

The background of the slide is a deep space image featuring a dense field of stars and colorful nebulae in shades of blue, purple, and orange. Overlaid on this are numerous white lines representing star trails, some forming concentric circles. In the bottom right corner, the dark silhouettes of a person and a child are visible; the person is standing and pointing their right hand towards a bright star in the distance.

# COMPSCI 497S

Scalable Web Systems

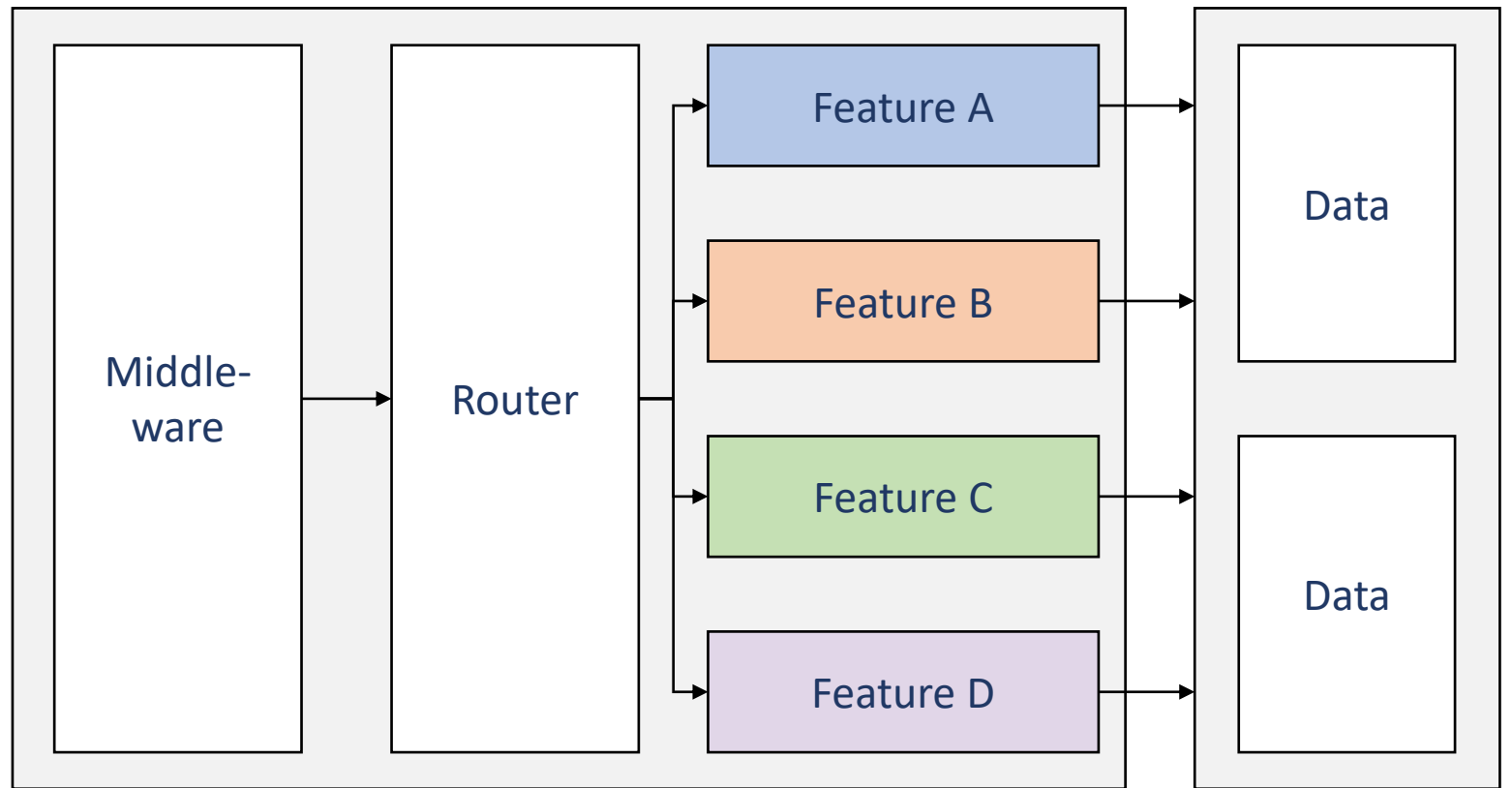
01 Micro-Services Fundamentals

# Today

- Monolithic Architecture
- Micro-Service Architecture
- Data Management Between Services
- Database Per Service

