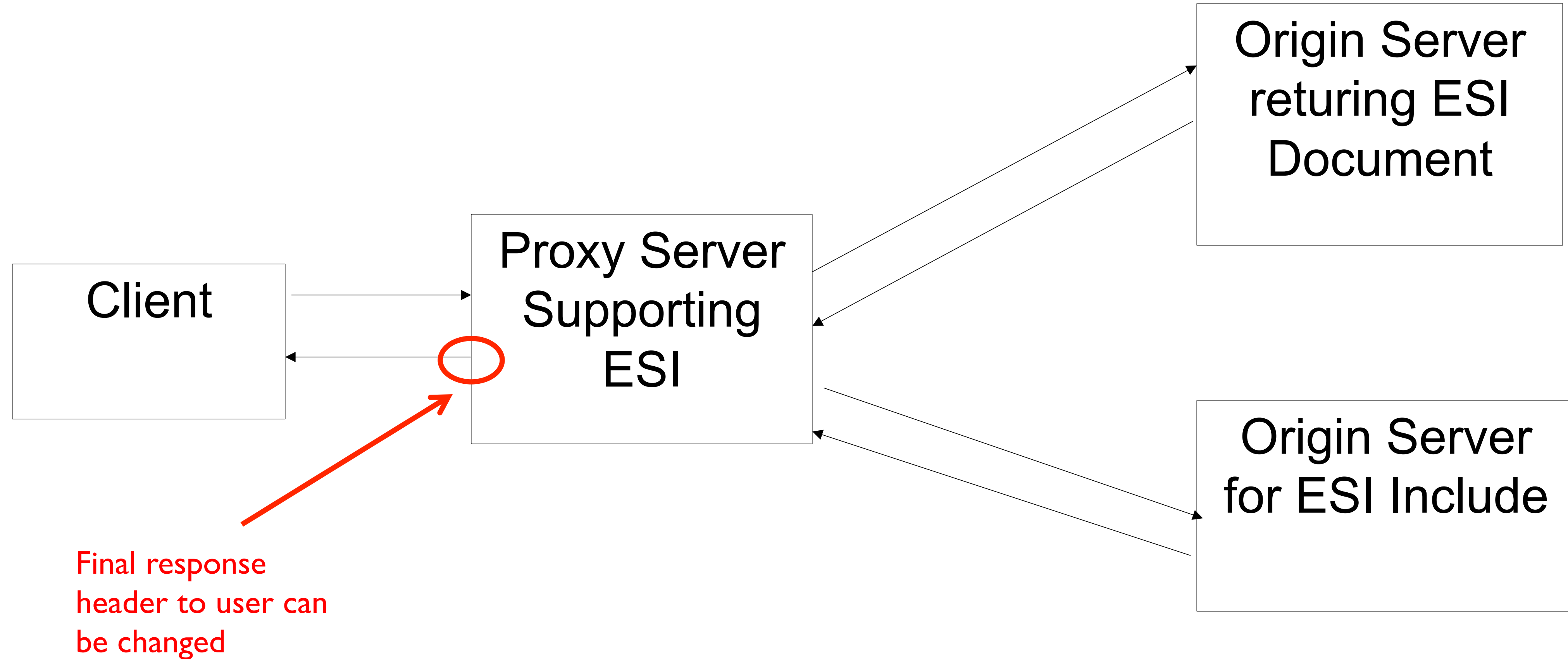


Mark Nottingham
<http://www.mnot.net/>

Future – Manipulating