SERVER COMPONENTS

REACT & NEXT.JS OFFICIAL DOCS STUDY

DongMin Kim

CONTENTS

GOALS

History of web development

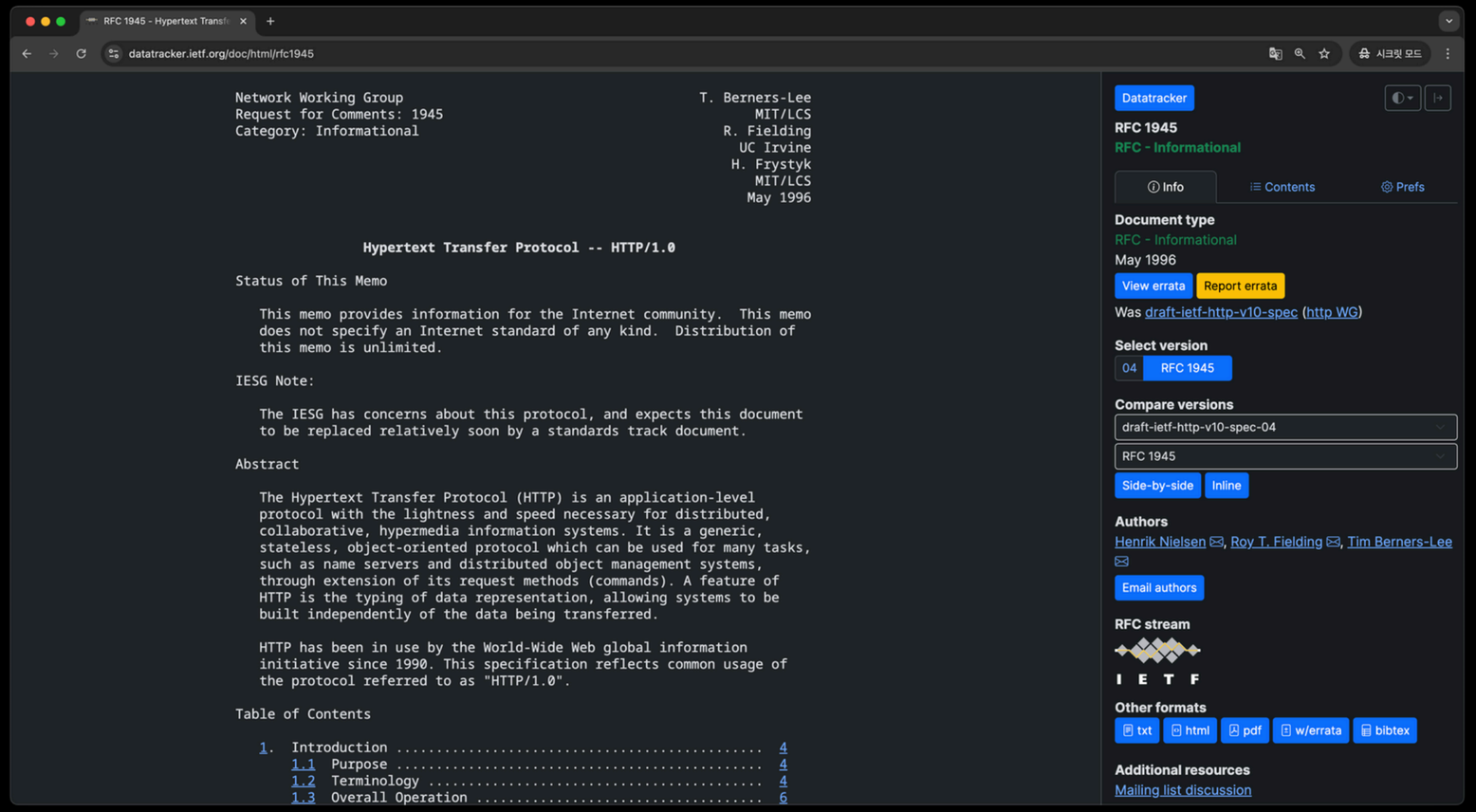
CSR, SSR, SSG, ISR, Hybrid Rendering

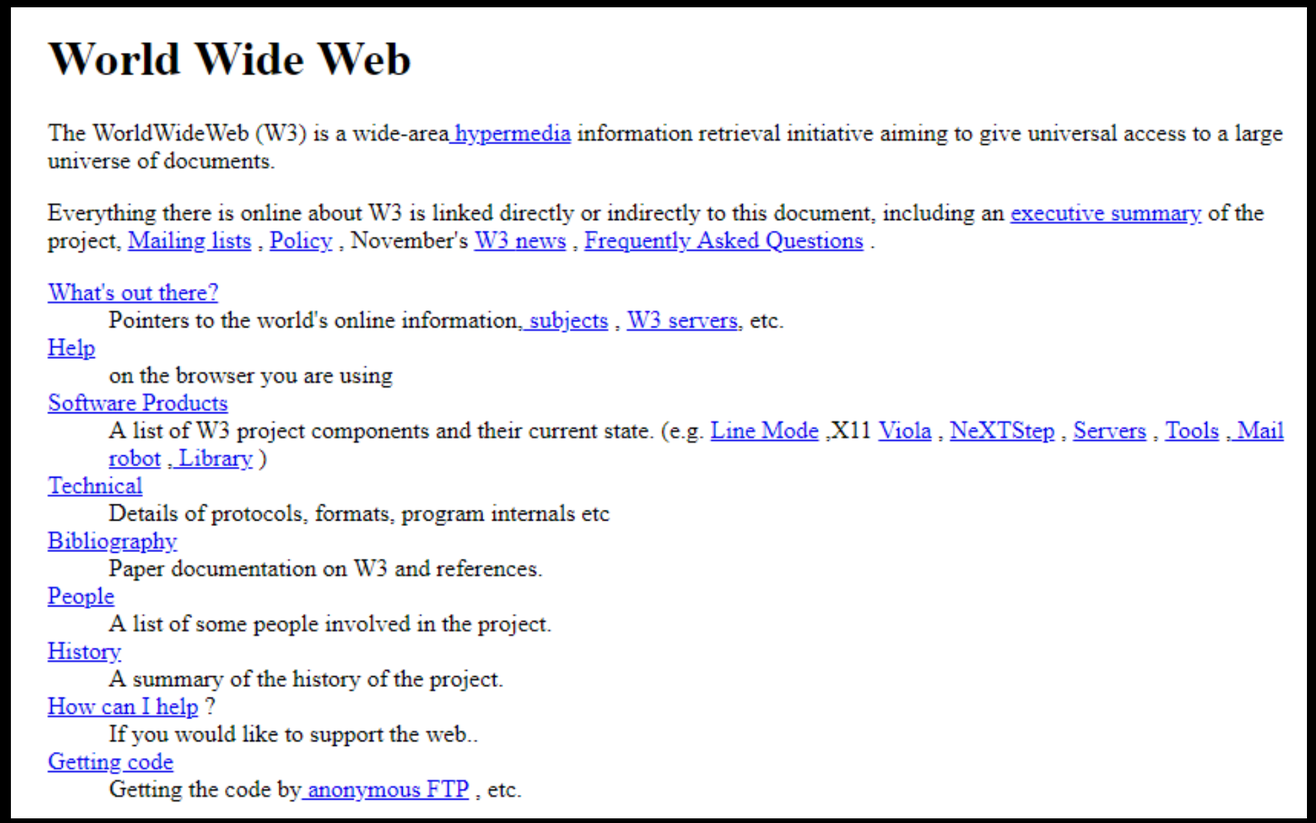
What is Server Components?

Why Server Components?

History of Web Development

The evolution of web technology





World Wide Web

The WorldWideWeb (W3) is a wide-area hypermedia information retrieval initiative aiming to give universal access to a large universe of documents.

Everything there is online about W3 is linked directly or indirectly to this document, including an executive summary of the project, Mailing lists , Policy , November's W3 news , Frequently Asked Questions .

What's out there?
Pointers to the world's online information, subjects , W3 servers, etc.
Help
on the browser you are using
Software Products
A list of W3 project components and their current state. (e.g. Line Mode ,X11 Viola , NeXTStep , Servers , Tools , Mail robot , Library)
Technical
Details of protocols, formats, program internals etc
Bibliography
Paper documentation on W3 and references.
People
A list of some people involved in the project.
History
A summary of the history of the project.
How can I help ?
If you would like to support the web..
Getting code
Getting the code by anonymous FTP , etc.

https://info.cern.ch/hypertext/WWW/TheProject.html

Static HTML

The Revolution of Information Delivery

Static HTML


server
index.html
about.html
main.html
images/
logo.jpg
profile.jpg
GET /
GET /images/logo.jpg
Hello World
<html>
<head>
<title>Index</title>
</head>
<body>
<h1>Hello World</h1>

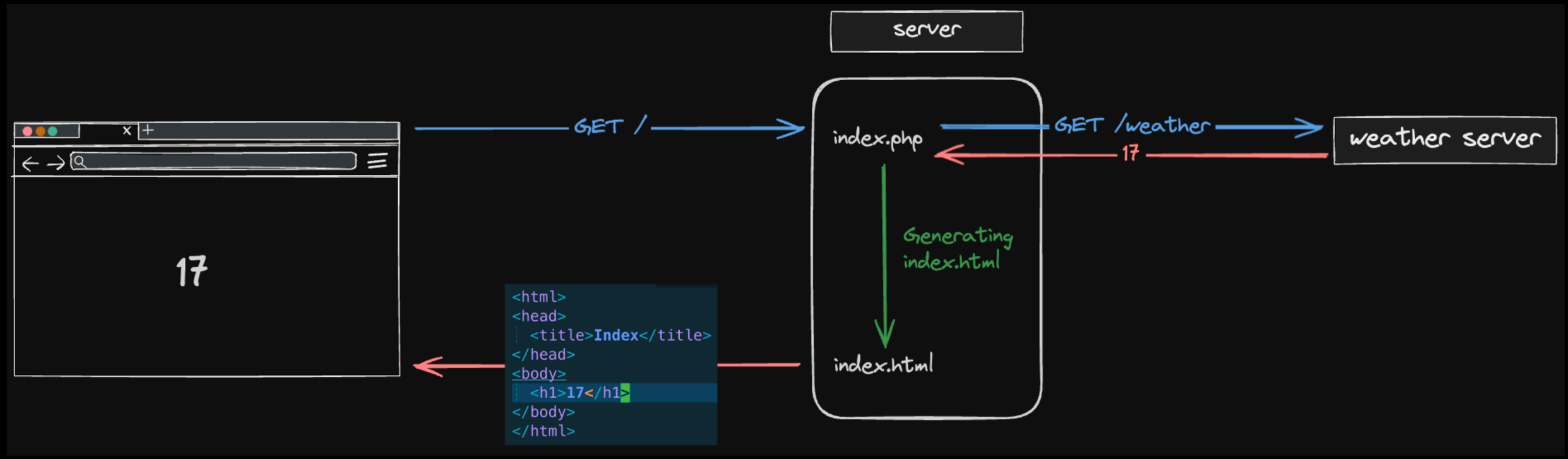
</body>
</html>

```jsp
<%@ page contentType="text/html; charset=UTF-8" language="java" %>
<!DOCTYPE html>
<html>
<head>
    <title>JSP 예제</title>
</head>
<body>
    <h2>이름을 입력하세요:</h2>
    <form action="hello.jsp" method="post">
        <label for="name">이름: </label>
        <input type="text" id="name" name="name" required>
        <button type="submit">전송</button>
    </form>

    <%
        String name = request.getParameter("name");

        if (name != null && !name.trim().isEmpty()) {
    %>
        <h3>안녕하세요, <%= name %>님!</h3>
    <%
        }
    %>
</body>
</html>
```

SSR
(Server Side Rendering)