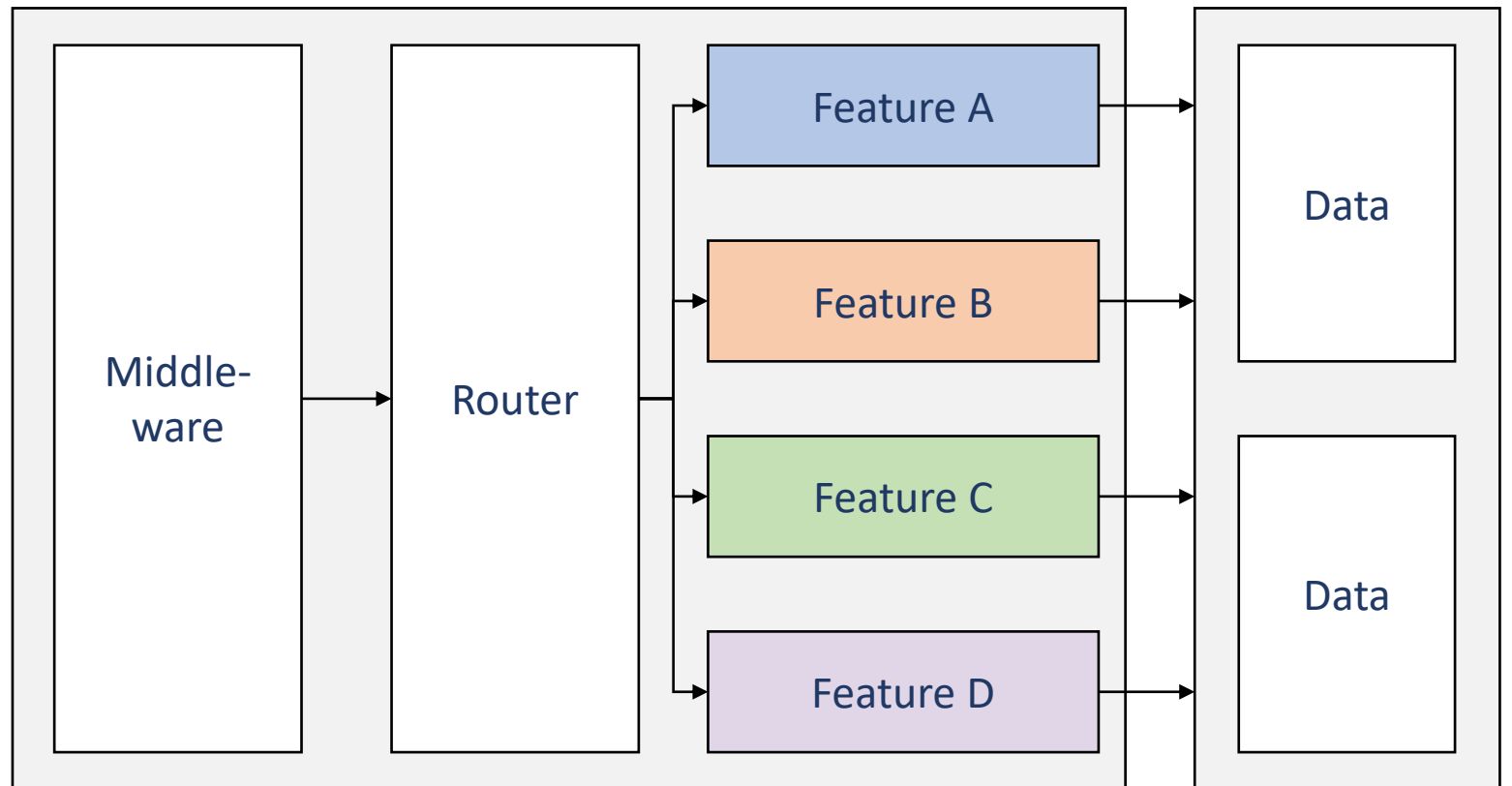
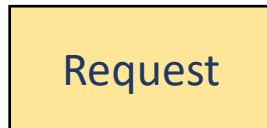
# Monolithic Architecture

This is probably how you are building your systems right now.



# Monolithic Architecture

A request arrives on some port given some route.

