# Load Balancing

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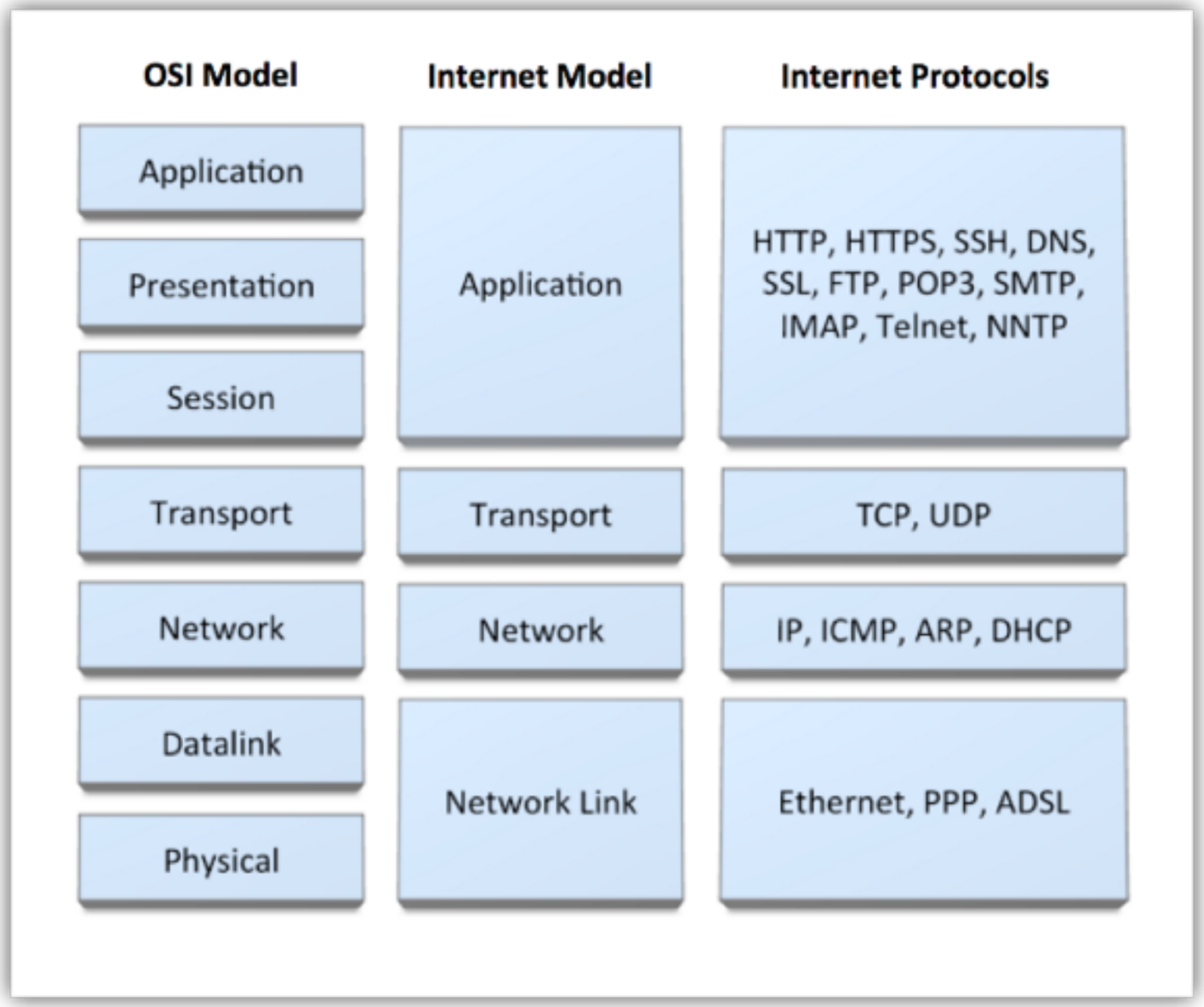
# Need and Goals

- Scalability
- Availability
- Performance
- Manageability
- Security
- Costs

# Products

- Software Load Balancing
- Appliances
- Switches

# OSI-Model




http://vichargrave.com/

# Fundamentals

- Low Layer (1-4)
- IP-/ MAC- Addresses
- Making a decision
- Distribute load based on required performance

# Layer-7 LB

- Content based decisions
- Application Delivery Controllers
- Parsing application data
- LB Policy
- Heavy processing time

# Advanced Concepts

- Session Persistance
  - TCP-SYN Packet
  - Application Request
- URL Switching
  - Separating content
  - Cookie Switching
- SSL Termination