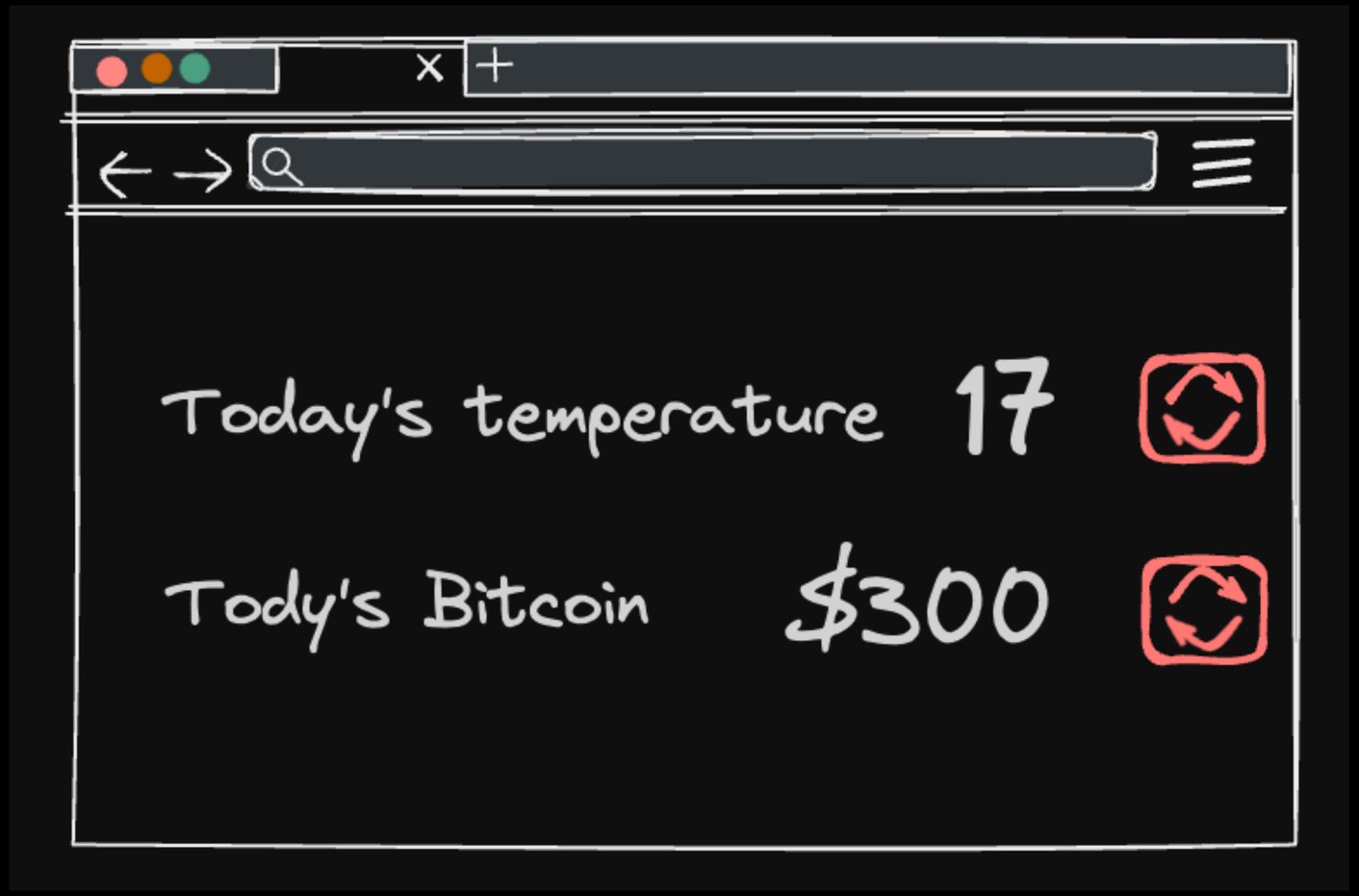
Dynamic HTML Generation

SSR(Server Side Rendering)



SSR(Server Side Rendering)

SSR(Server Side Rendering)



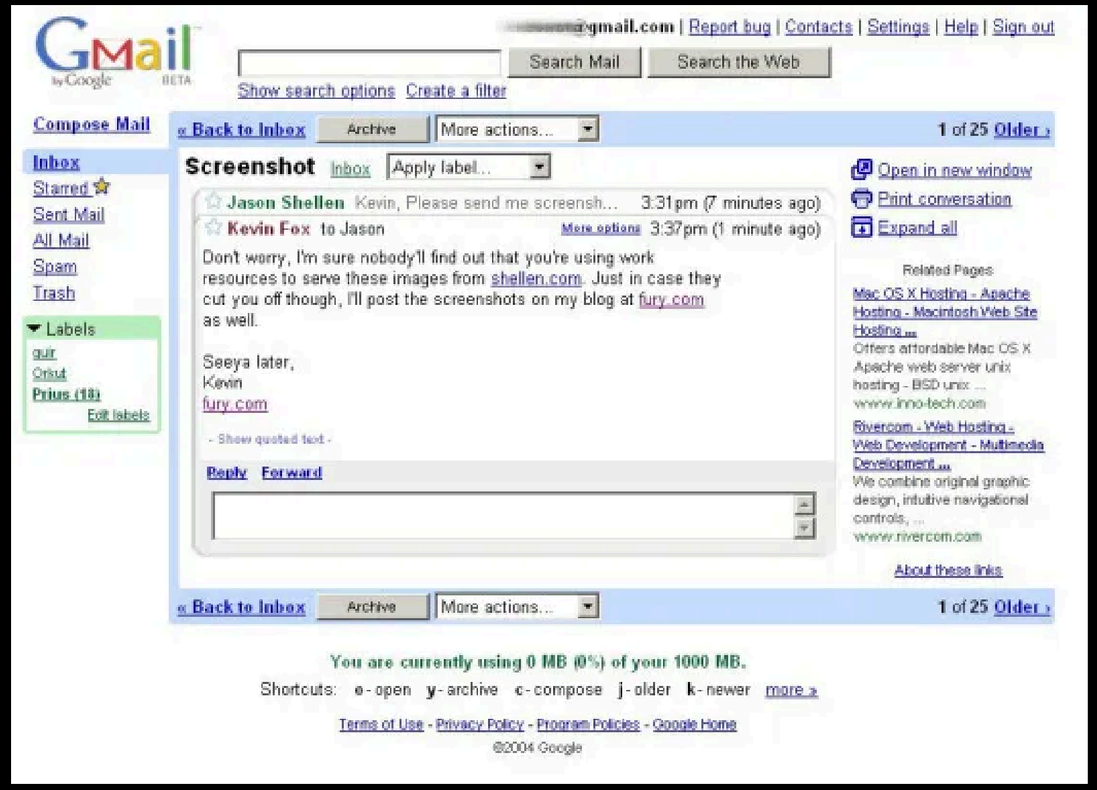
AJAX

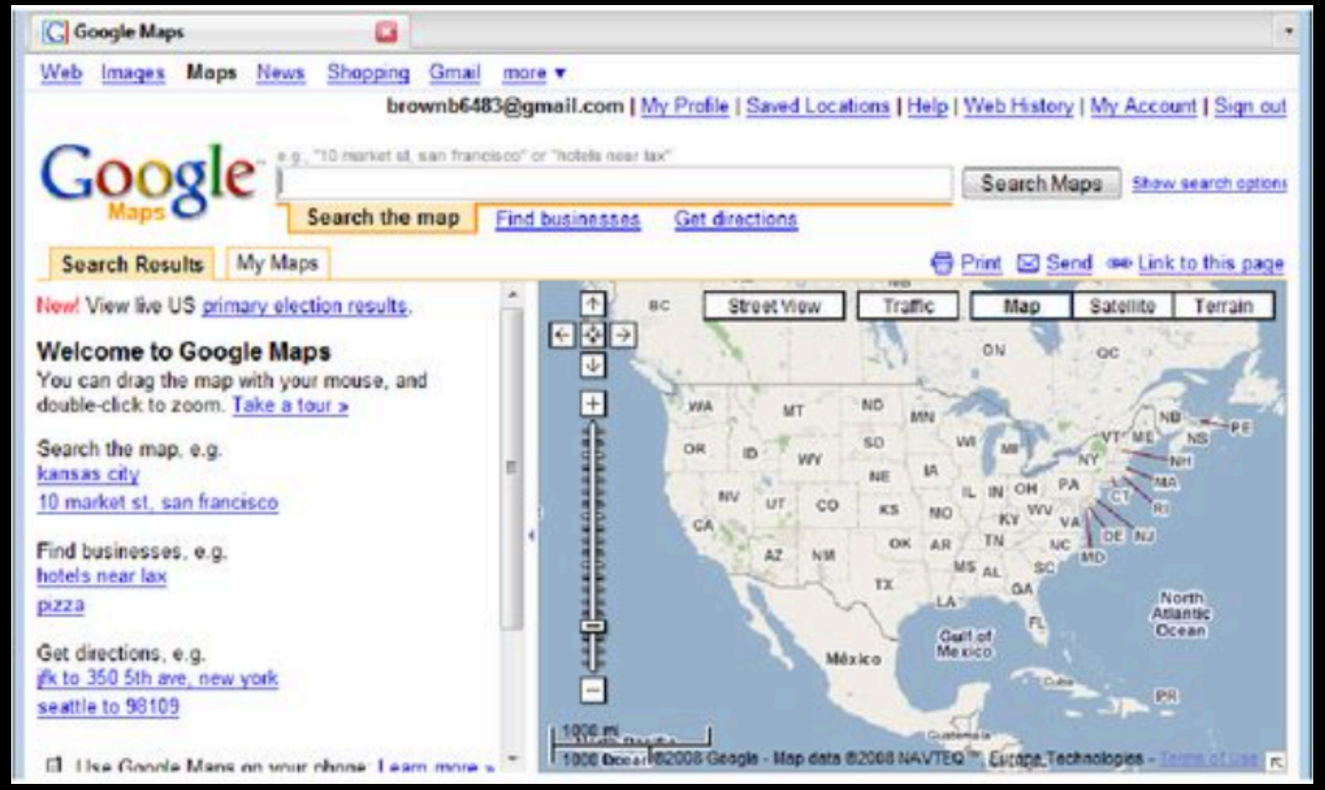
Asynchronous JavaScript and XML

AJAX - Practice

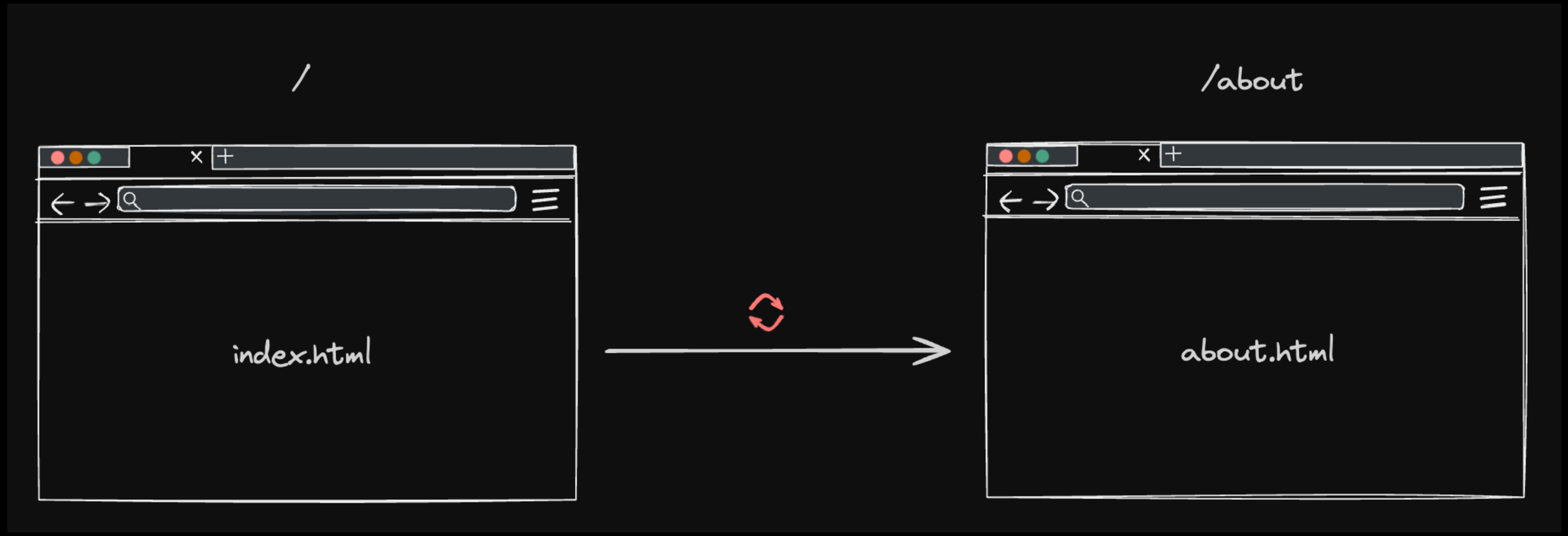
https://github.com/gdsc-konkuk/24-25-study-react-nextjs-docs/tree/main/11_01_ServerComponents/AJAX_Practice

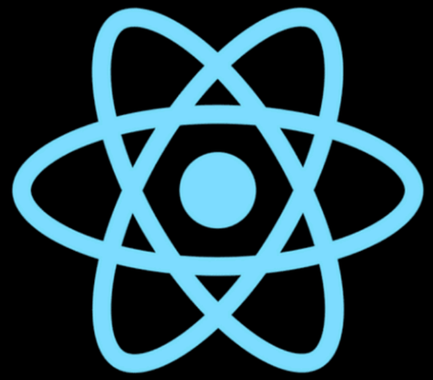
AJAX


Gmail by Google BETA
gmail.com | Report bug | Contacts | Settings | Help | Sign out
Search Mail
Search the Web
Show search options Create a filter
Compose Mail
Inbox
Starred
Sent Mail
All Mail
Spam
Trash
Labels
quir
Orkut
Prius (18)
Edit labels
« Back to Inbox
Archive
More actions...
1 of 25 Older ›
Screenshot
Inbox
Apply label...
Jason Shellen Kevin, Please send me screensh... 3:31pm (7 minutes ago)
Kevin Fox to Jason
More options 3:37pm (1 minute ago)
Don't worry, I'm sure nobody'll find out that you're using work resources to serve these images from shellen.com. Just in case they cut you off though, I'll post the screenshots on my blog at fury.com as well.
Seeya later,
Kevin
fury.com
- Show quoted text -
Reply Forward
Open in new window
Print conversation
Expand all
Related Pages
Mac OS X Hosting - Apache Hosting - Macintosh Web Site Hosting ...
Offers affordable Mac OS X Apache web server unix hosting - BSD unix ...
www.inno-tech.com
Rivercom - Web Hosting - Web Development - Multimedia Development ...
We combine original graphic design, intuitive navigational controls, ...
www.rivercom.com
About these links
« Back to Inbox
Archive
More actions...
1 of 25 Older ›
You are currently using 0 MB (0%) of your 1000 MB.
Shortcuts: e - open y - archive c - compose j - older k - newer more »
Terms of Use - Privacy Policy - Program Policies - Google Home
©2004 Google