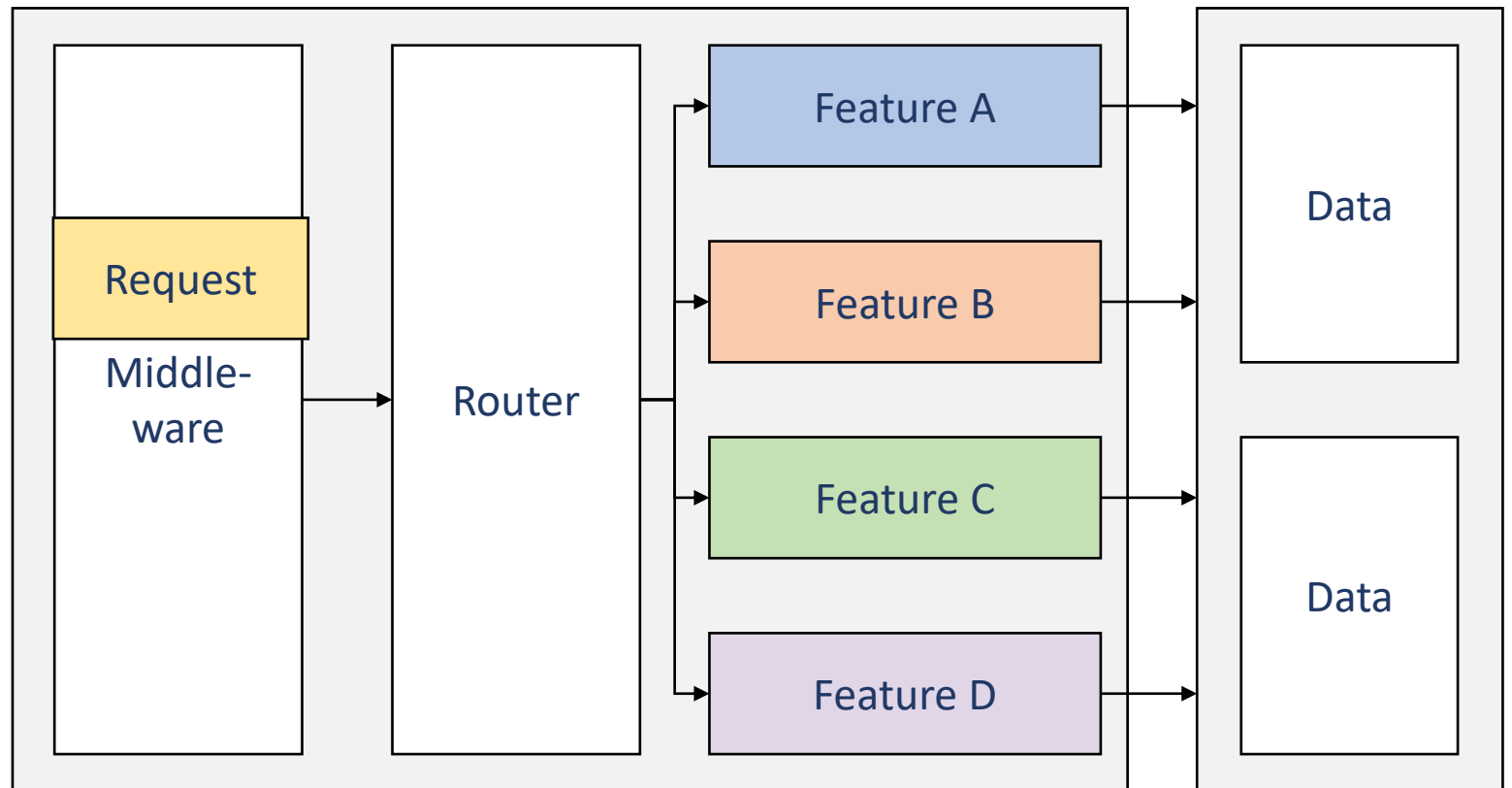




# Monolithic Architecture

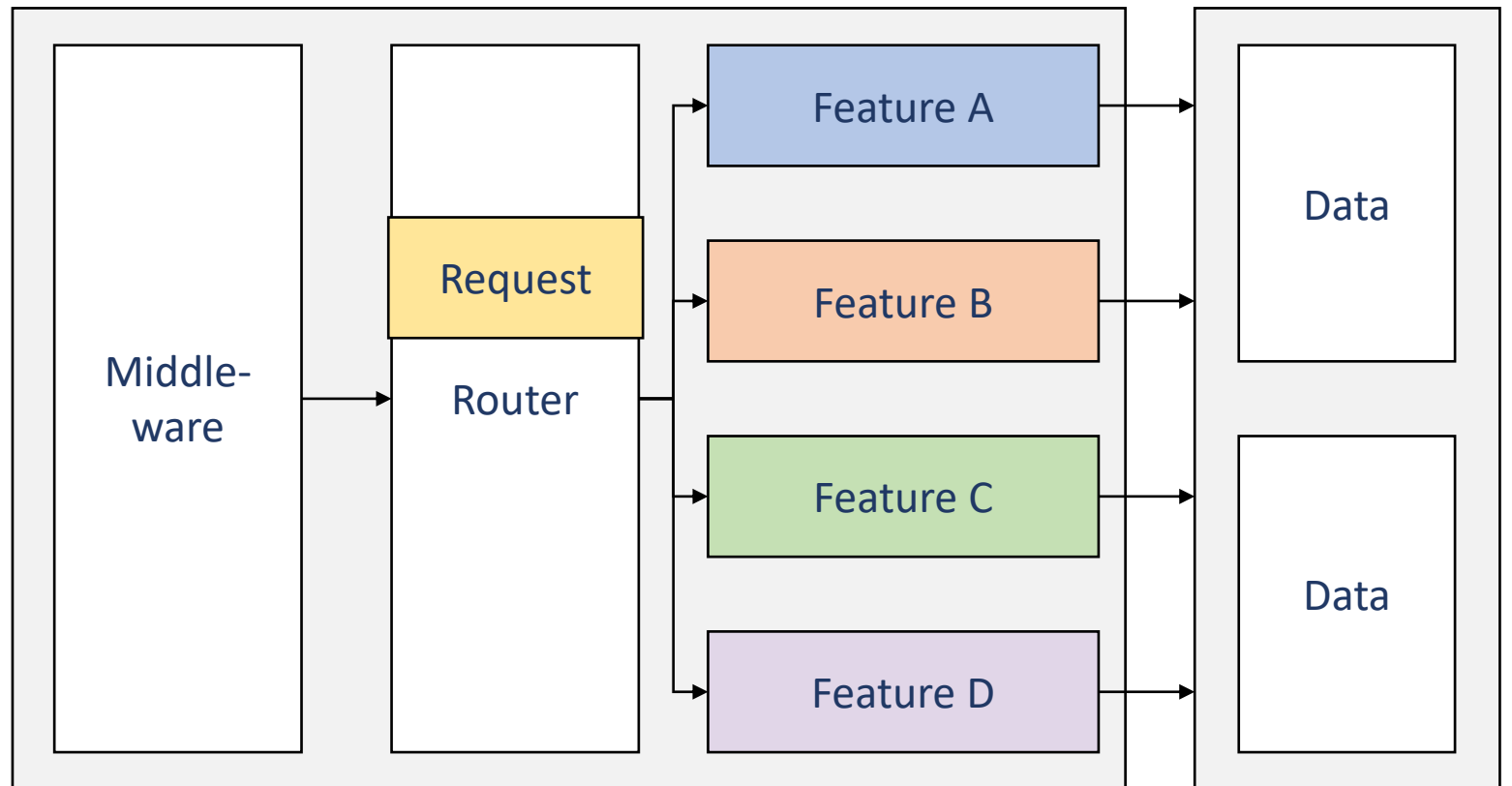
The various  
middleware  
processes the  
request.

Body parsing,  
sessions,  
authentication,  
etc.