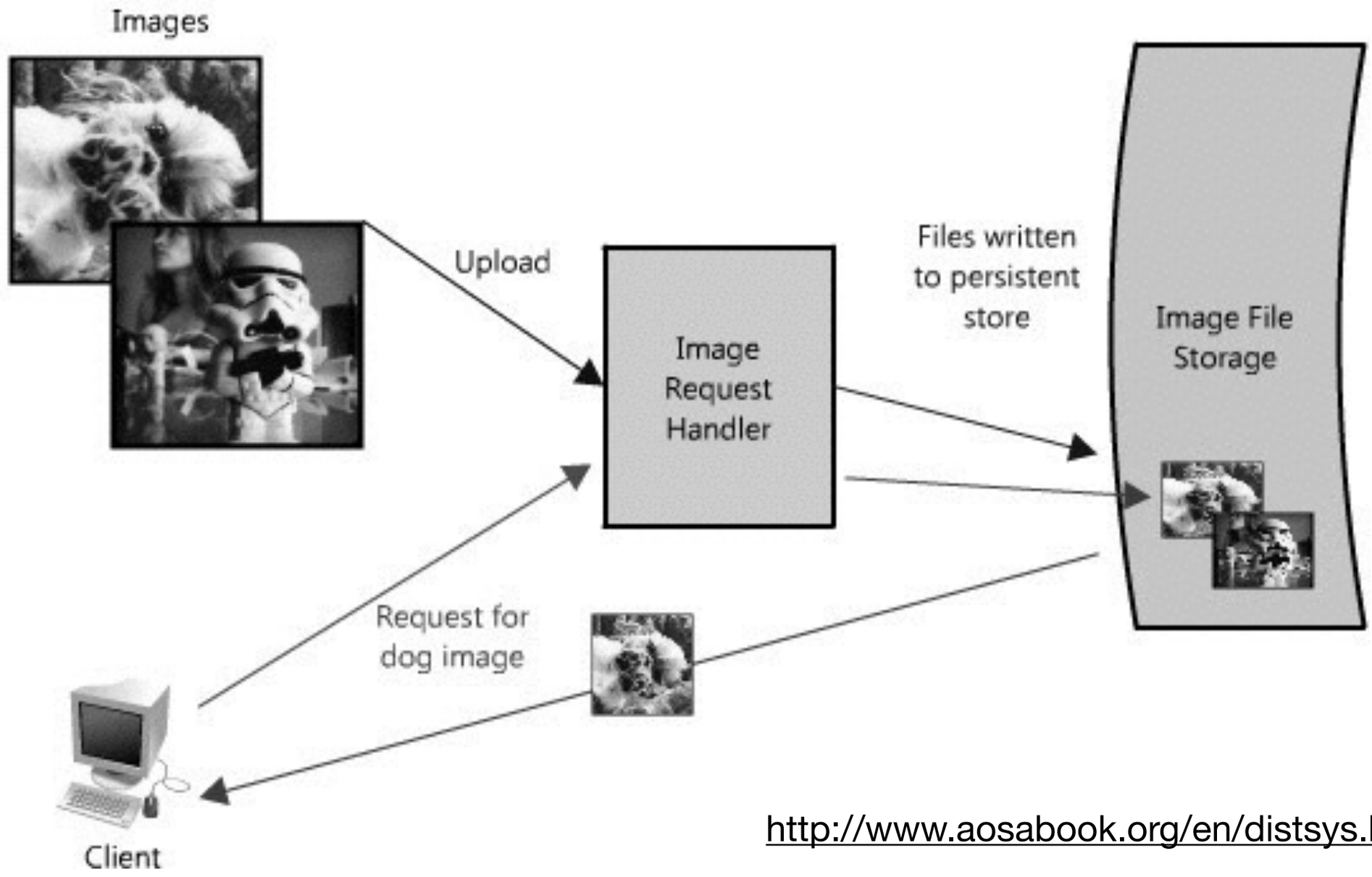
# Web-App Design

- Same goals as load balancing
- Content
- Service
- Redundancy
- Partitions

# Content

- Distribute request handler
- Shorten querying time
- Raise scalability

# Content

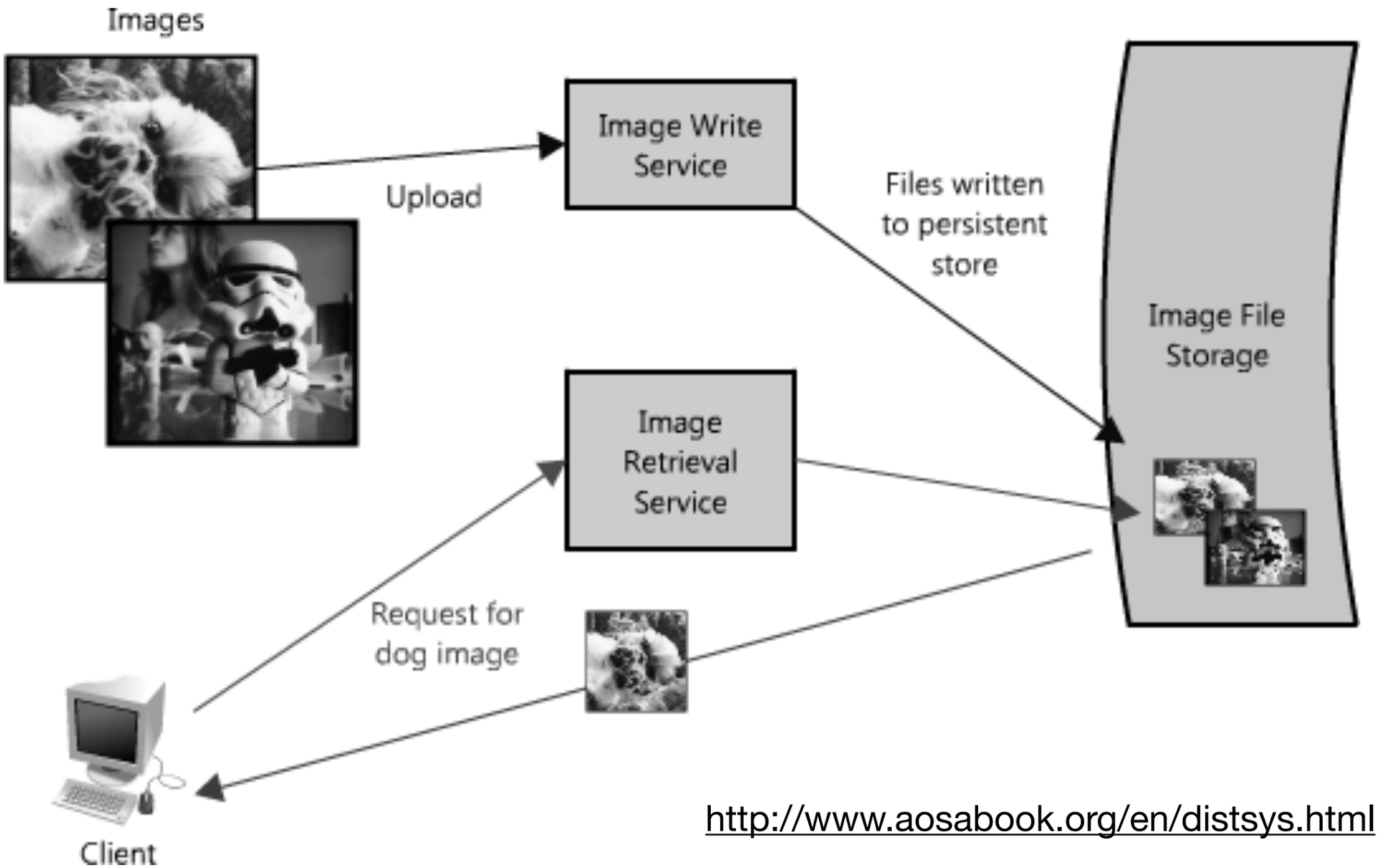



http://www.aosabook.org/en/distsys.html

# Service

- See every component as own service