Google Maps
Web Images Maps News Shopping Gmail more ▾
brownb6483@gmail.com | My Profile | Saved Locations | Help | Web History | My Account | Sign out
Google Maps
Search Maps
Show search options
Search the map
Find businesses
Get directions
Search Results
My Maps
Print Send Link to this page
New! View live US primary election results.
Welcome to Google Maps
You can drag the map with your mouse, and double-click to zoom. Take a tour »
Search the map, e.g.
kansas city
10 market st, san francisco
Find businesses, e.g.
hotels near lax
pizza
Get directions, e.g.
jfk to 350 5th ave, new york
seattle to 98109
Use Google Maps on your phone Learn more »
Street View
Traffic
Map
Satellite
Terrain
North Atlantic Ocean
Gulf of Mexico
México
©2008 Google - Map data ©2008 NAVTEQ™, Europa Technologies - Terms of Use

AJAX





CSR & SPA

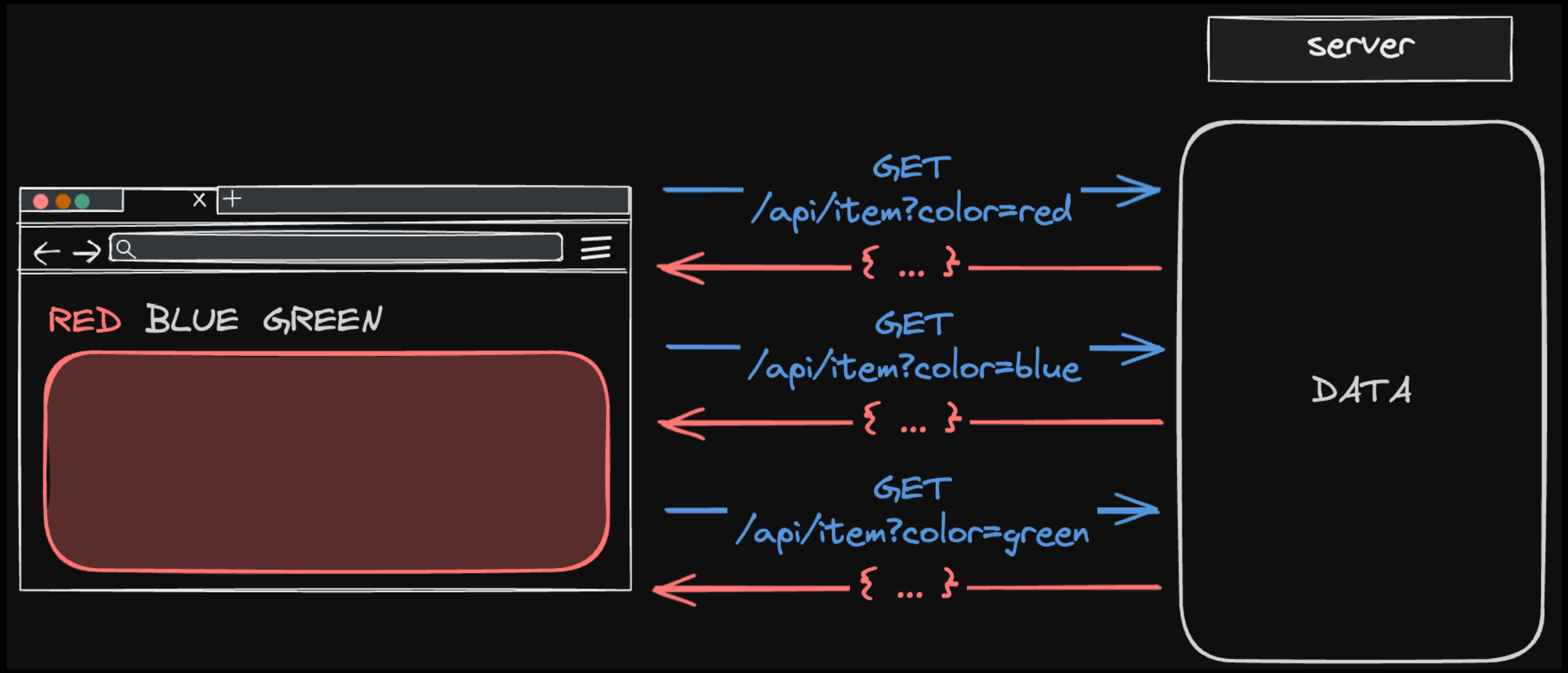
Client Side Rendering
Single Page Application

CSR & SPA

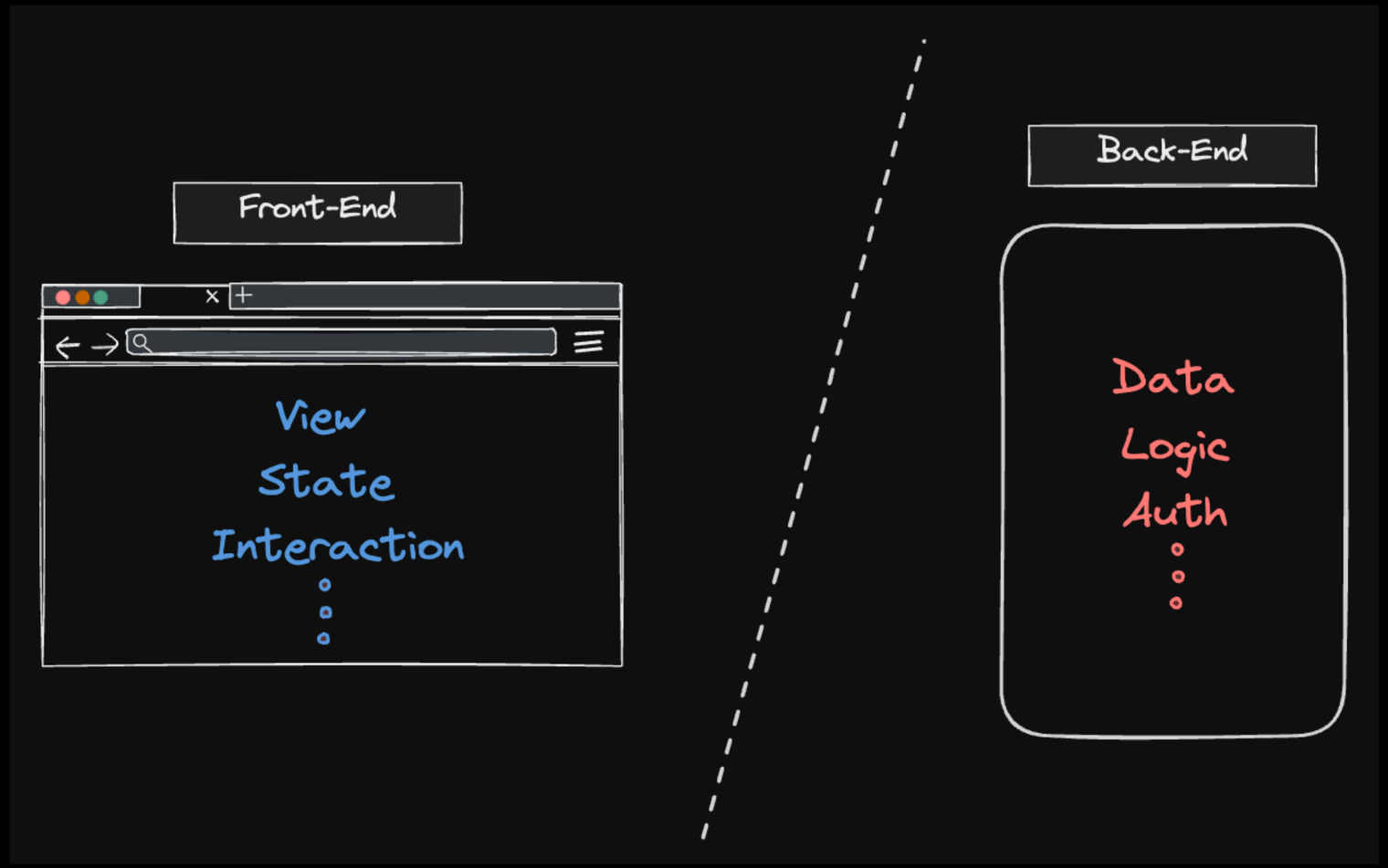

server
GET /
DATA
<html>
<head>
<title>Index</title>
</head>
<body>

</body>
</html>
+ JS bundle

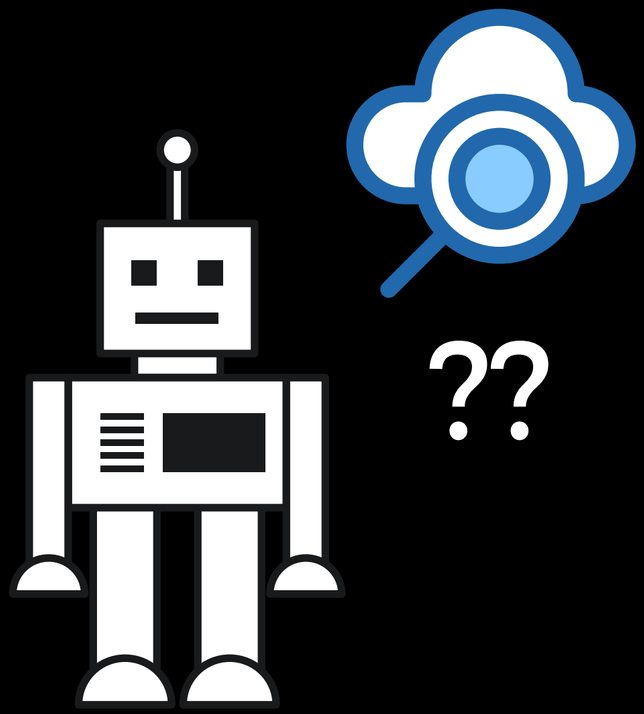
CSR & SPA


server
RED BLUE GREEN
GET
/api/item?color=red
{ ... }
GET
/api/item?color=blue
{ ... }
GET
/api/item?color=green
{ ... }
DATA