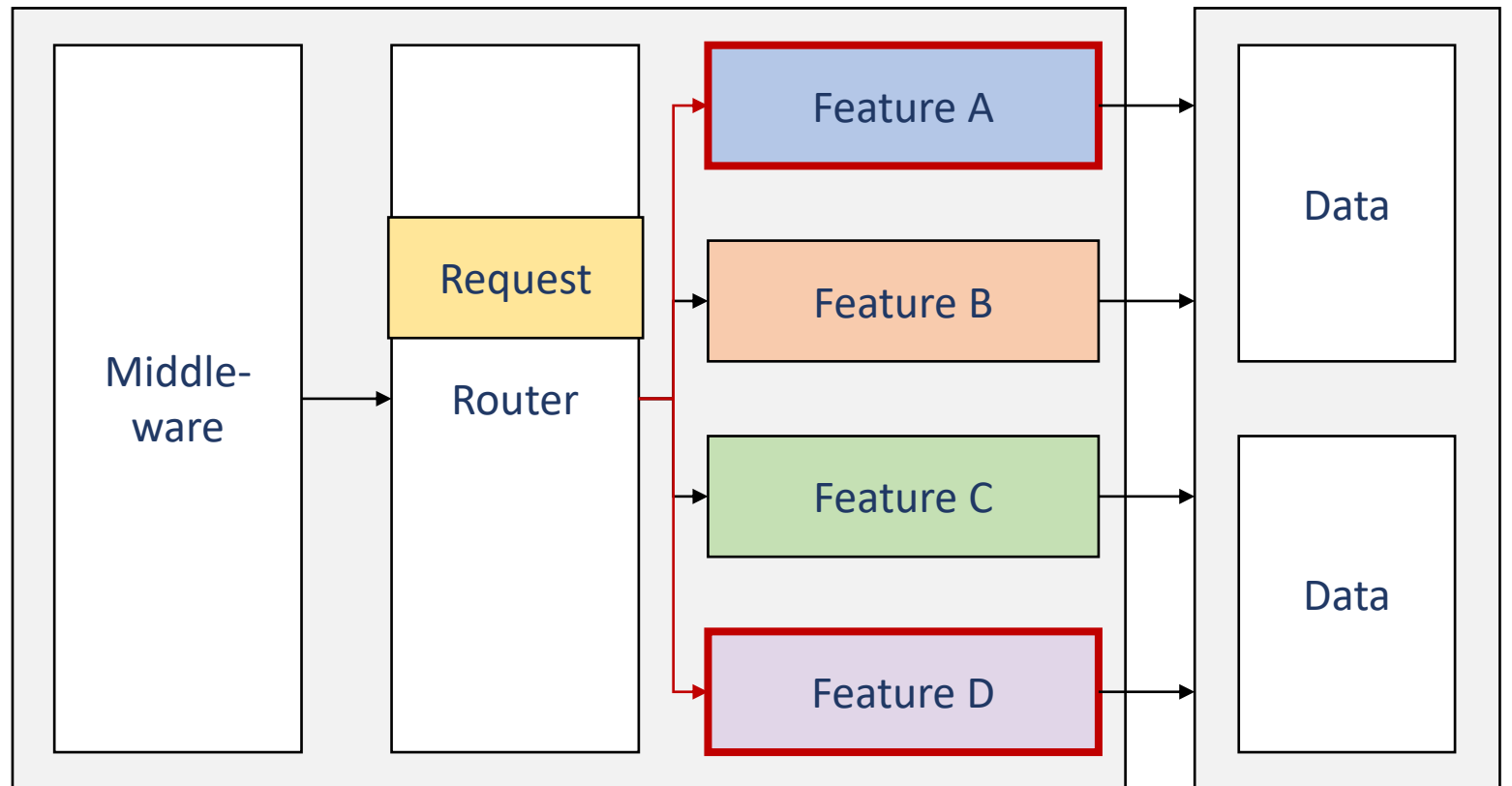
# Monolithic Architecture

The router looks at the route to determine what the request and invokes the appropriate controller.