Requests/Responses

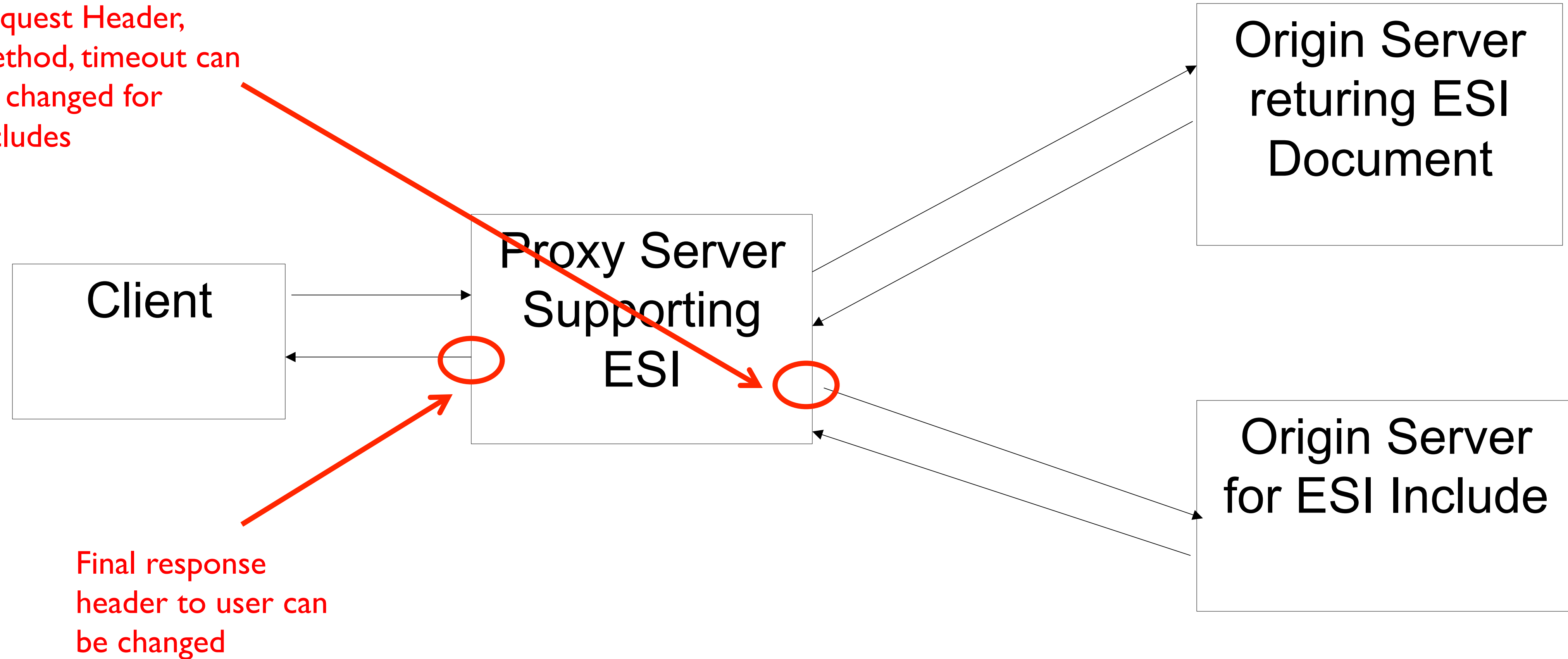


Future – Manipulating