CSR & SPA

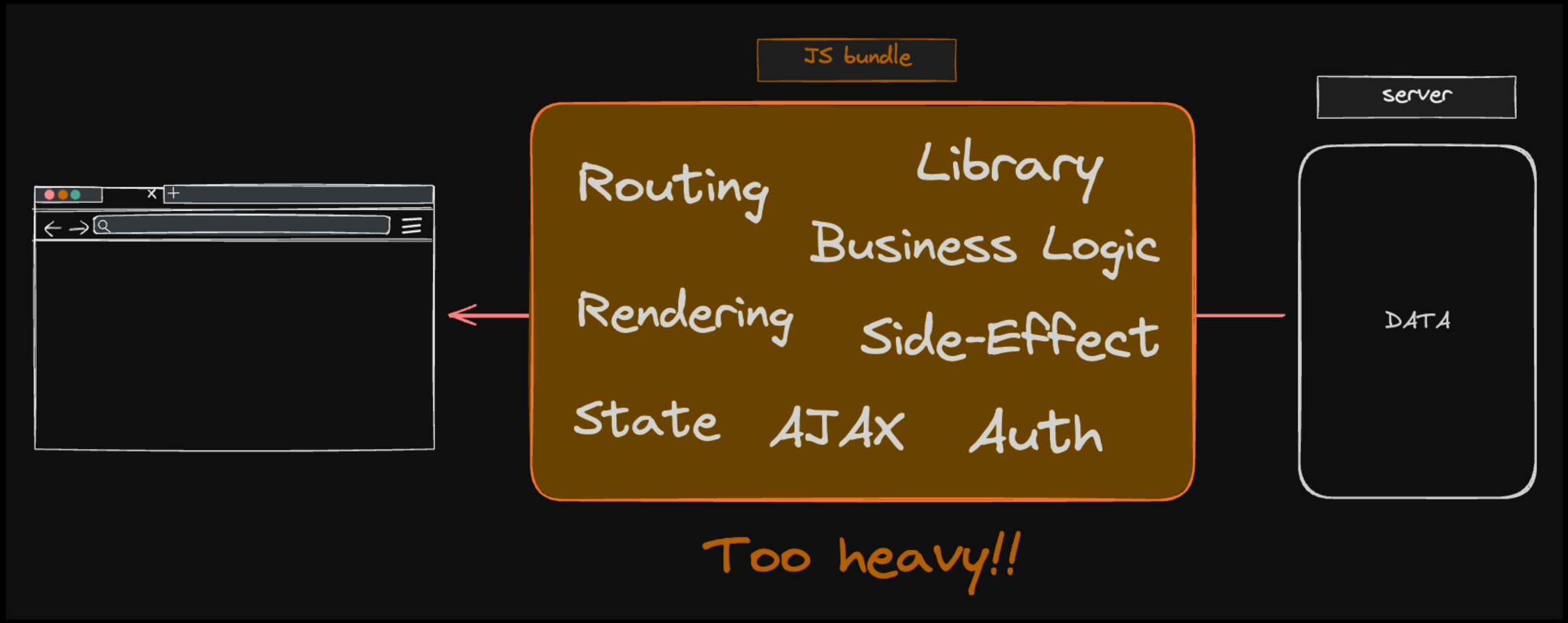


CSR & SPA



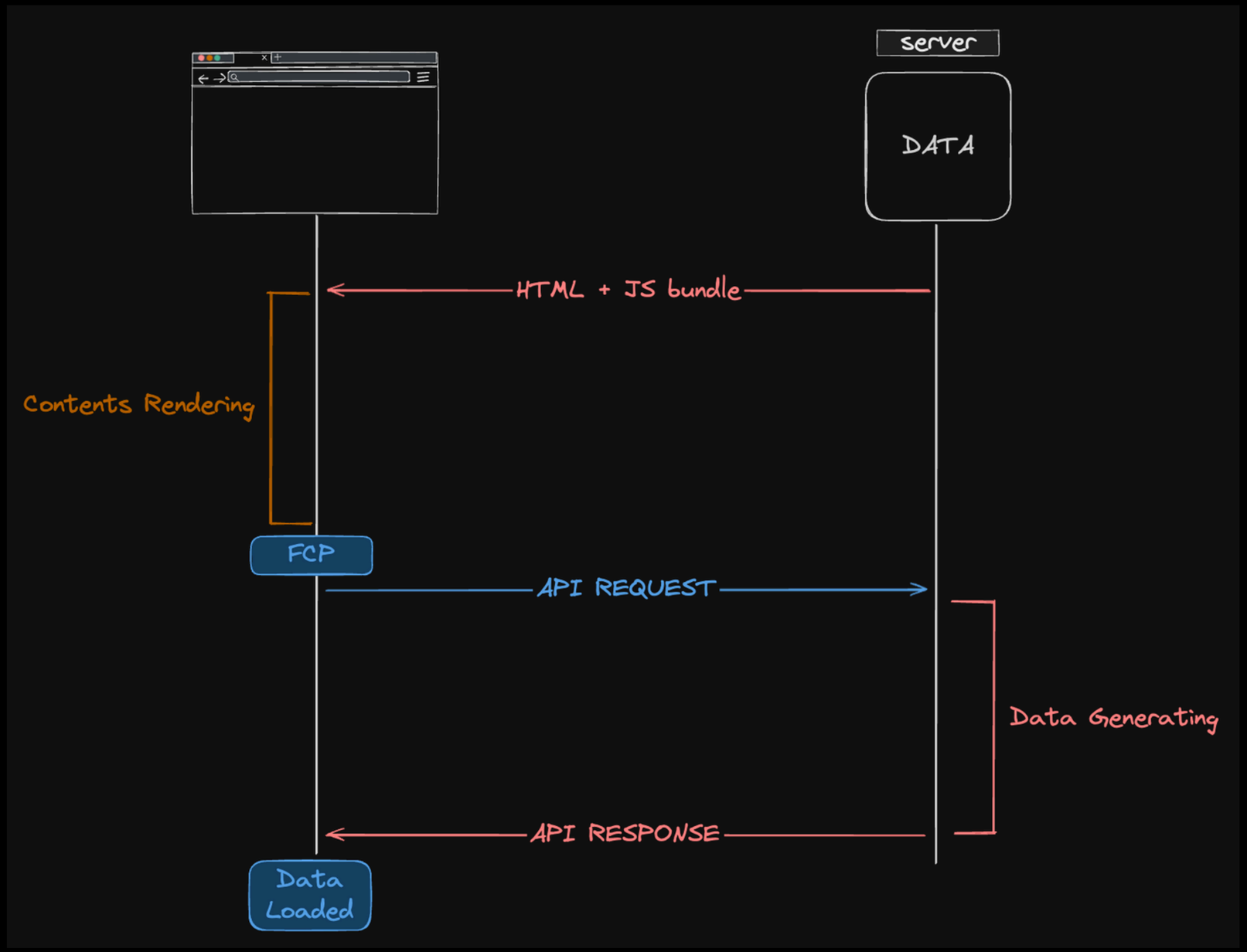

```
<html>
<head>
  <title>Index</title>
</head>
<body>
    <div id="root"></div>
</body>
</html>
```

CSR & SPA


JS bundle
server
Routing
Library
Business Logic
Rendering
Side-Effect
State
AJAX
Auth
DATA
Too heavy!!

CSR & SPA

```tsx
export default function Page() {
  const [state, setState] = useState(0);

  const fetchData = async () => {
    const response = await fetch("...");
    const data = await response.json();

    setState(data);
  };

  useEffect(() => {
    fetchData();
  }, []);

  if (!state) return "Loading...";

  return <div>...</div>;
}
```