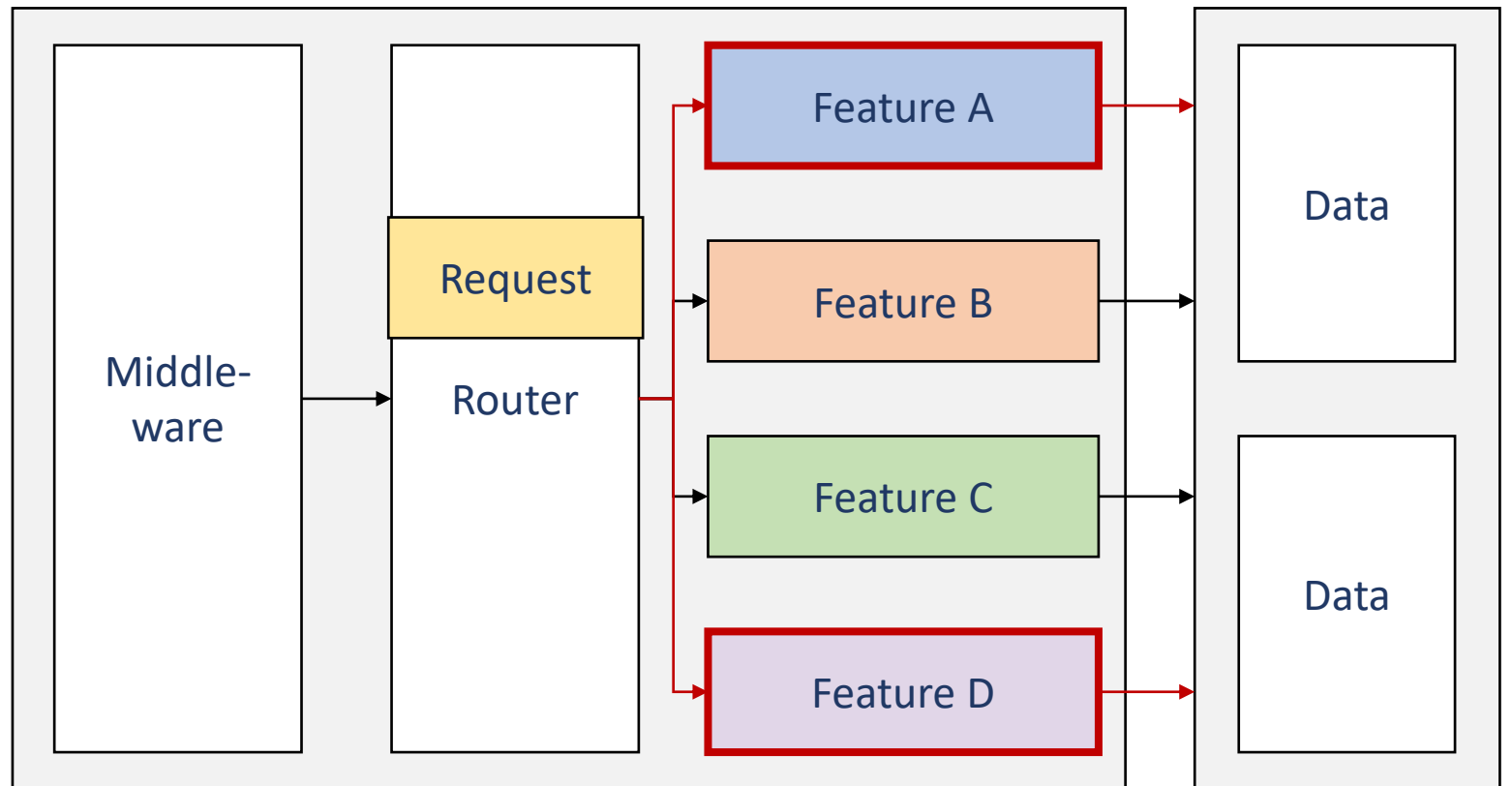
# Monolithic Architecture

This, in turn,  
causes various  
features to be  
activated.



# Monolithic Architecture

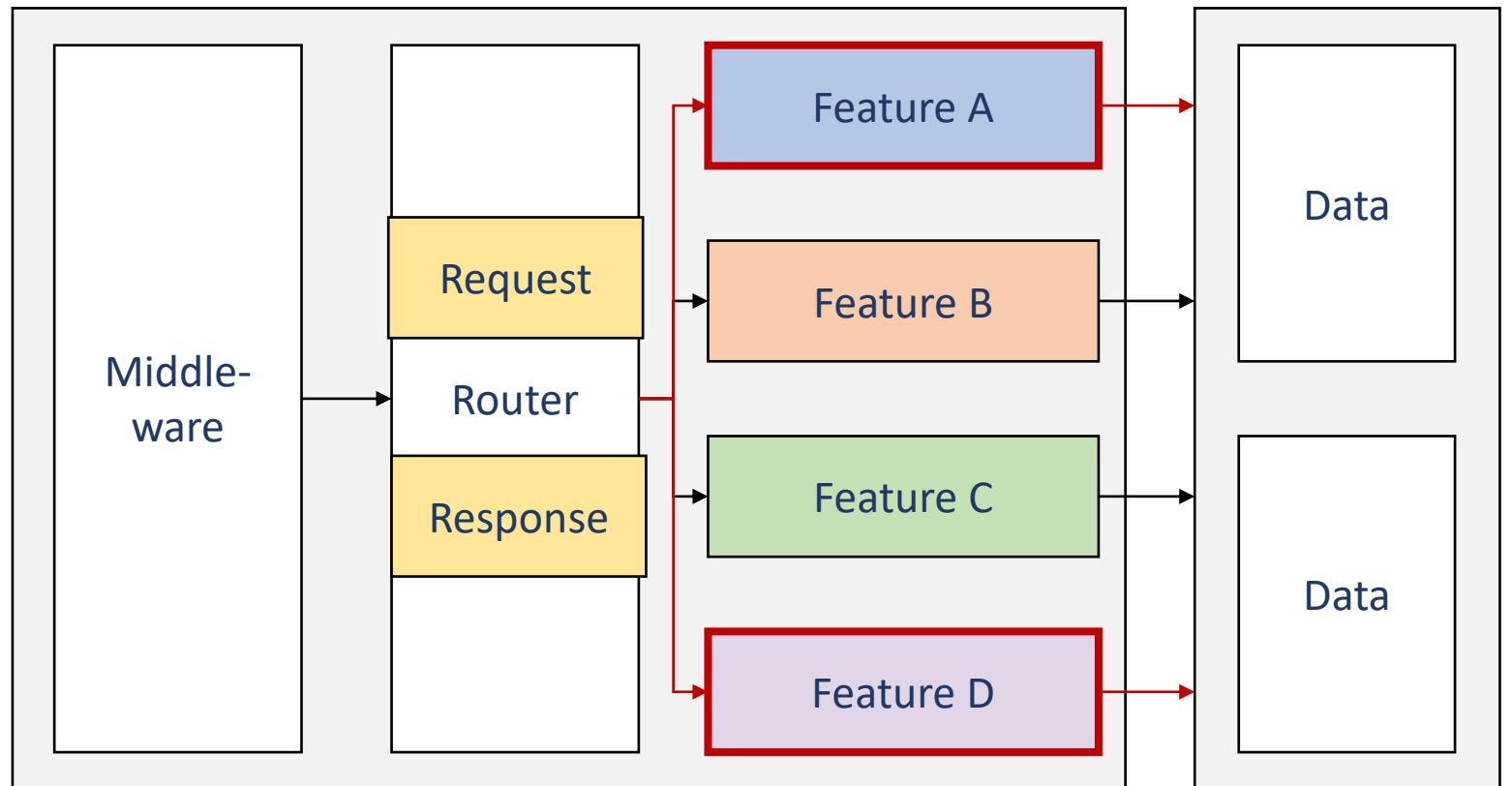
Data is  
fetched/stored  
through various  
CRUD  
operations.