- Define clear interfaces
- Service Oriented Architectures (SOA)
- Public- Facing API’s

# Service

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# Scheduling Algorithm

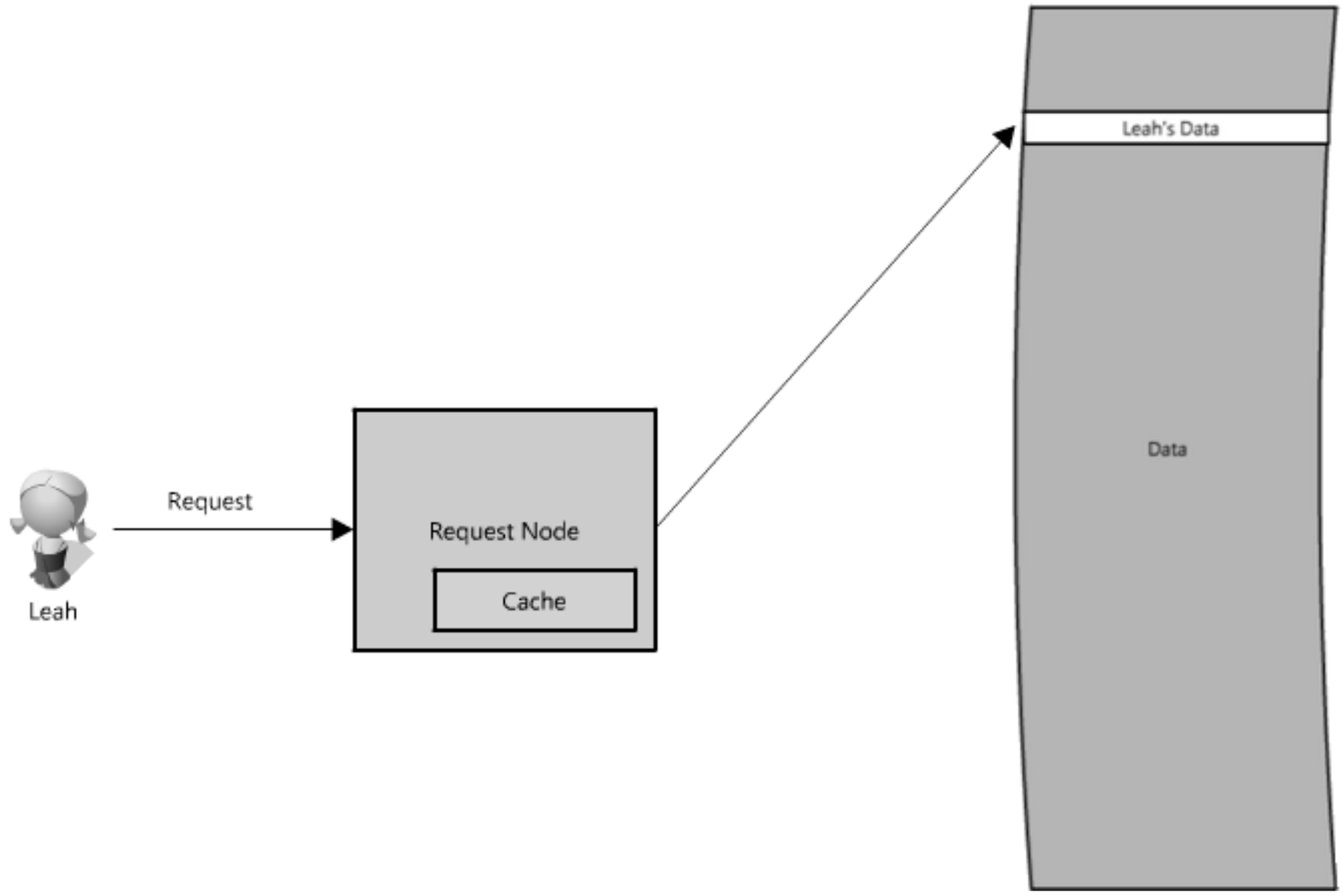
- Round Robin
- Weighed Round Robin
- Least Connection
- Least Connected Slow Start Time
- Weighed Least Connected
- Agent Based Adaptive