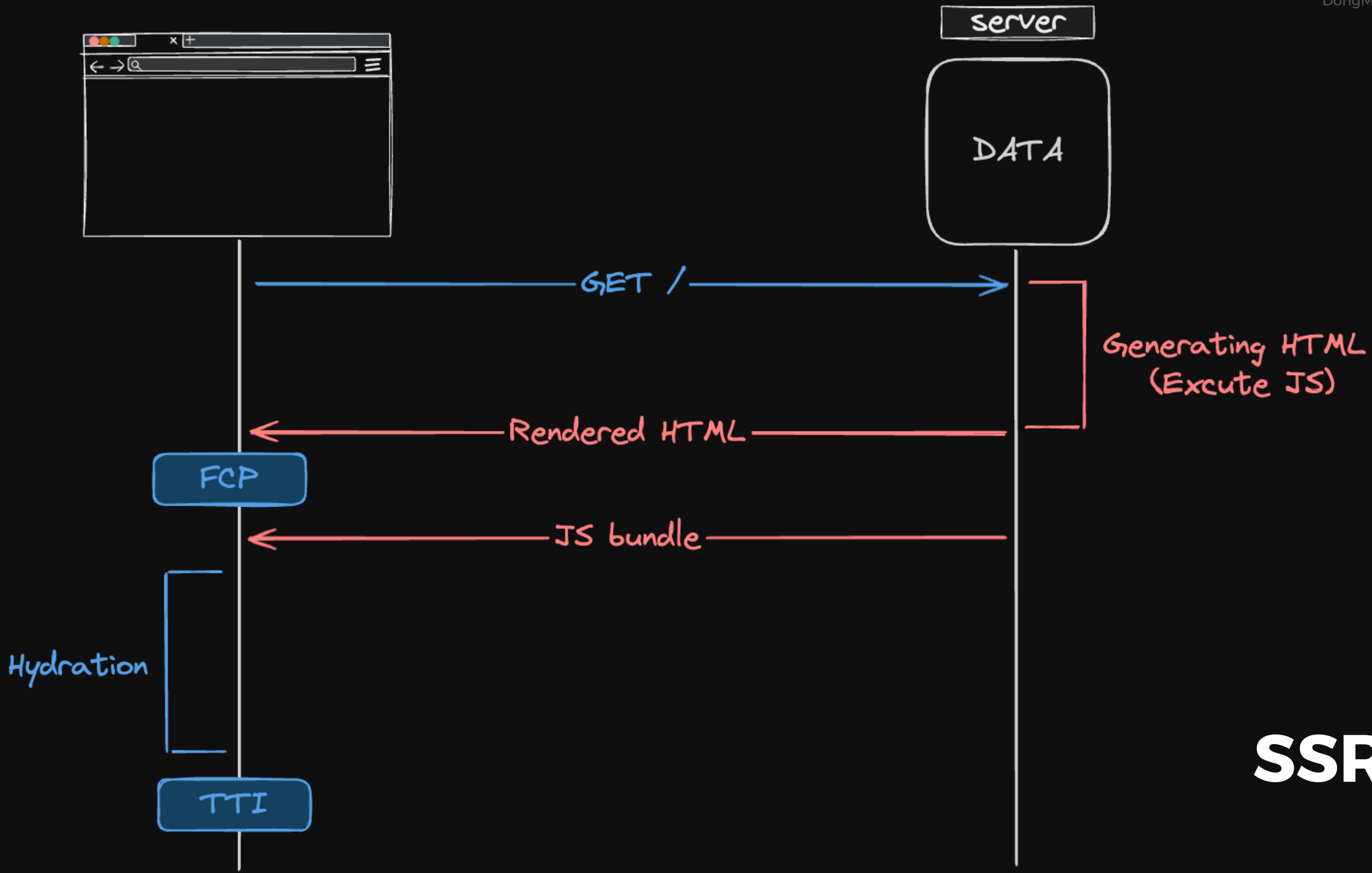


Hybrid Rendering

Revival of SSR

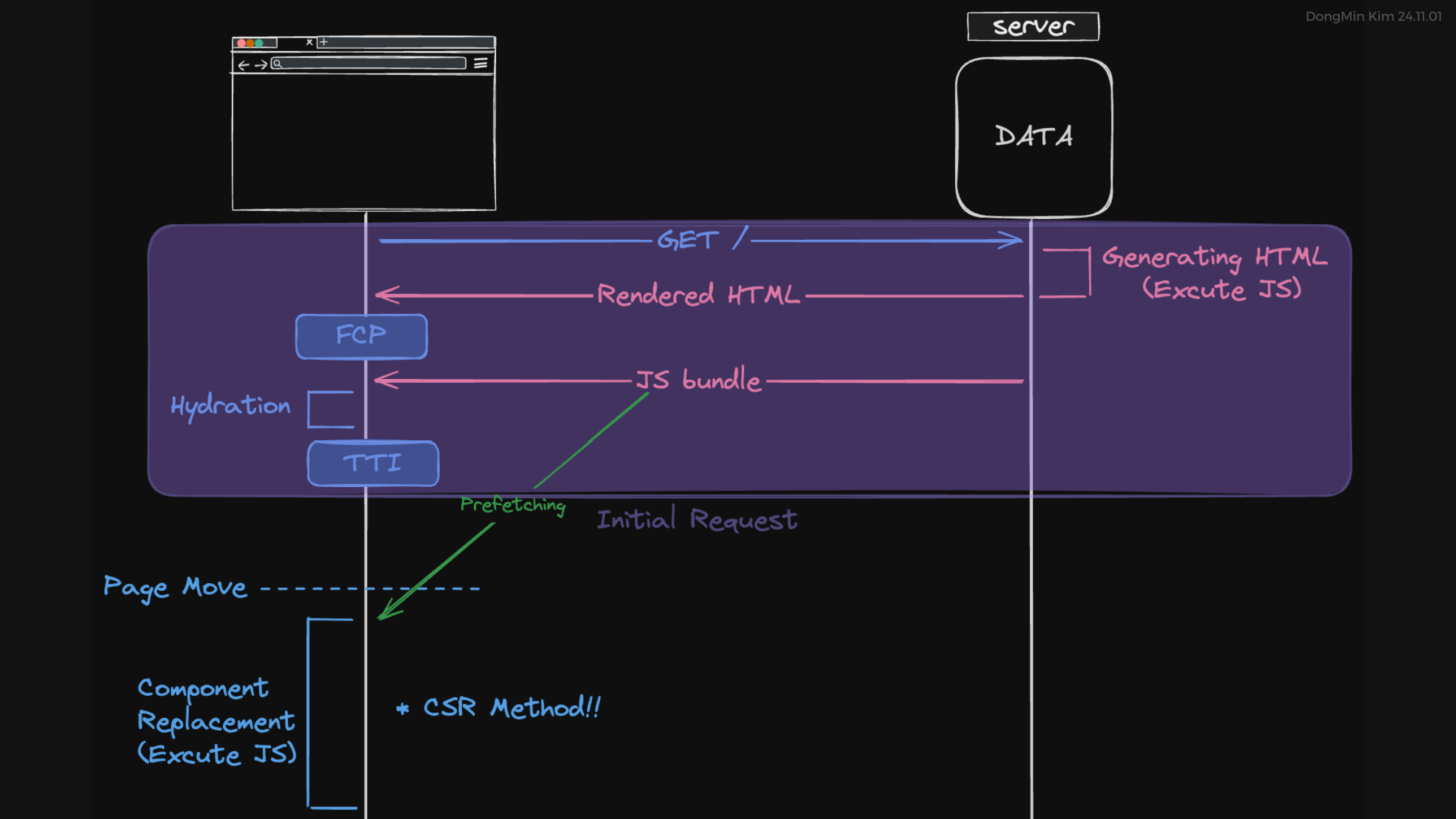
Page Router

Fast FCP + CSR

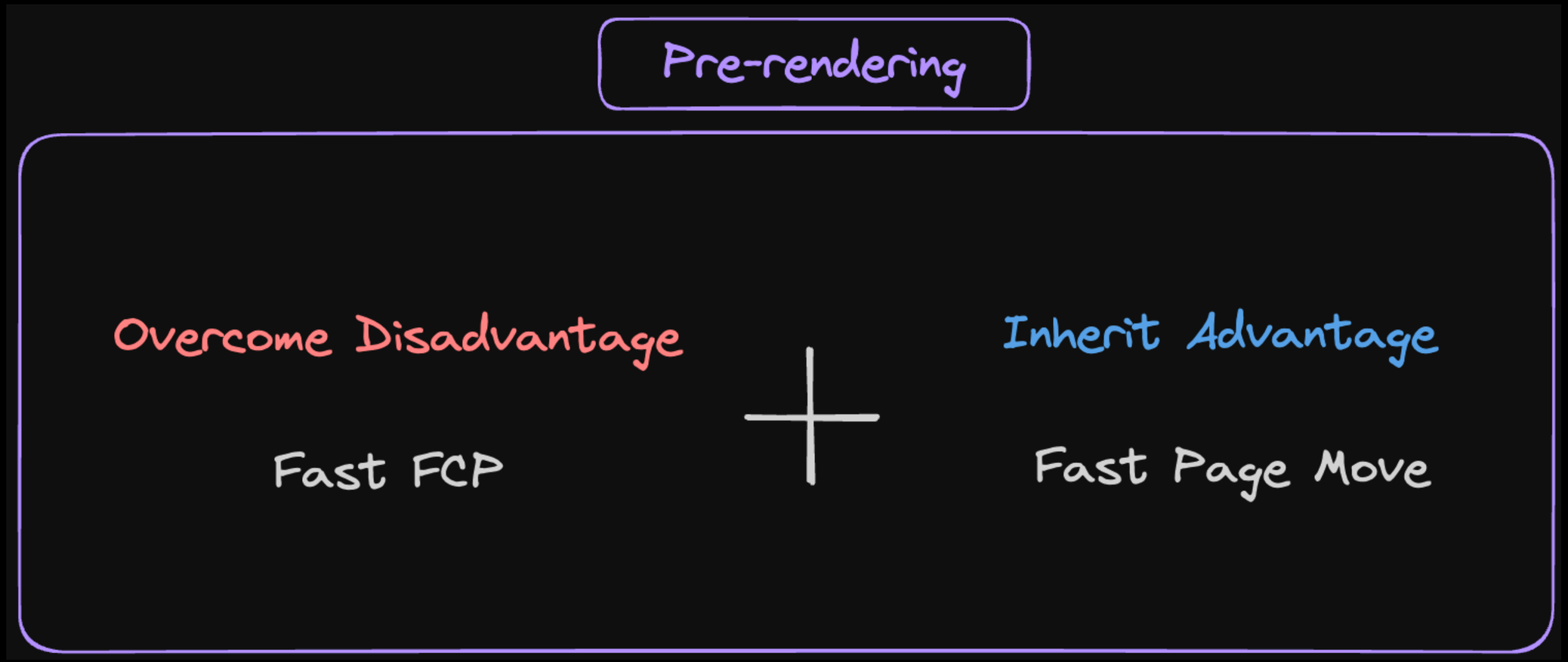

server
DATA
GET /
Generating HTML
(Excute JS)
Rendered HTML
FCP
JS bundle
Hydration
TTI

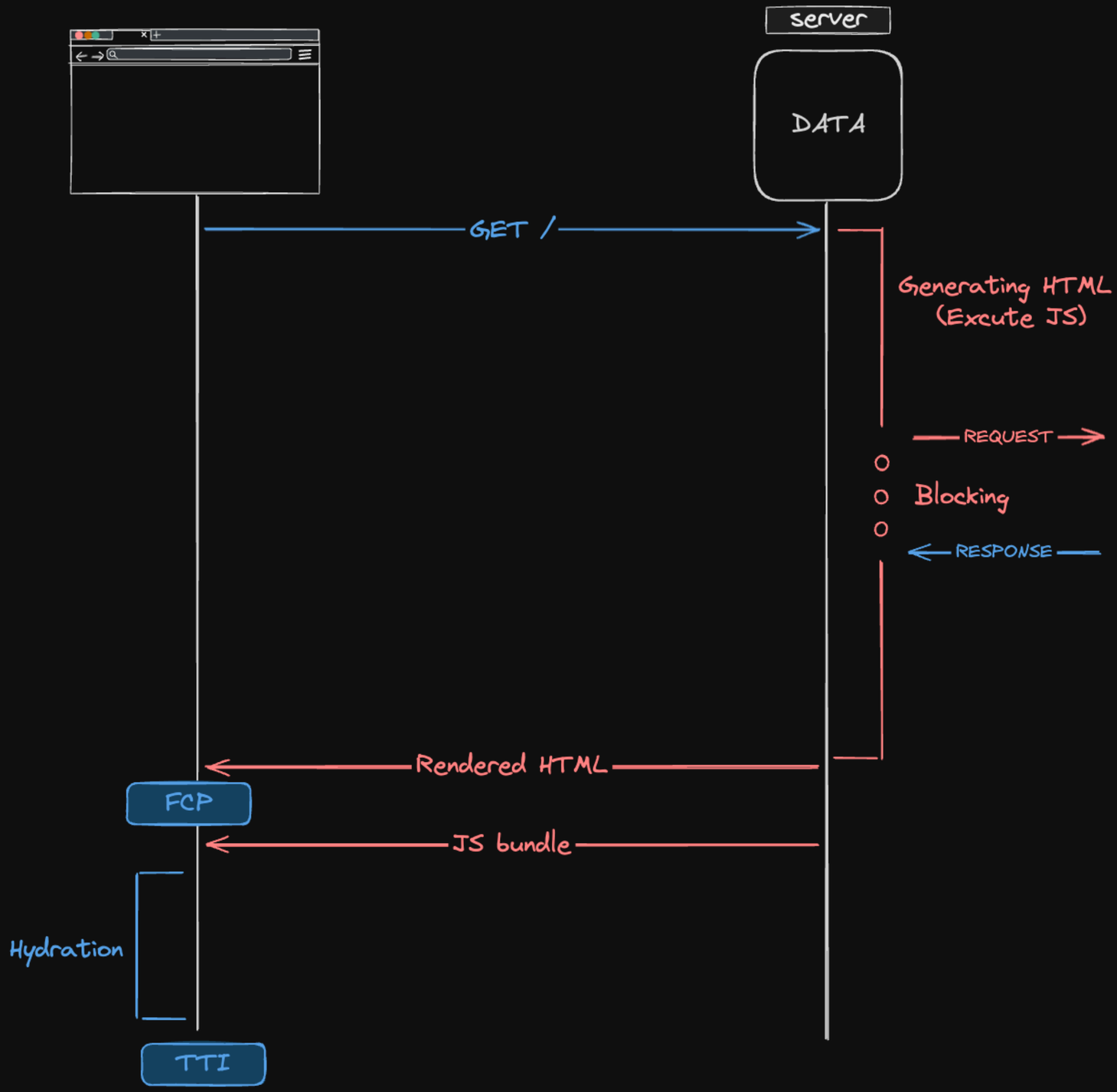
SSR

DongMin Kim 24.11.01

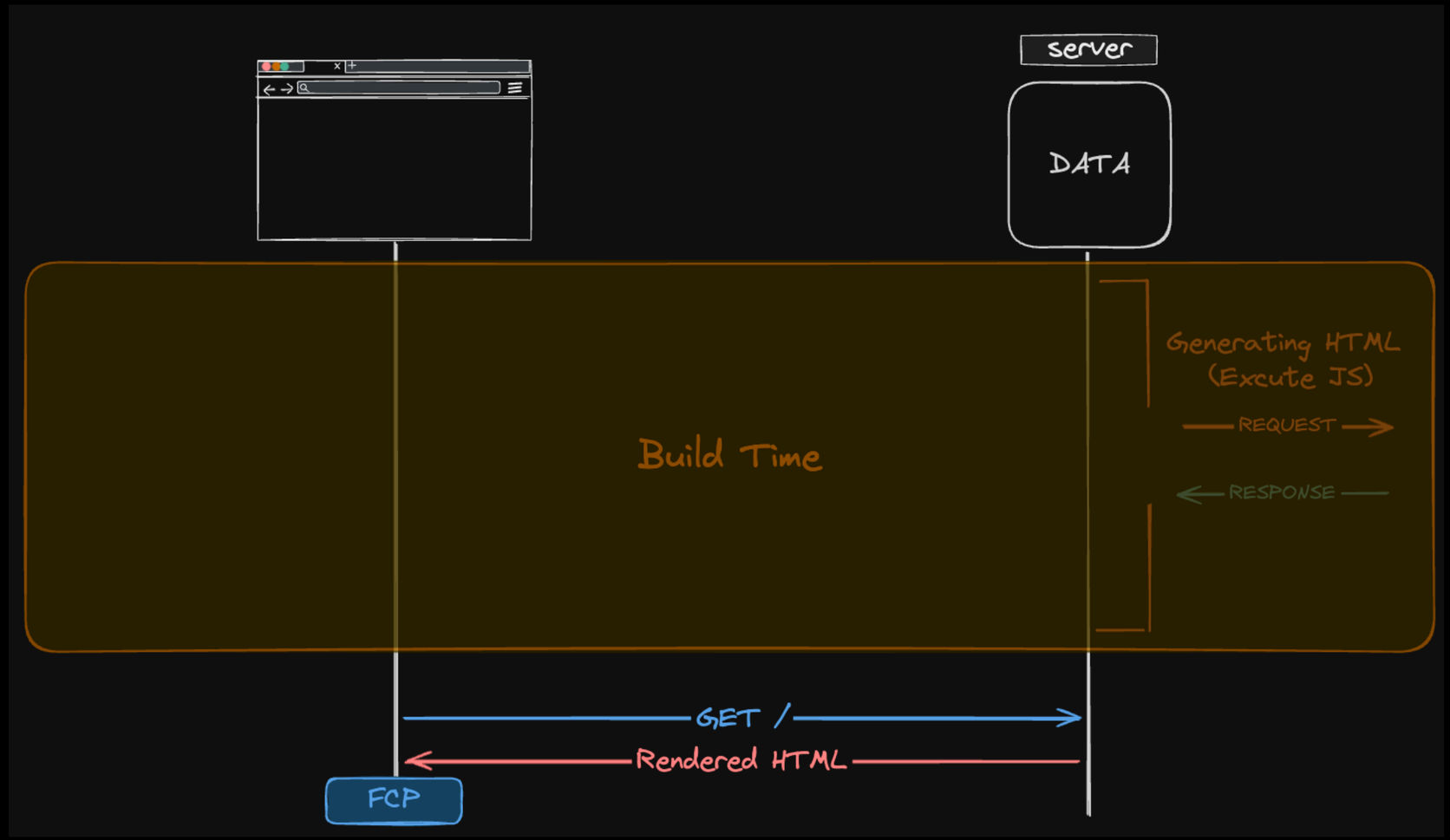


Page Router

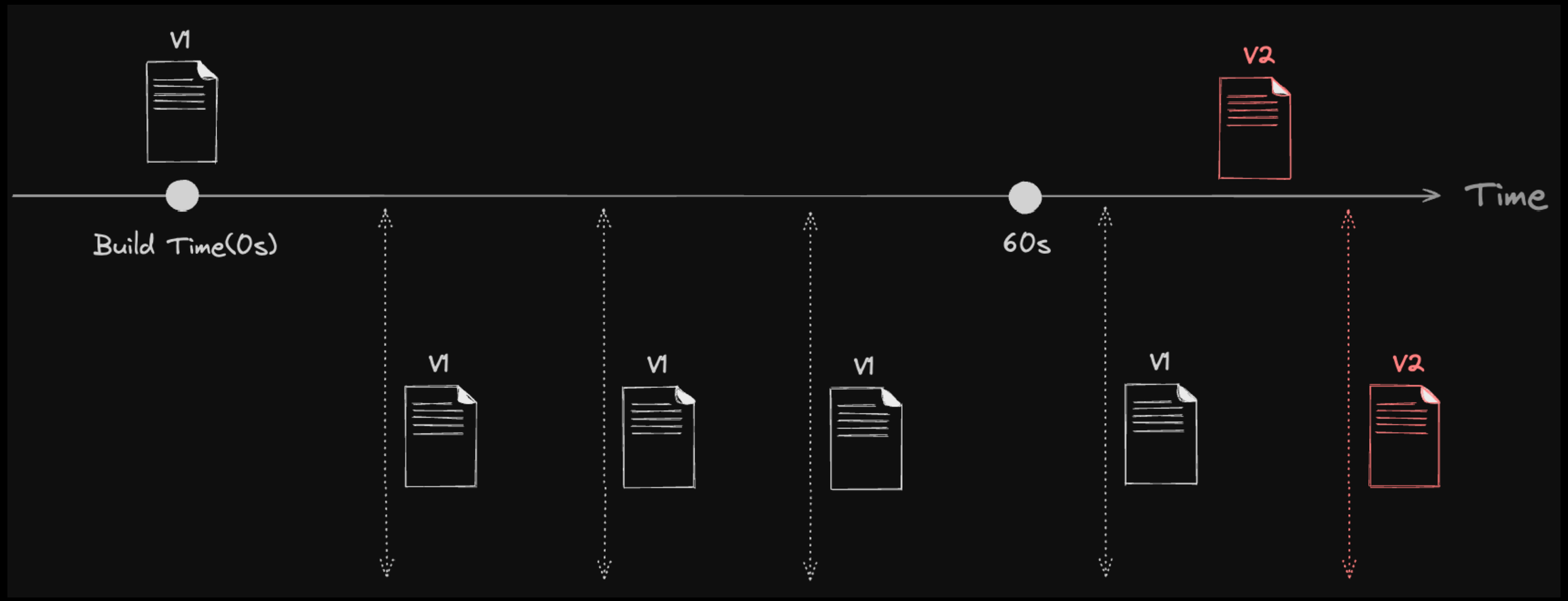

Pre-rendering
Overcome Disadvantage
Fast FCP
+
Inherit Advantage
Fast Page Move


server
DATA
GET /
Generating HTML
(Excute JS)
REQUEST
Blocking
RESPONSE
Rendered HTML
FCP
JS bundle
Hydration
TTI