Requests/Responses



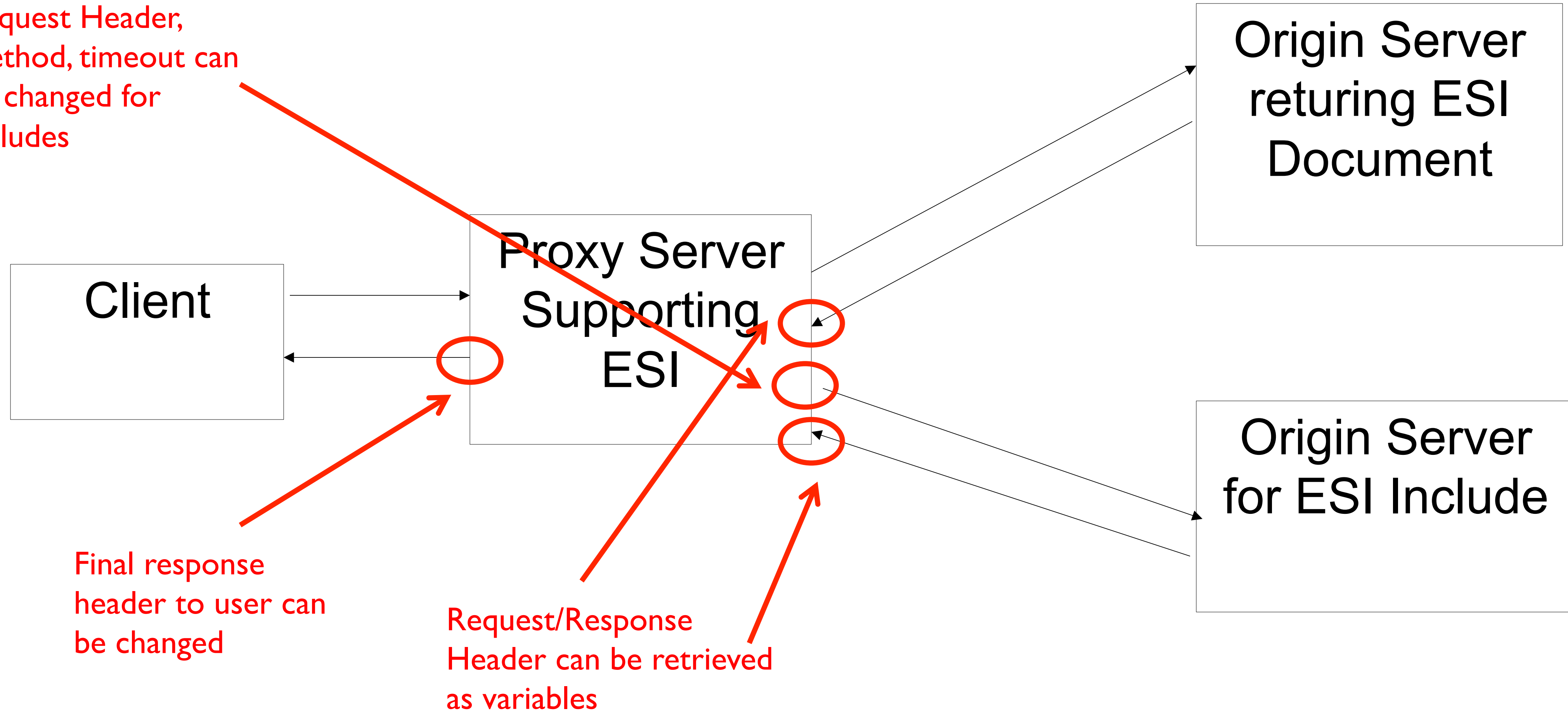
Future – Manipulating Requests/Responses