# Scheduling Algorithm

Agent Based Adaptive

- adaptive logic
- periodically file
- numerical value
- low traffic

# Caches

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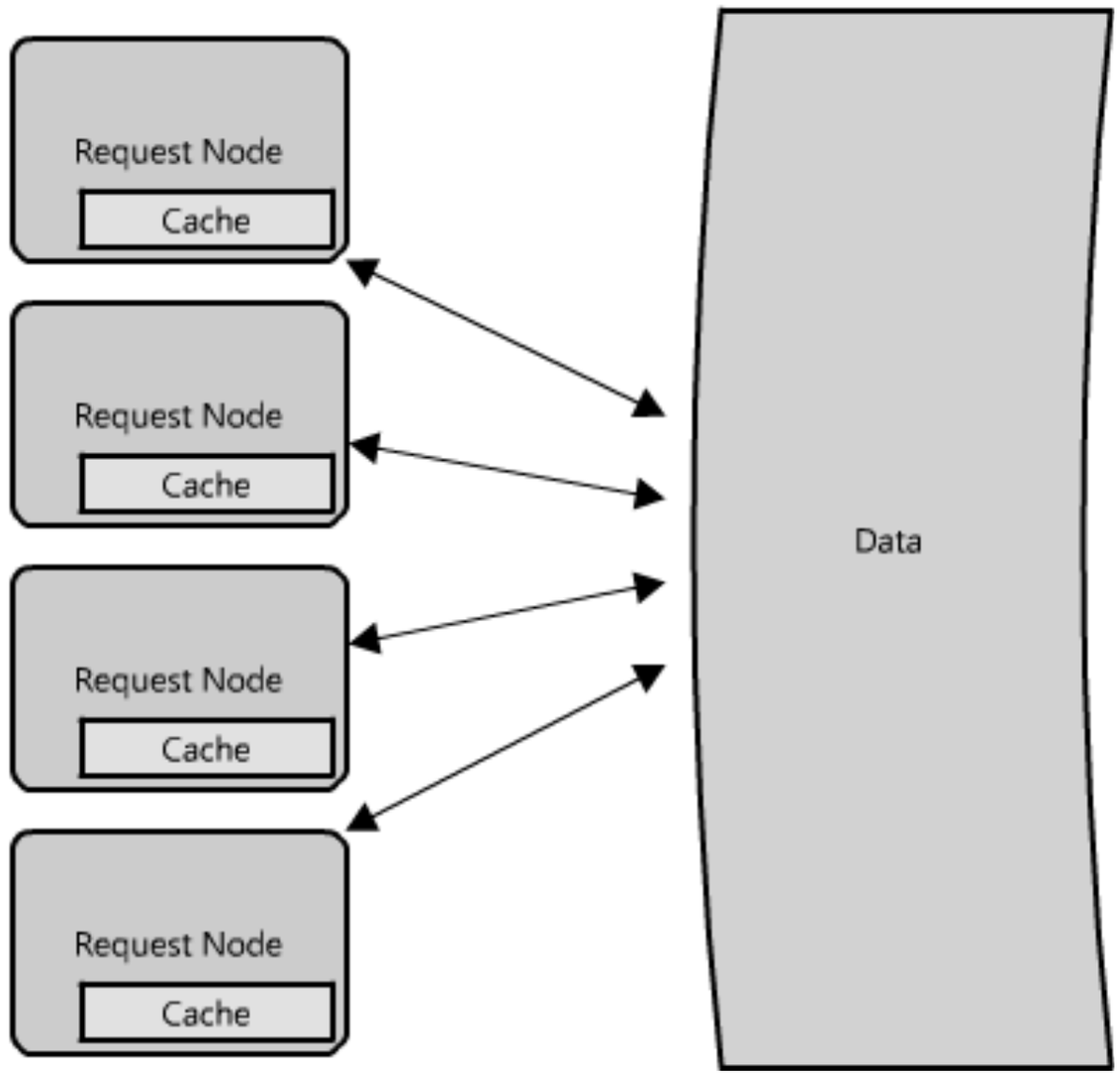


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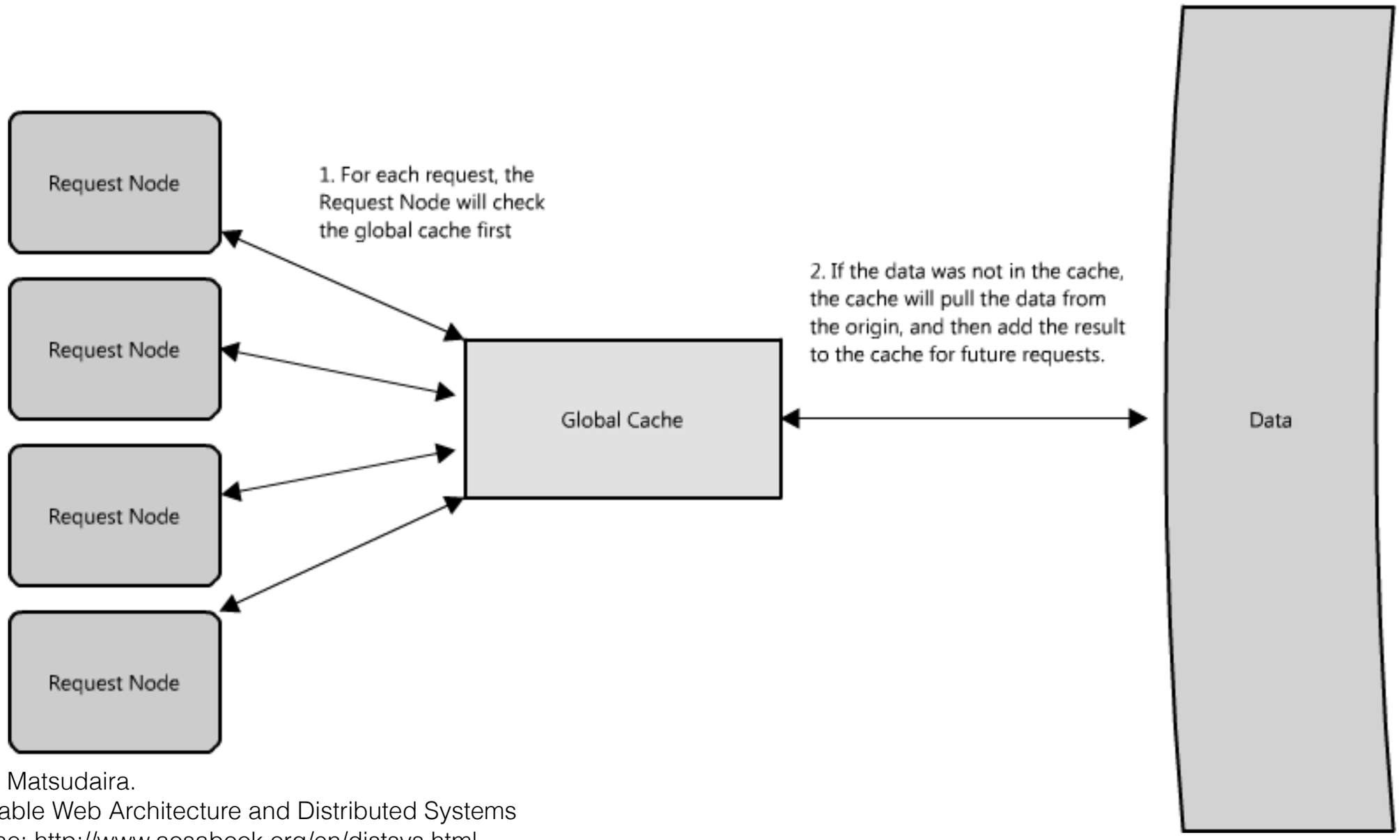
# Global Caches