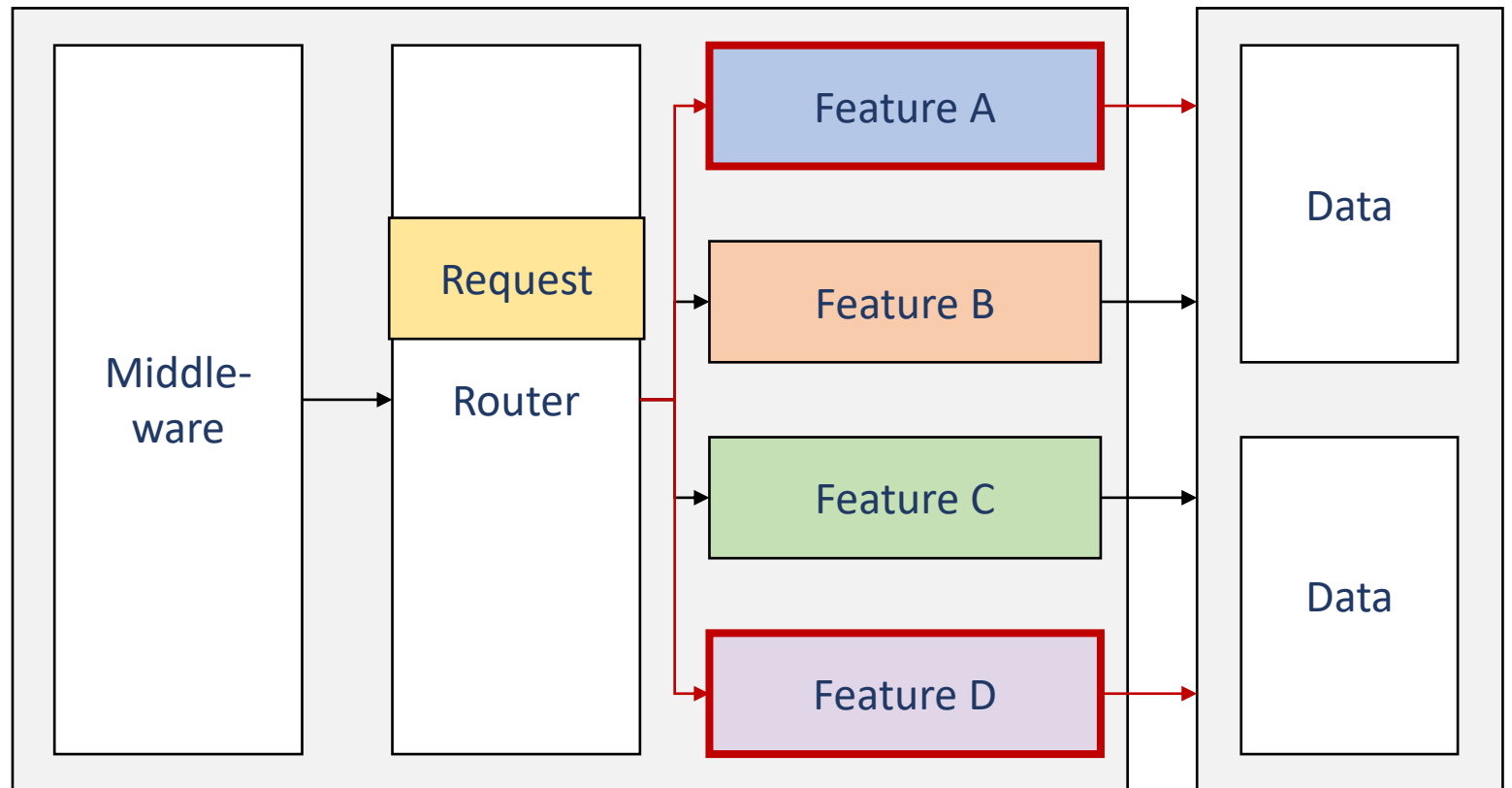
# Monolithic Architecture

The activated features complete and a response is constructed.