Request Header,
method, timeout can
be changed for
includes

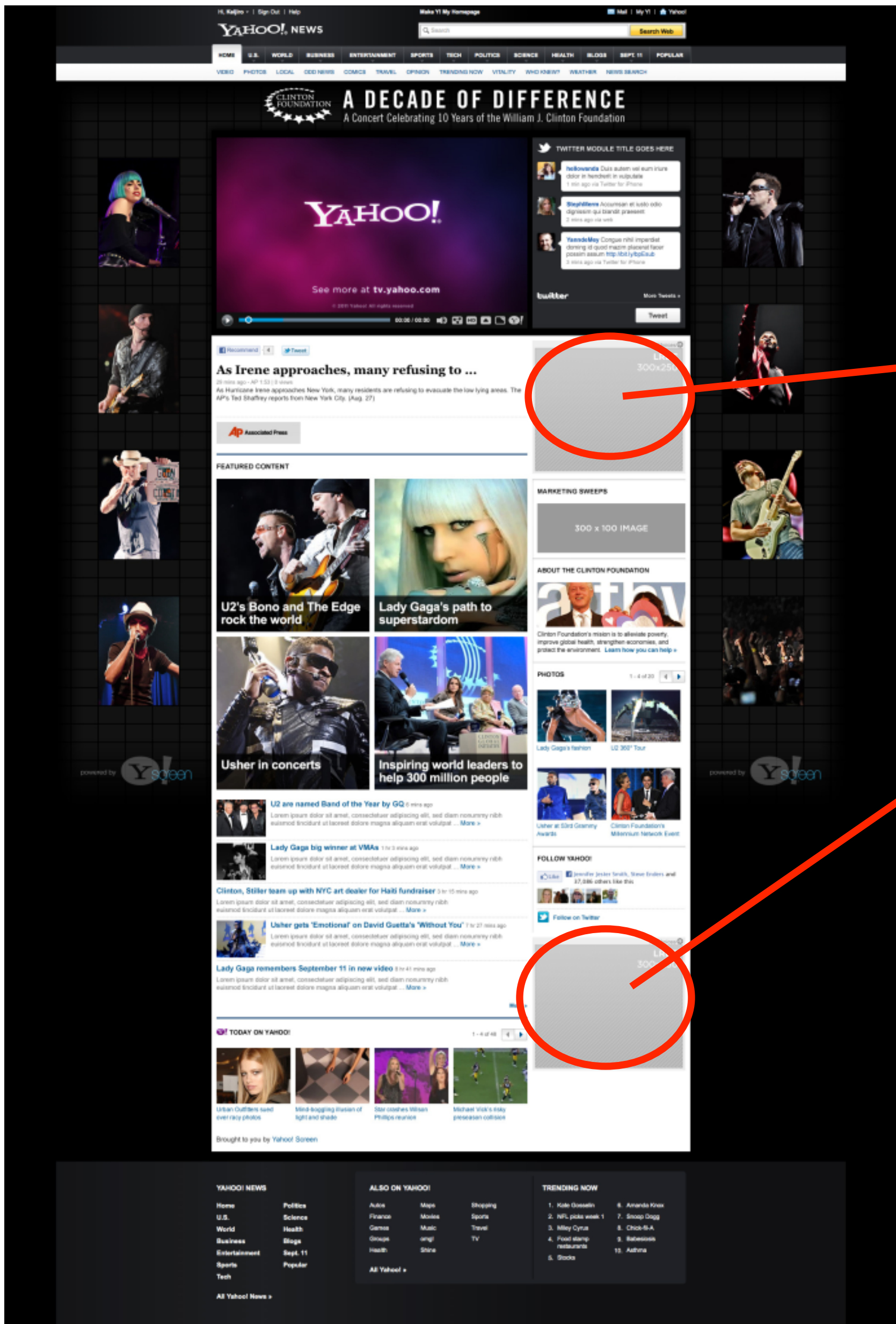


Future – Manipulating Requests/Responses

Request Header,
method, timeout can
be changed for
includes



Future – Smart Assembly



One request for multiple includes (e.g. one Ad call fetching multiple ad position)

Future – More Use cases

- Device Detection
- Bucket Testing



<https://doazrm3qeh7n2.cloudfront.net/images/features/quick-a-vs-b-testing.jpg>



<http://illusionmedia.com/wp-content/uploads/2012/03/mobileDevices1-300x200.jpg>

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Q & A

谢谢

kichan@yahoo-inc.com

Reference

- ESI Language Specification – <http://www.w3.org/TR/esi-lang>
- Edge Architecture Specification - <http://www.w3.org/TR/edge-arch>
- ATS ESI plugin - <https://github.com/apache/trafficserver/blob/master/plugins/experimental/esi/README>
- Varnish ESI - <https://www.varnish-cache.org/docs/3.0/tutorial/esi.html>
- Akamai ESI - http://www.akamai.com/dl/technical_publications/akamai_esi_extensions.pdf
- F5 - http://support.f5.com/kb/en-us/products/wa/manuals/product/wa9_4policy/WA_Policy_9_4-19-1.html