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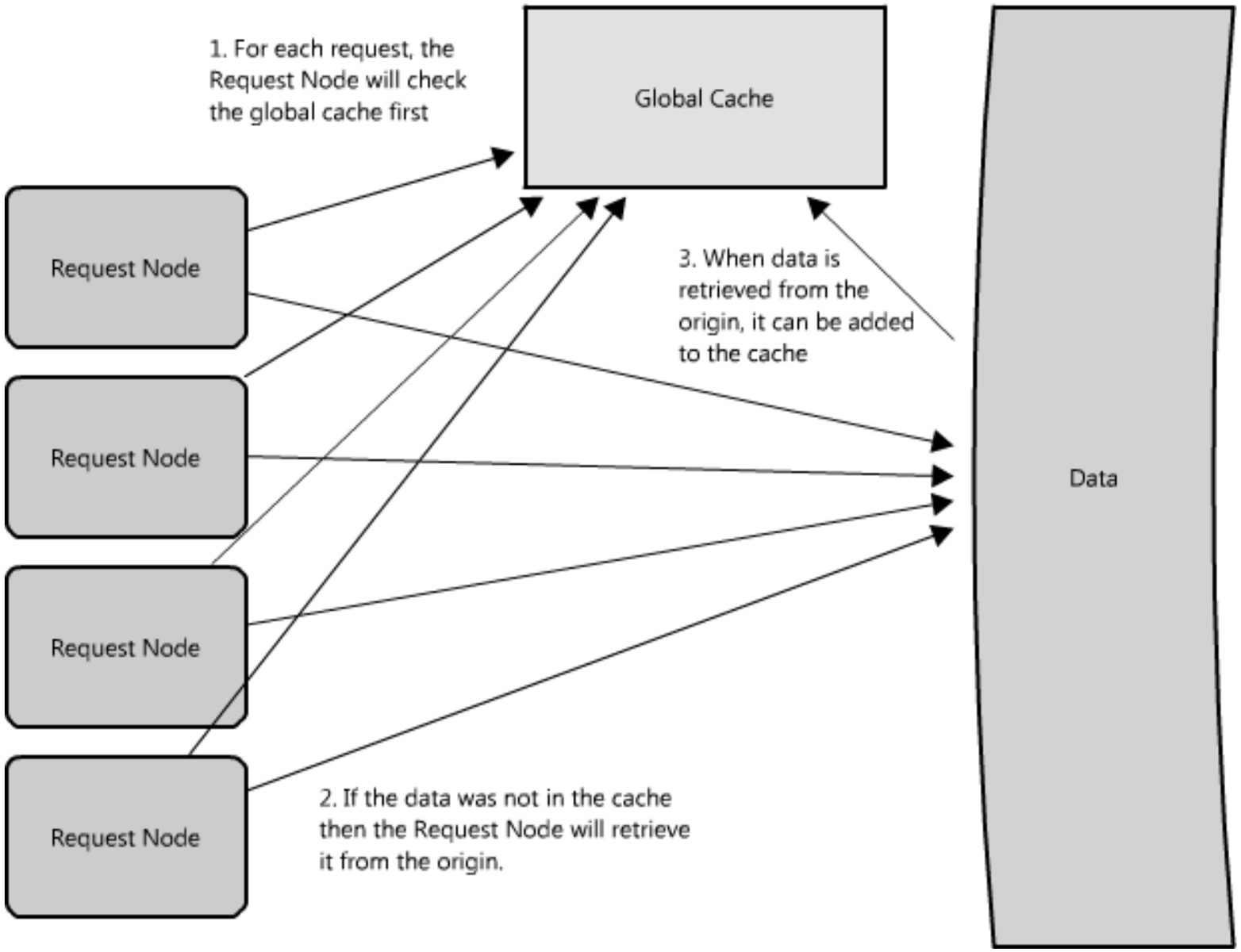