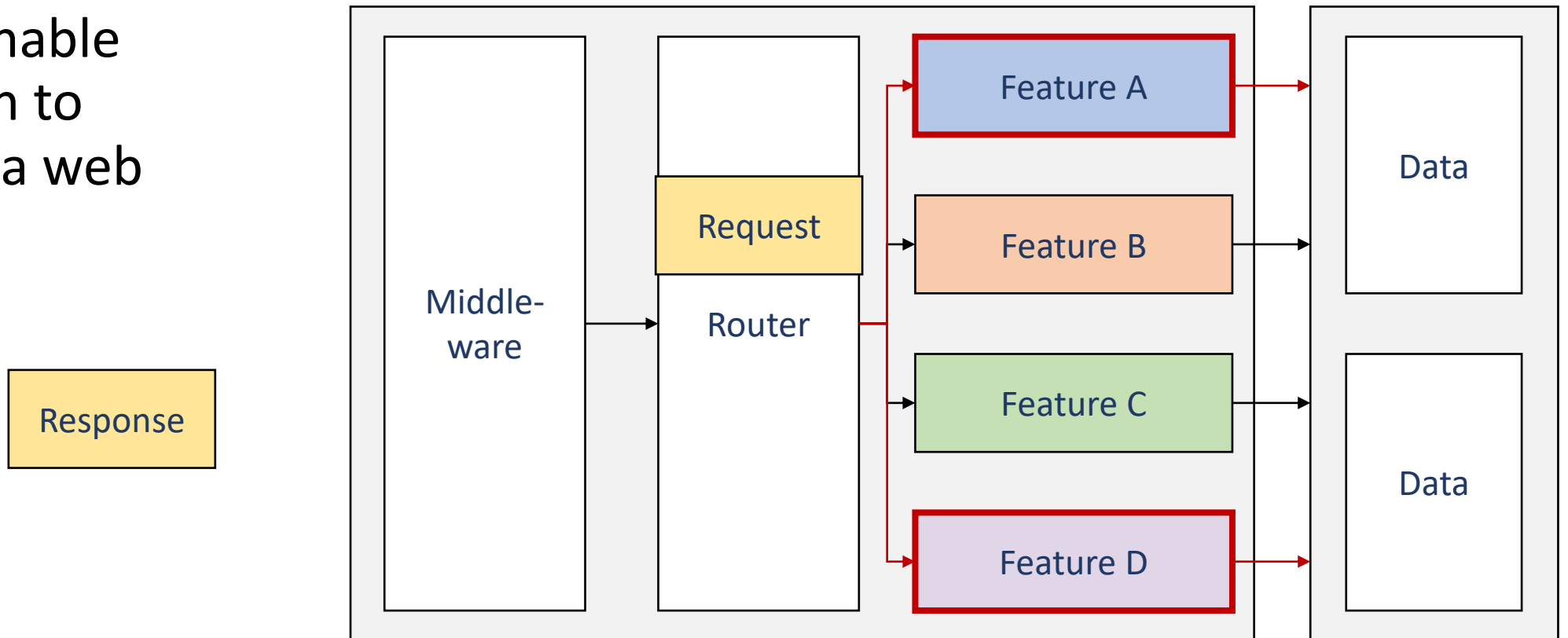
# Monolithic Architecture

The response is then sent back to the requesting client.



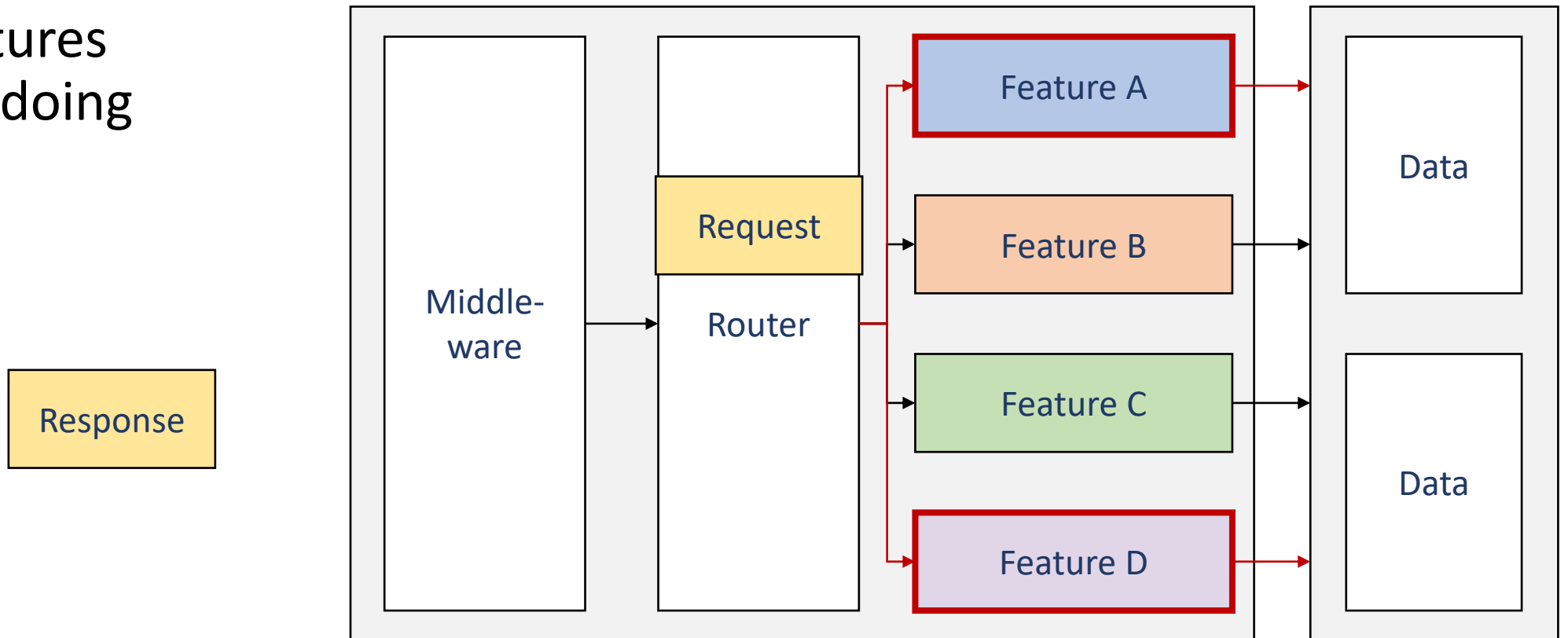
# Monolithic Architecture

This is not an unreasonable approach to building a web system.