SSG(Static Site Generation)



ISR(Incremental Static Regeneration)



Page Router

SSR

CSR

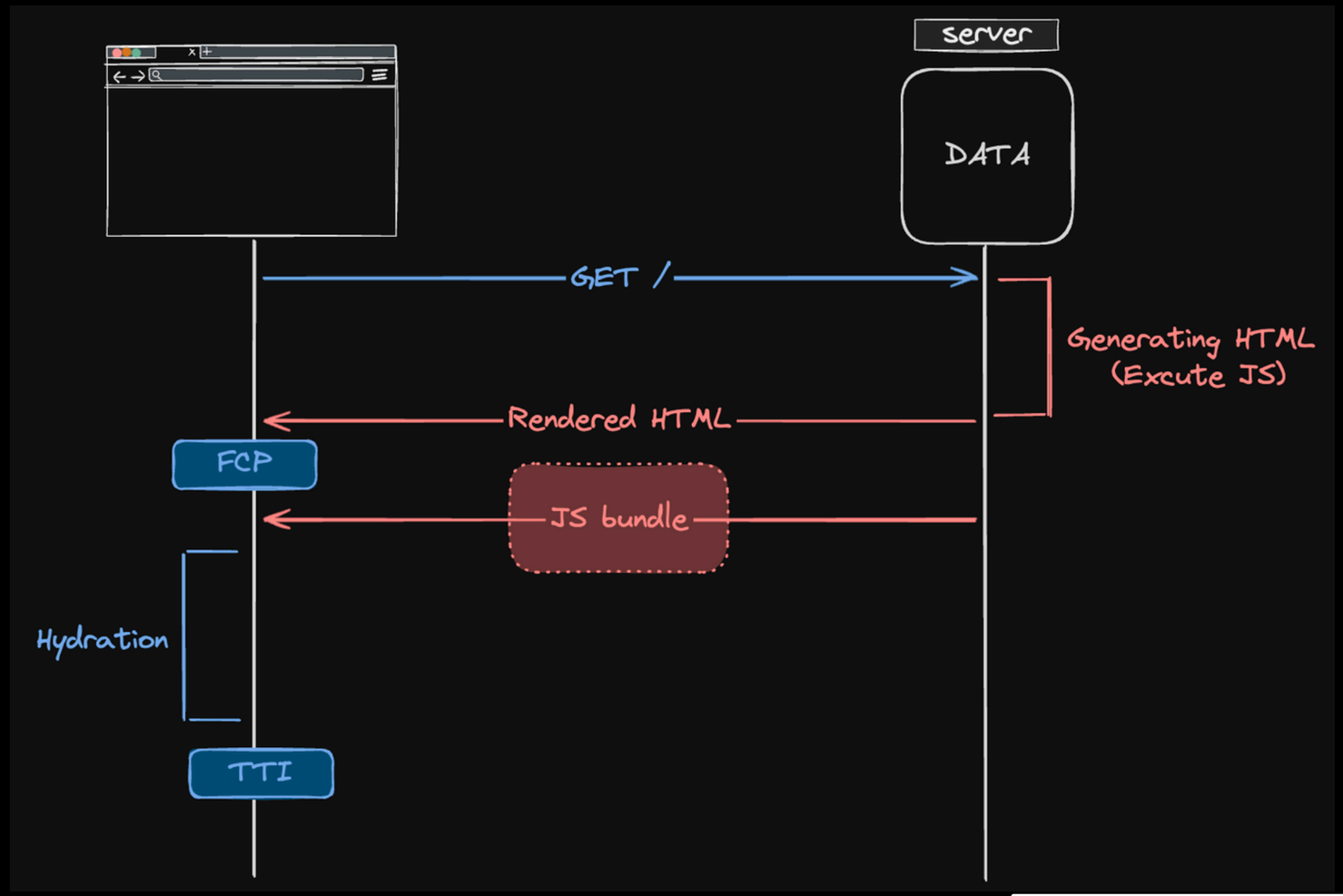
SSG

ISR

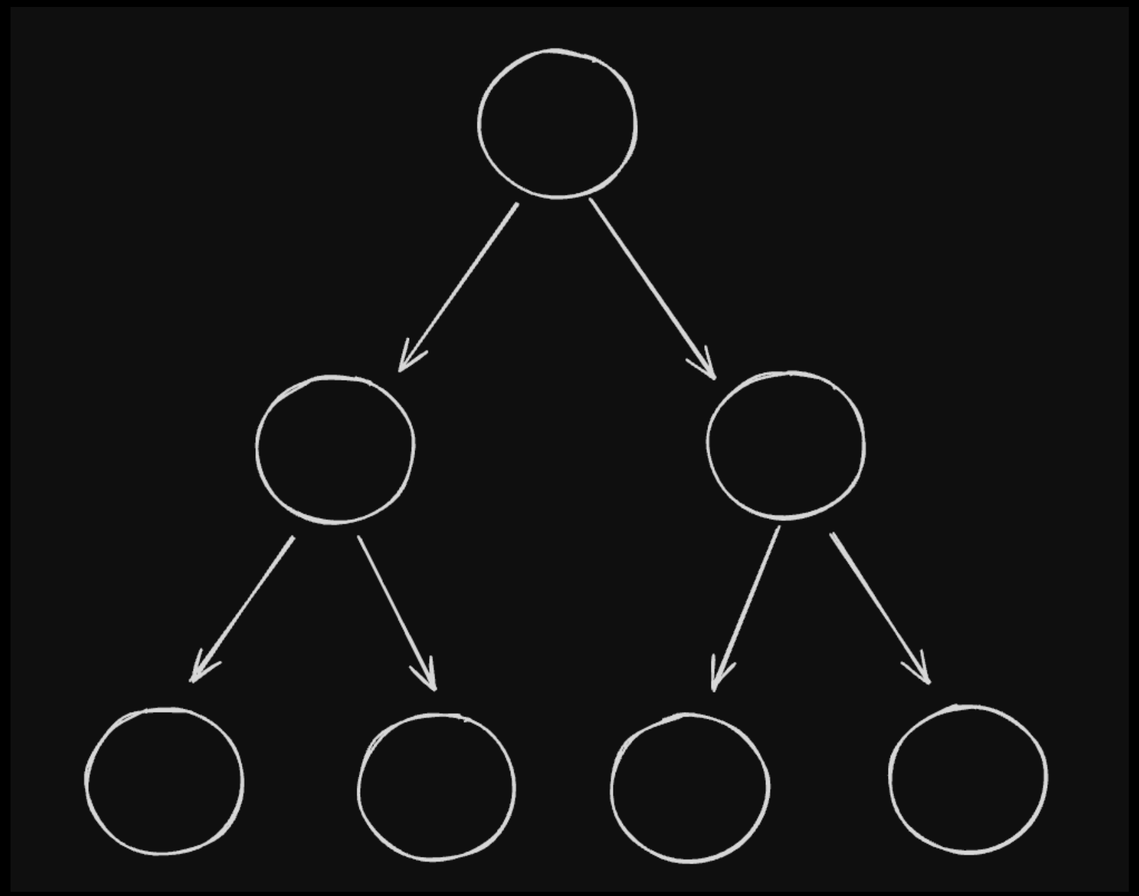
App Router

Server Components

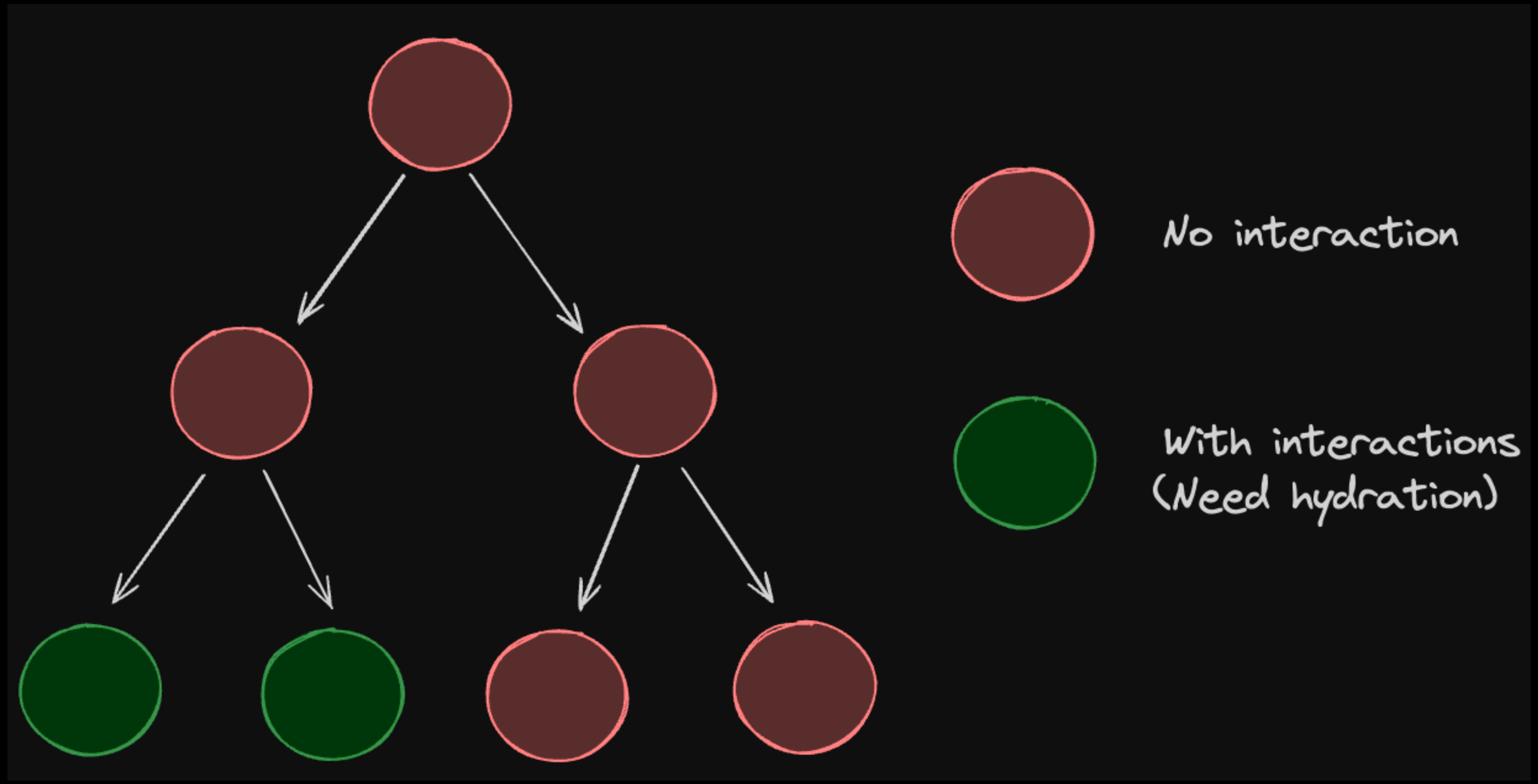
Page Router


server
DATA
GET /
Generating HTML
(Excute JS)
Rendered HTML
FCP
JS bundle
Hydration
TTI