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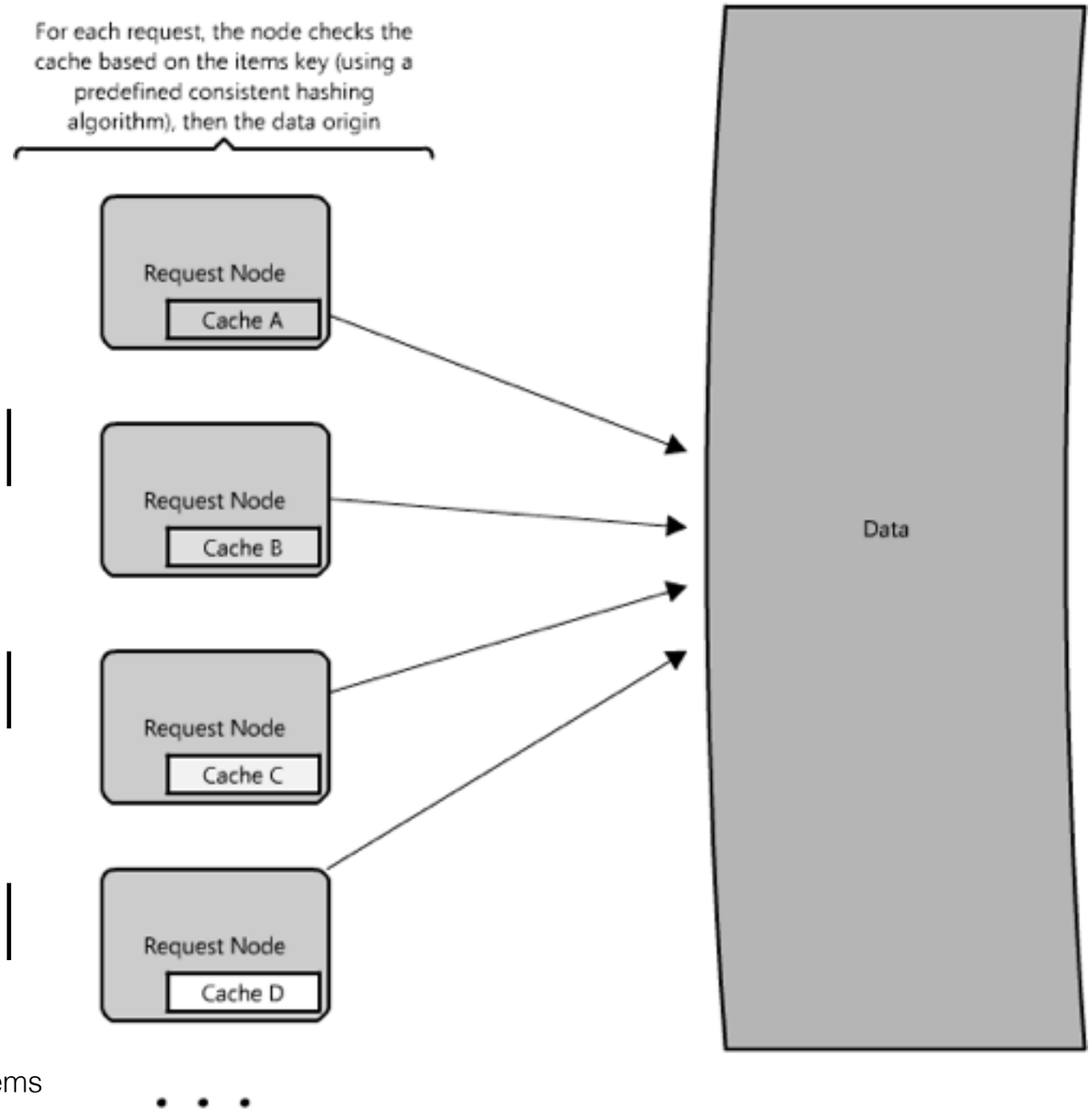
# Distributed Cache

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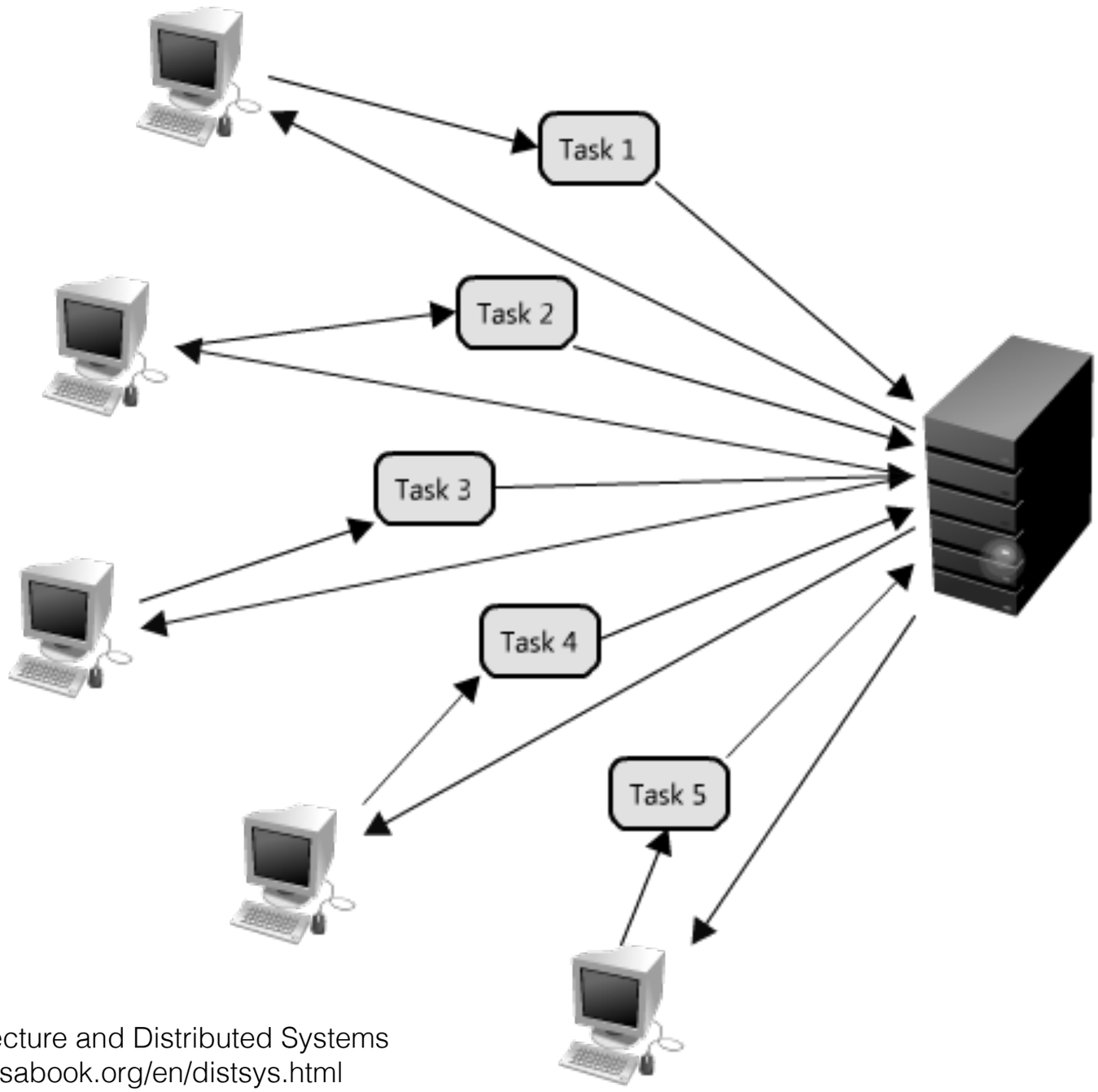
# Queue