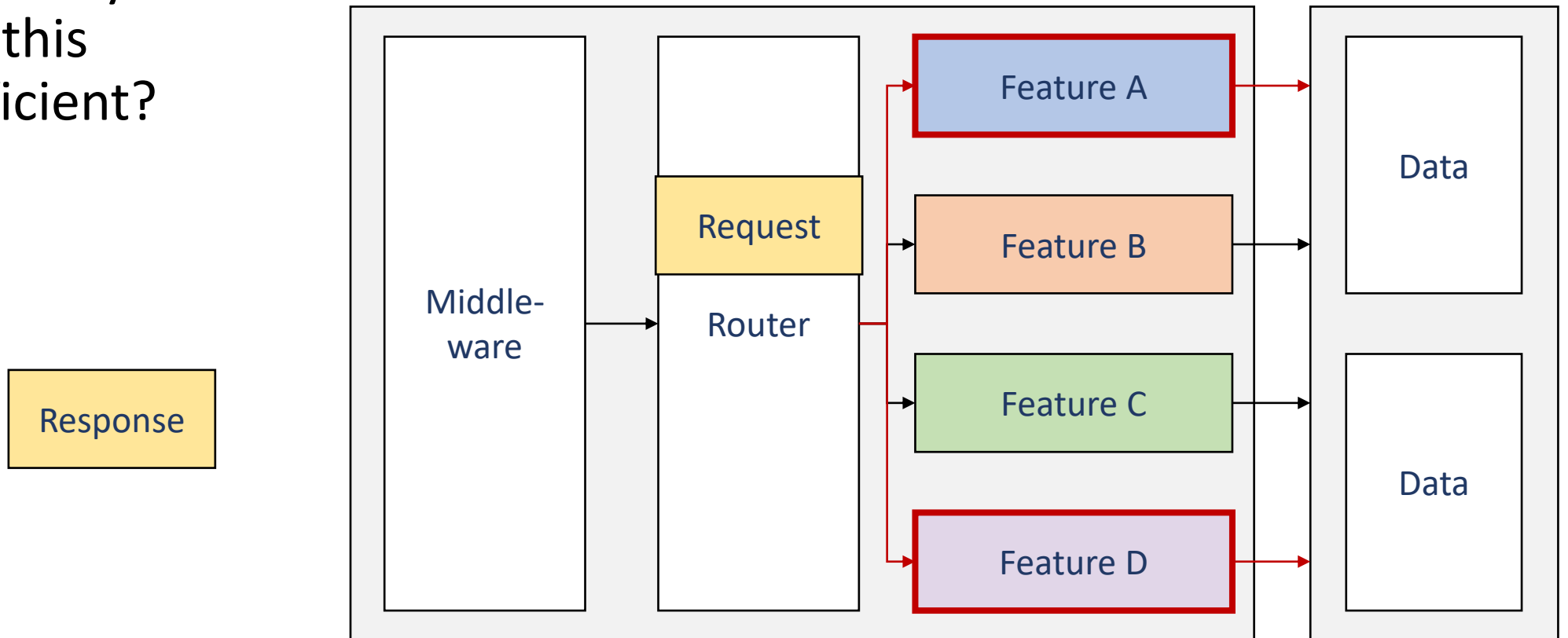
# Monolithic Architecture

Do other architectures exist for doing this?



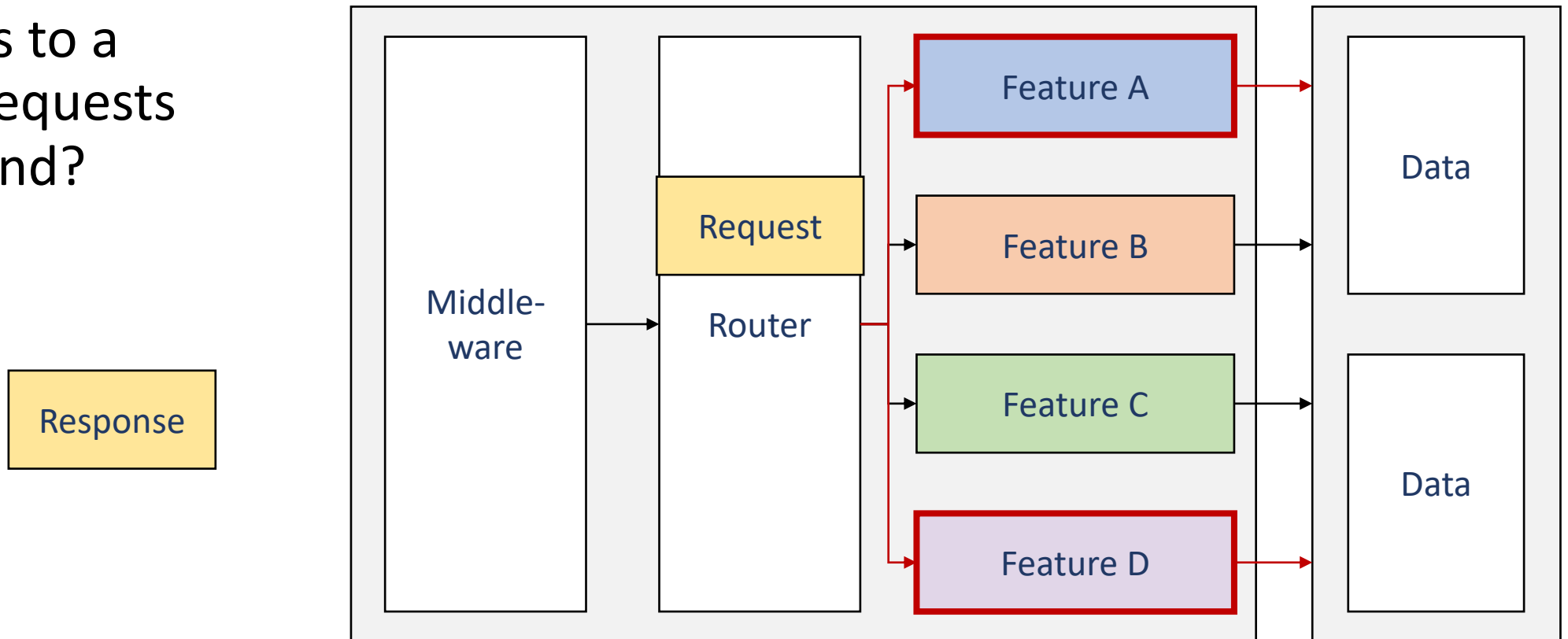
# Monolithic Architecture

Are there ways  
to make this  
more efficient?



# Monolithic Architecture

What if we  
scale this to a  
million requests  
per second?



# Code Example: 01-monolith