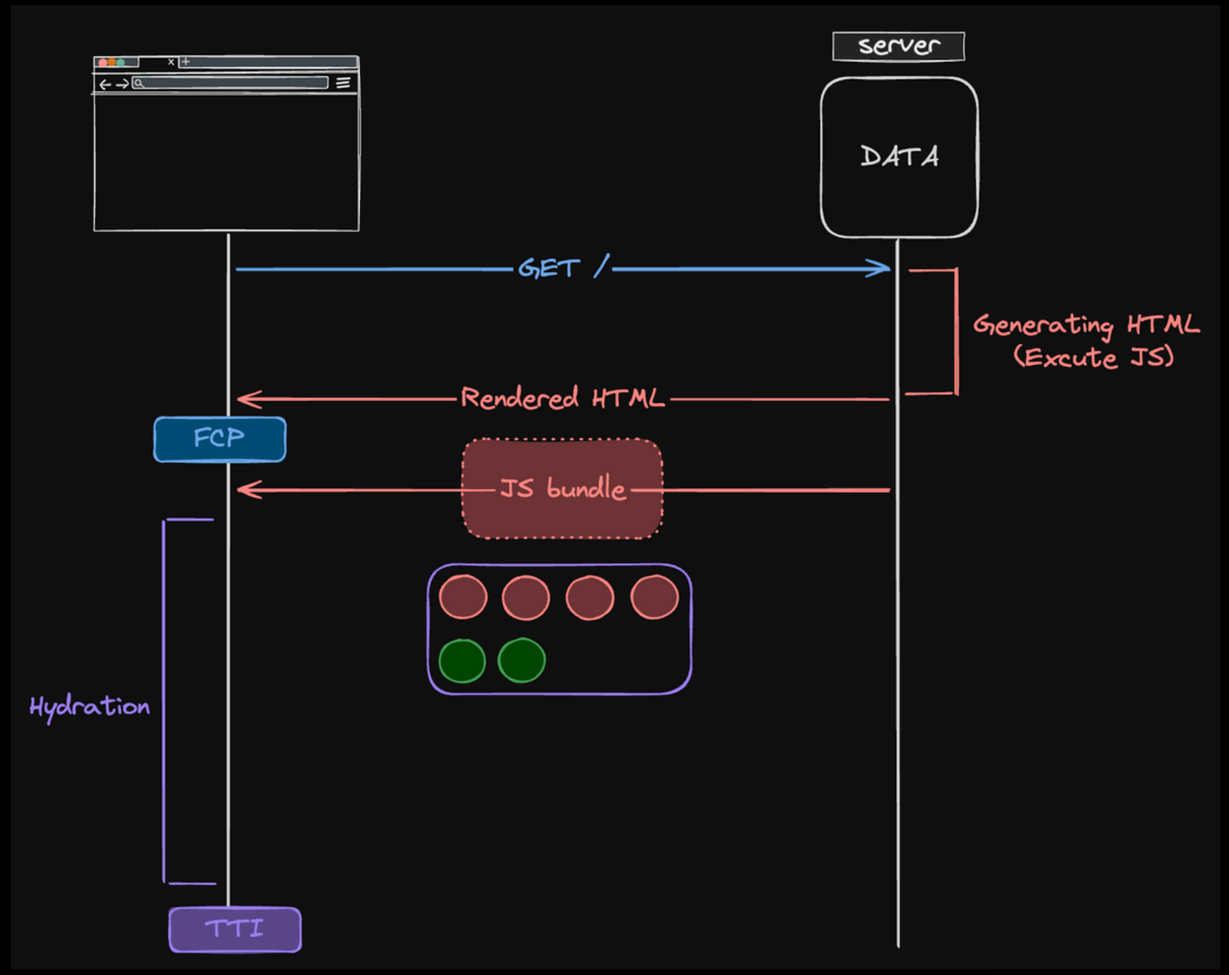
Page Router



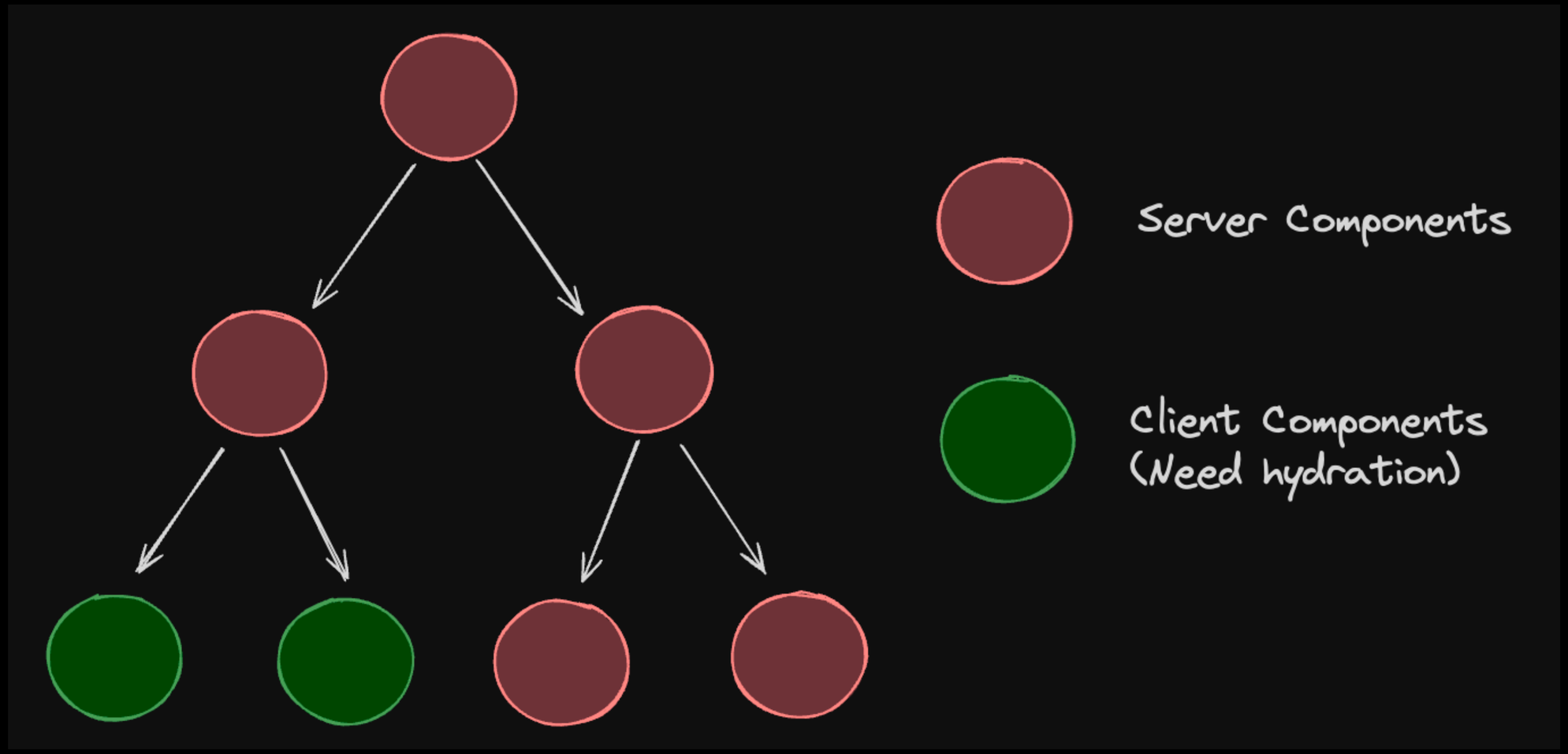
Page Router

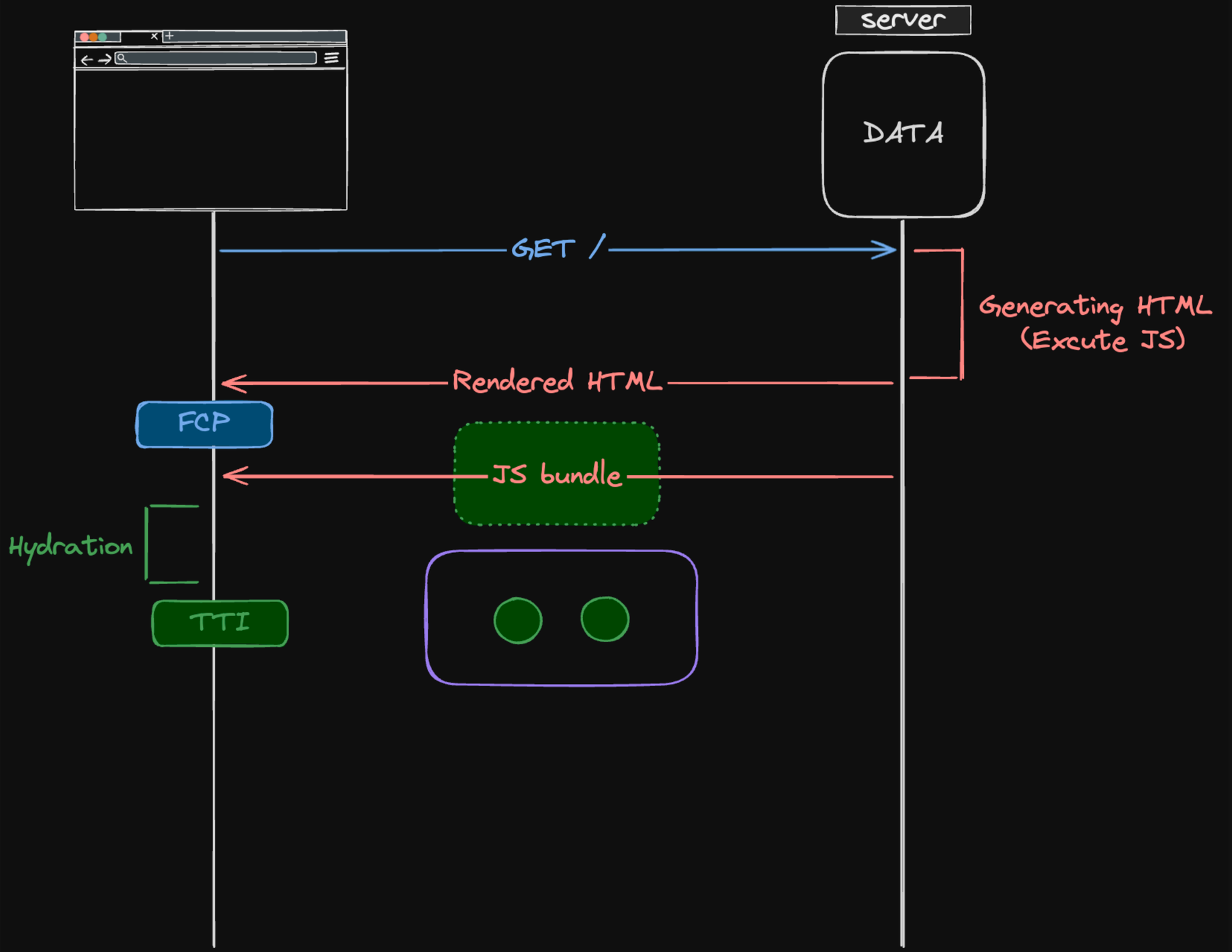


Page Router


server
DATA
GET /
Generating HTML
(Excute JS)
Rendered HTML
FCP
JS bundle
Hydration
TTI

App Router




server
DATA
GET /
Generating HTML
(Excute JS)
Rendered HTML
FCP
JS bundle
Hydration
TTI