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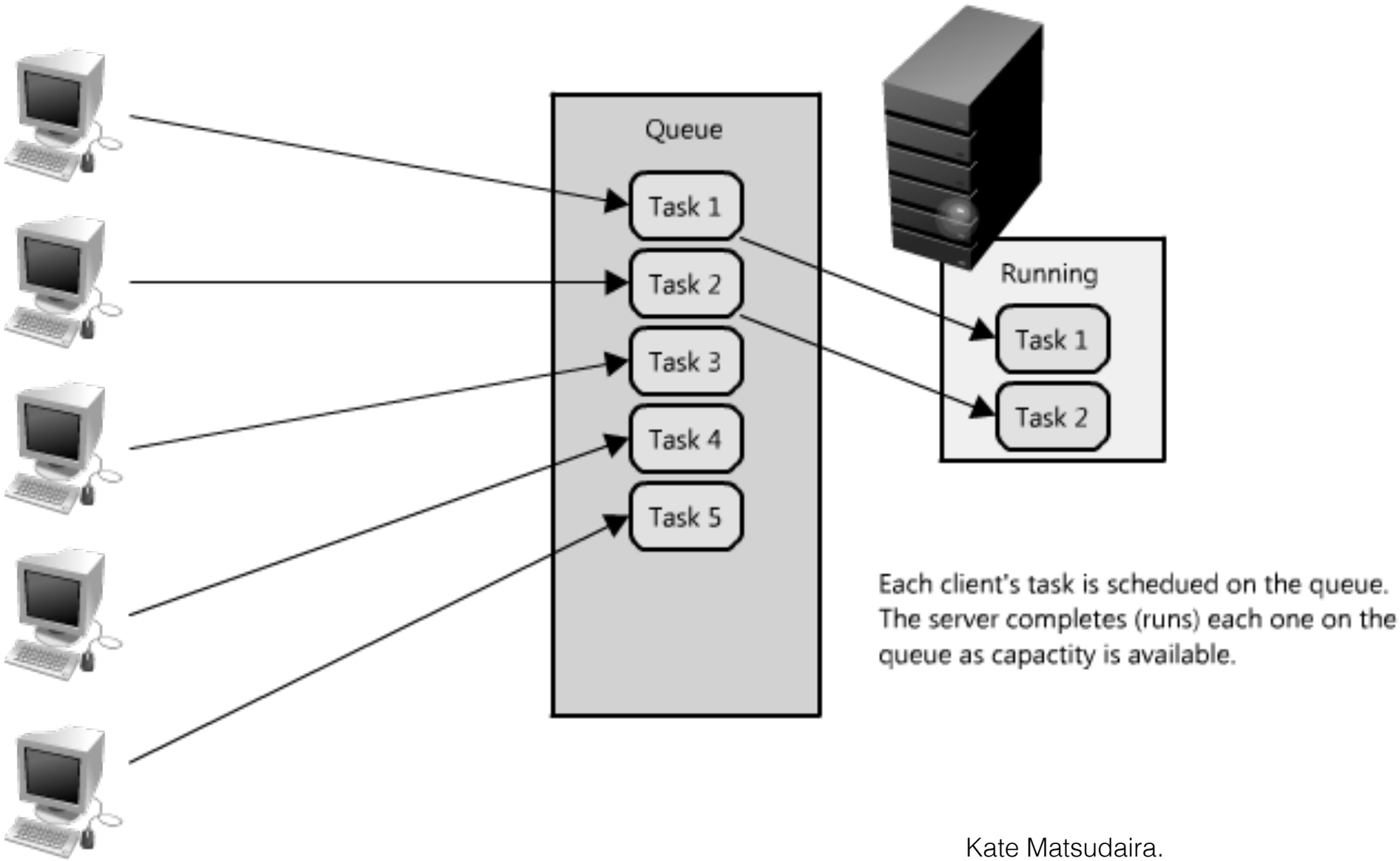