App Router

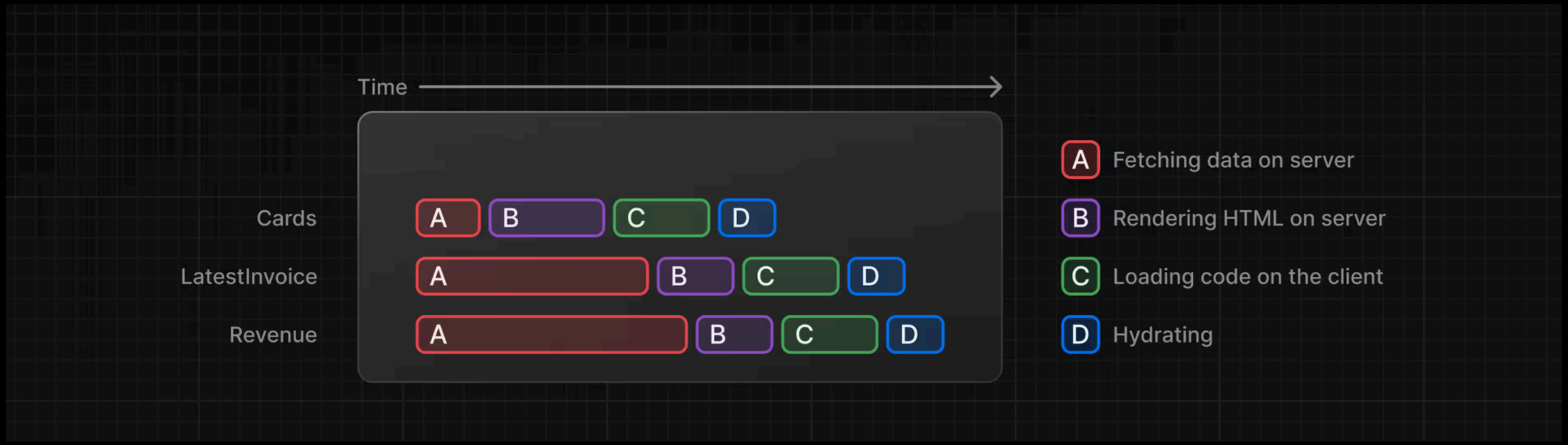
Server Components

1. No interaction
2. Executed on the Server Only

Client Components

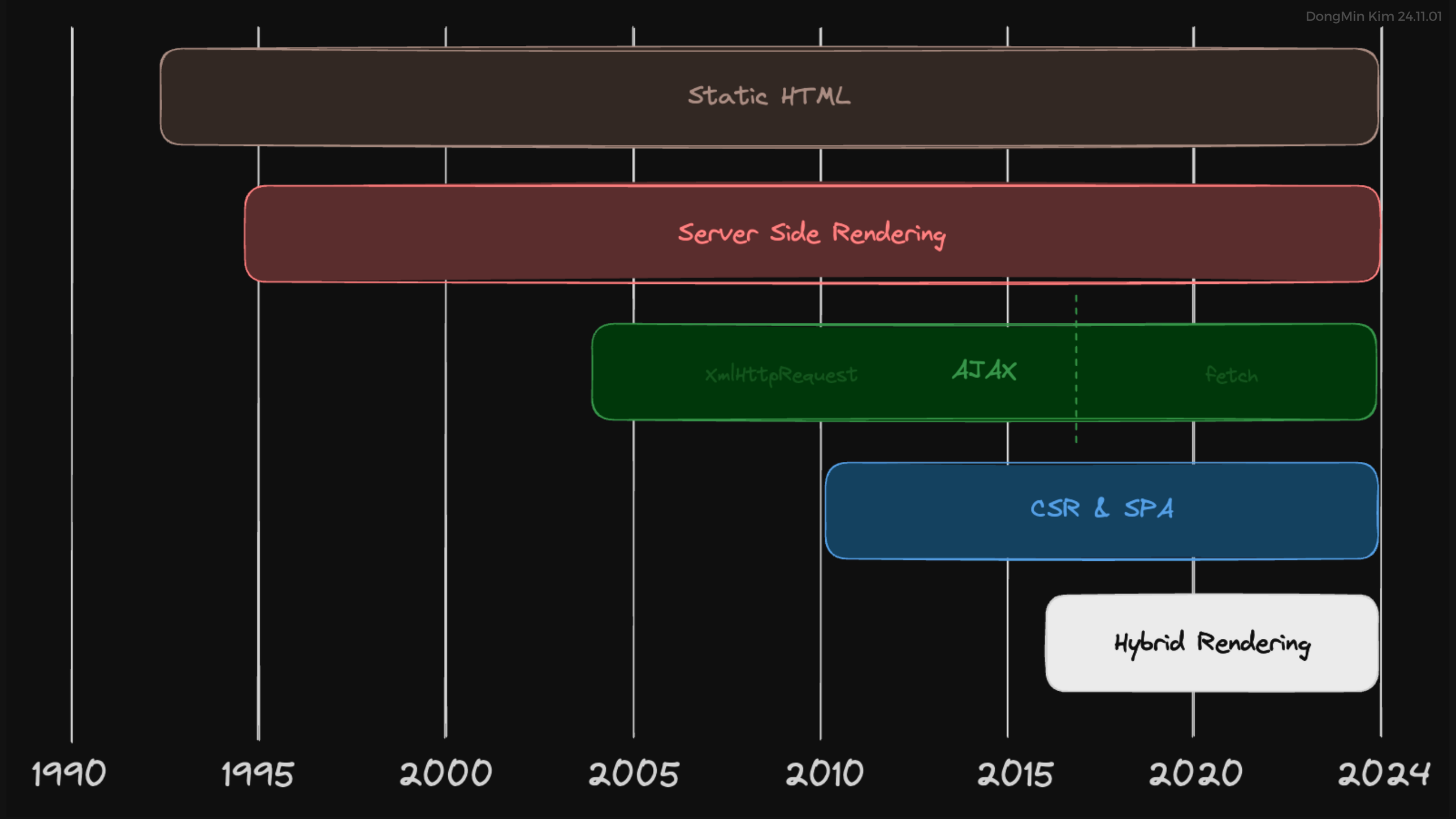
1. With interaction
2. Executed on Both Sides (Pre-render, hydration)

App Router - Streaming



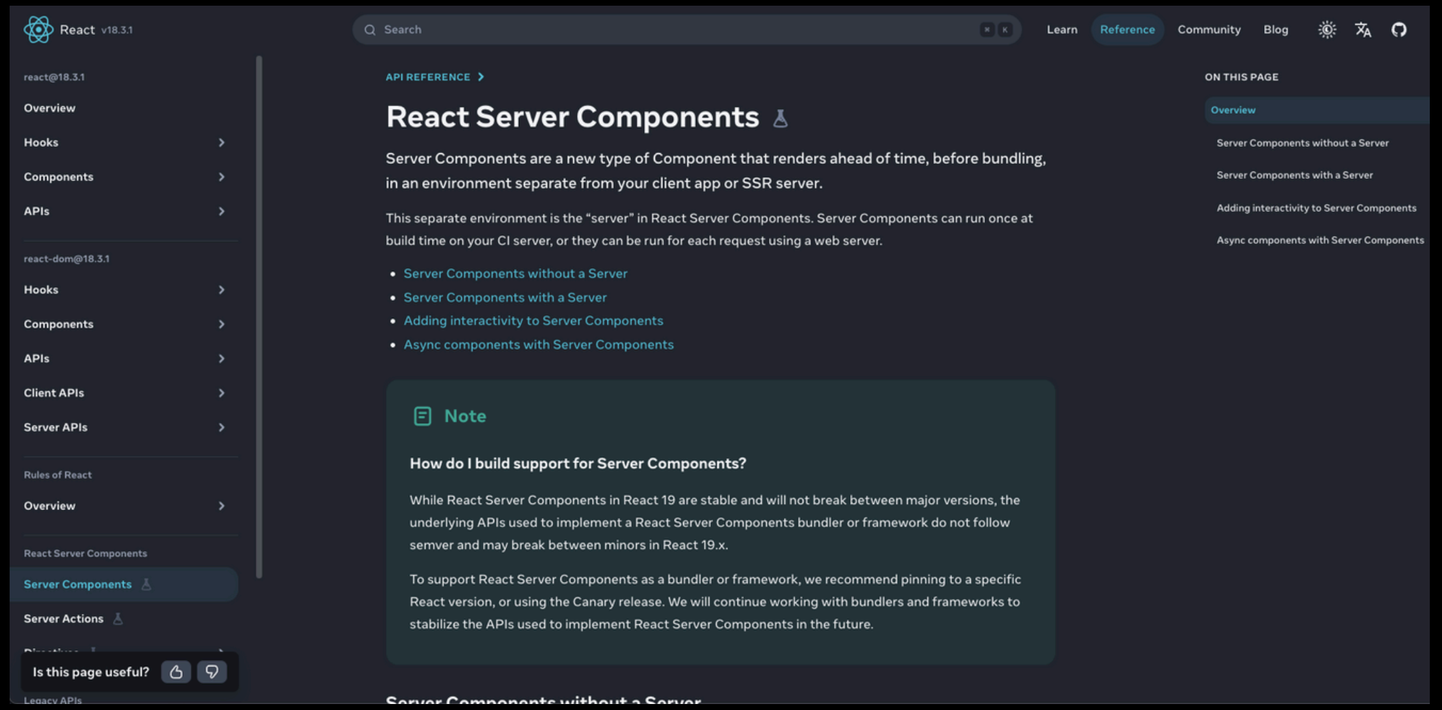
Interim Summary

- Keep going



Official Docs

Came a long way



Server Components

Server Components are a new type of Component that renders ahead of time, before bundling, in an environment separate from your client app or SSR server.

Server Components

- Server Components without a Server
- Server Components with a Server
- Adding interactivity to Server Components
- Async components with Server Components

SSG

SSR

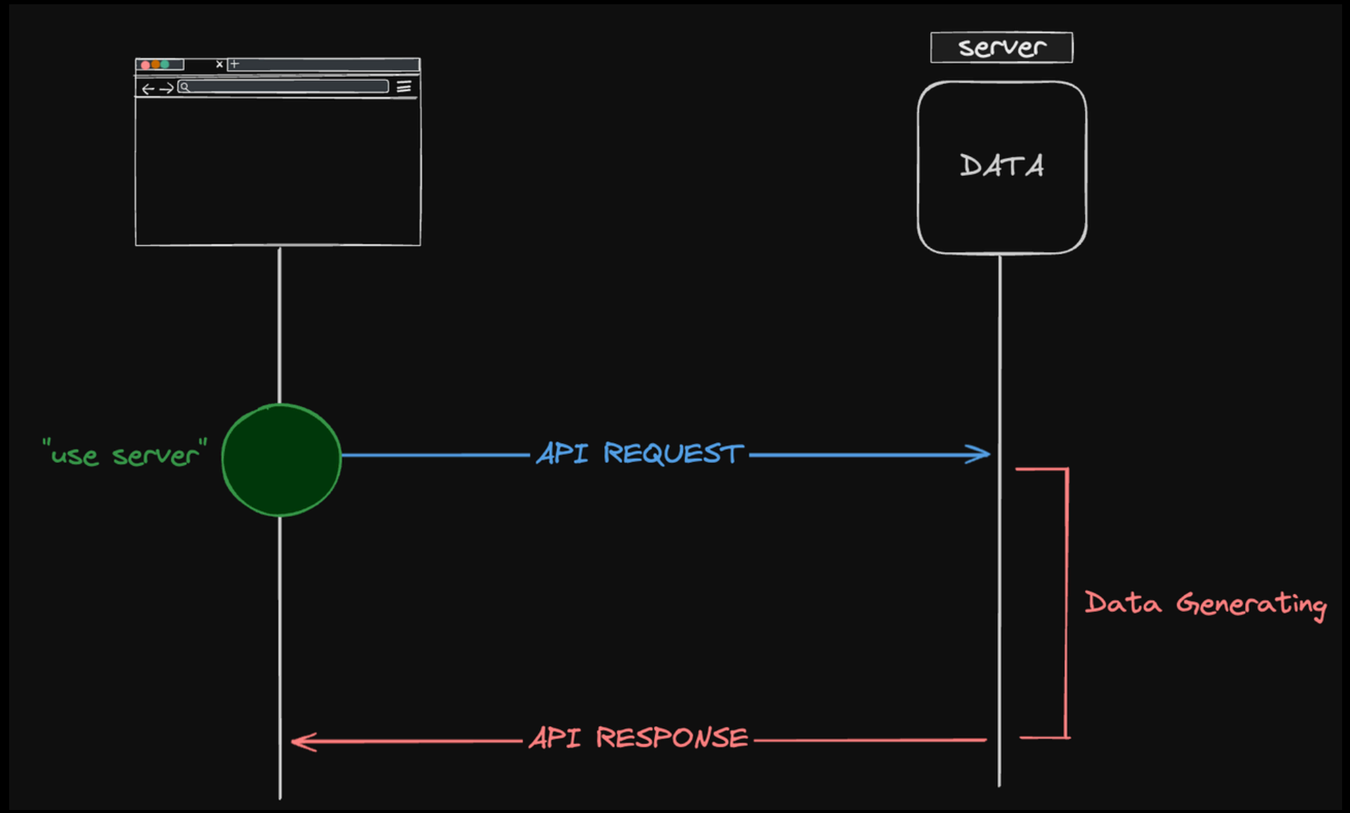
Hydration

Streaming

Server Actions

Server Actions allow Client Components to call async functions executed on the server.

```
async function createNoteAction() {
  // Server Action
  'use server';

  await db.notes.create();
}
```



Directives - “use server”

Notably, these are not supported:

- React elements, or JSX
- Functions, including component functions or any other function that is not a Server Action
- Classes
- Objects that are instances of any class (other than the built-ins mentioned) or objects with a null prototype
- Symbols not registered globally, ex. `Symbol('my new symbol')`

Supported serializable return values are the same as serializable props for a boundary Client Component.

Directives - “use client”

Advantages of Server Components

- Server Components can reduce the amount of code sent and run by the client. Only Client modules are bundled and evaluated by the client.
- Server Components benefit from running on the server. They can access the local filesystem and may experience low latency for data fetches and network requests.

Limitations of Server Components

- Server Components cannot support interaction as event handlers must be registered and triggered by a client.
  - For example, event handlers like `onClick` can only be defined in Client Components.
- Server Components cannot use most Hooks.
  - When Server Components are rendered, their output is essentially a list of components for the client to render. Server Components do not persist in memory after render and cannot have their own state.

Directives - “use client”

Notably, these are not supported:

- Functions that are not exported from client-marked modules or marked with `'use server'`
- Classes
- Objects that are instances of any class (other than the built-ins mentioned) or objects with a null prototype
- Symbols not registered globally, ex. `Symbol('my new symbol')`

Directives - “use server”

Notably, these are not supported:

- React elements, or JSX
- Functions, including component functions or any other function that is not a Server Action
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- Symbols not registered globally, ex. `Symbol('my new symbol')`

Supported serializable return values are the same as serializable props for a boundary Client Component.

THANK YOU

QnA & Discussion

Retrospect

Please write in free format and upload.

NICKNAME.MD

in 11_01_ServerComponents/Retrospect

https://github.com/gdsc-konkuk/24-25-study-react-nextjs-docs/tree/main/11_01_ServerComponents