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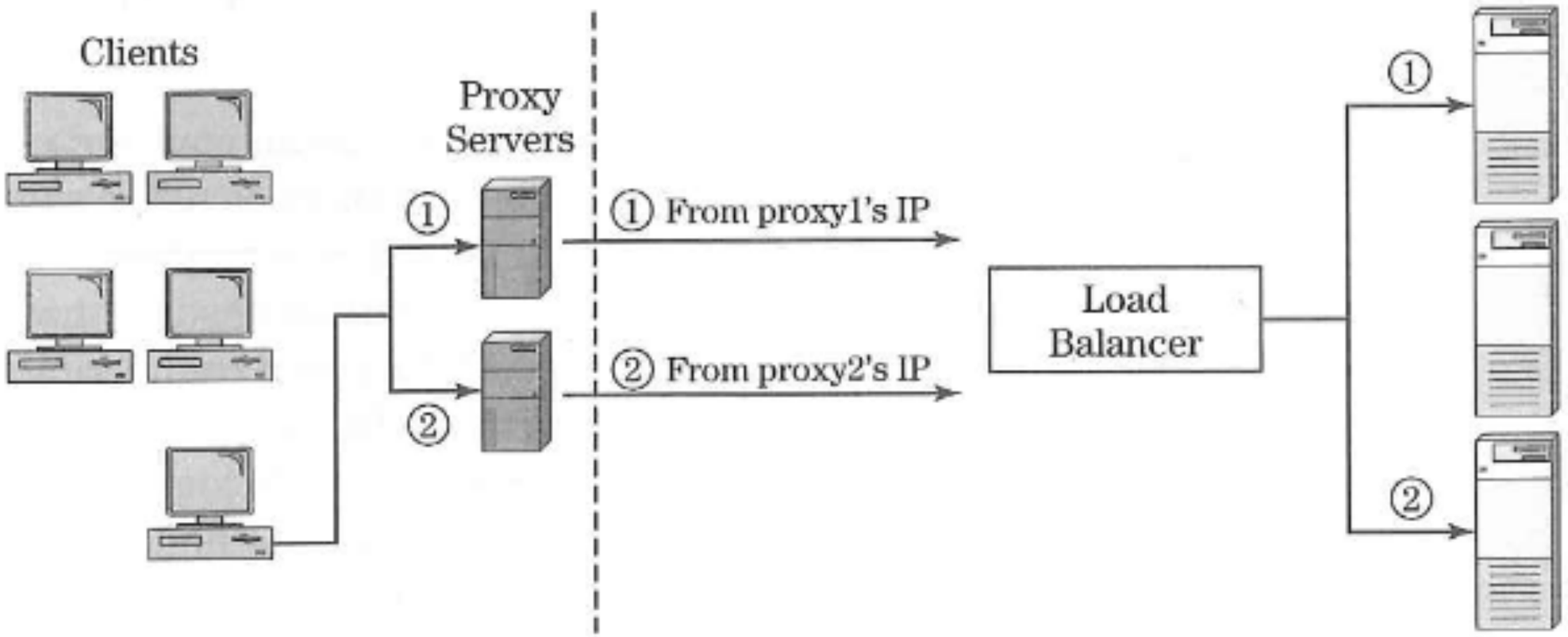
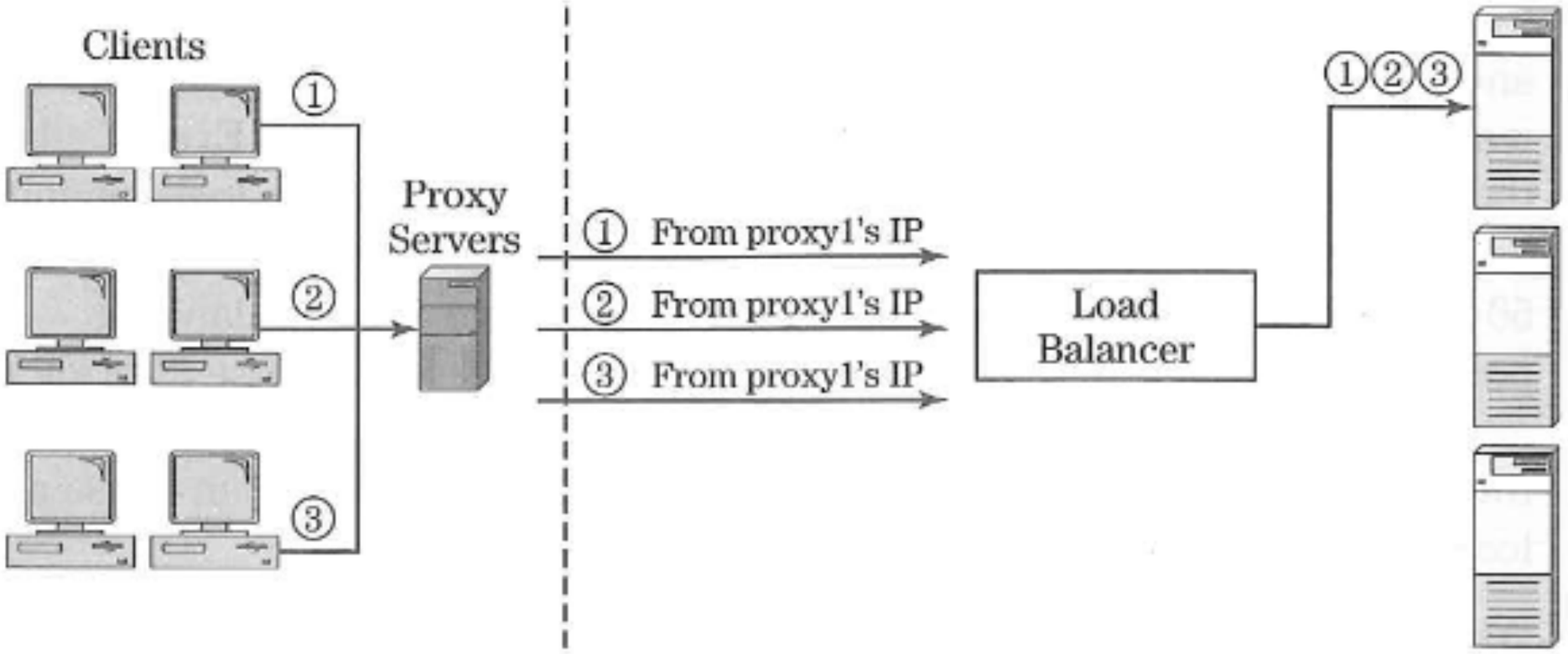
# Mega Proxy Problem




Internal network for an enterprise or ISP with multiple proxy servers

The second connection comes from proxy2's IP address, causing the load balancer to assign the connection to a server based on load rather than on session persistence.

# Mega Proxy Problem




Internal network for an enterprise or ISP with a proxy server serving thousands of users

Load balancer sends all connections to the same server to assure session persistence, because all users through proxy server have proxy's IP address as the source IP. This causes uneven load balancing.

# Sources

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# Thanks For Your Attention