



# PERFORMANCE 101

BY MARTIN CHAOV



# AGENDA

WHAT IS PERFORMANCE?

WHAT TO MEASURE?

HOW TO MEASURE IT?

TOOLS

SUMMARY





# WHAT IS PERFORMANCE?

ACCOMPLISHMENT OF A GIVEN TASK MEASURED AGAINST PRESET KNOWN STANDARDS OF ACCURACY, QUALITY, COMPLETENESS, COST, AND SPEED.

# COMPUTER PERFORMANCE

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- Accuracy
- Efficiency
- Speed of execution
- Short response time
- High throughput
- High availability
- High bandwidth
- Low utilization of resources

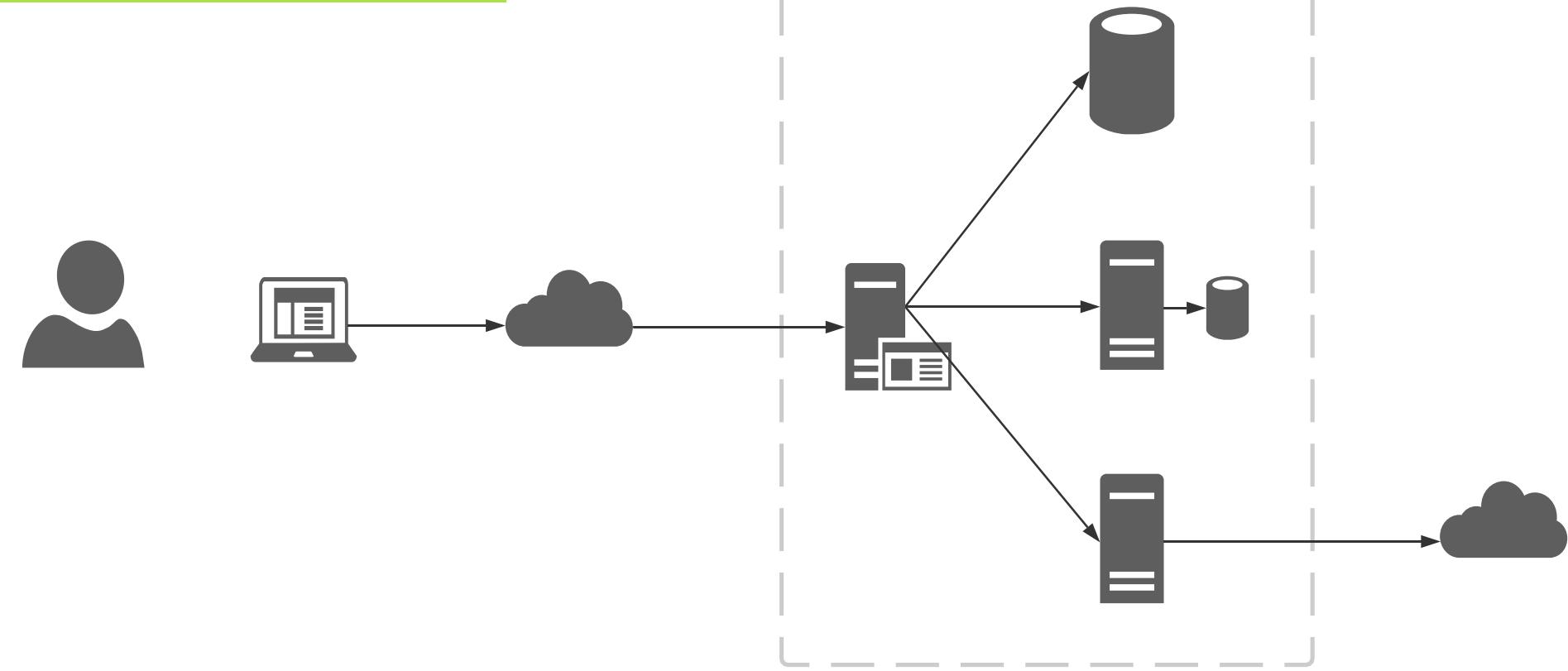




WHAT TO MEASURE

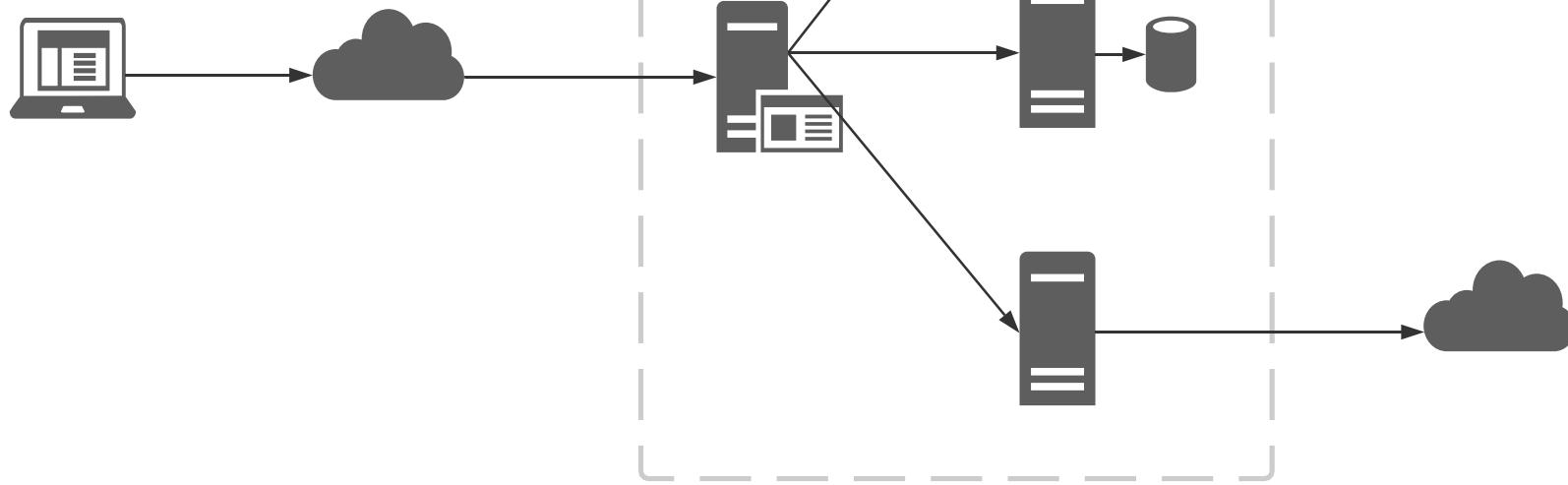
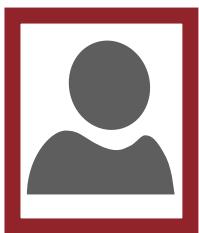
# EXAMPLE SYSTEM

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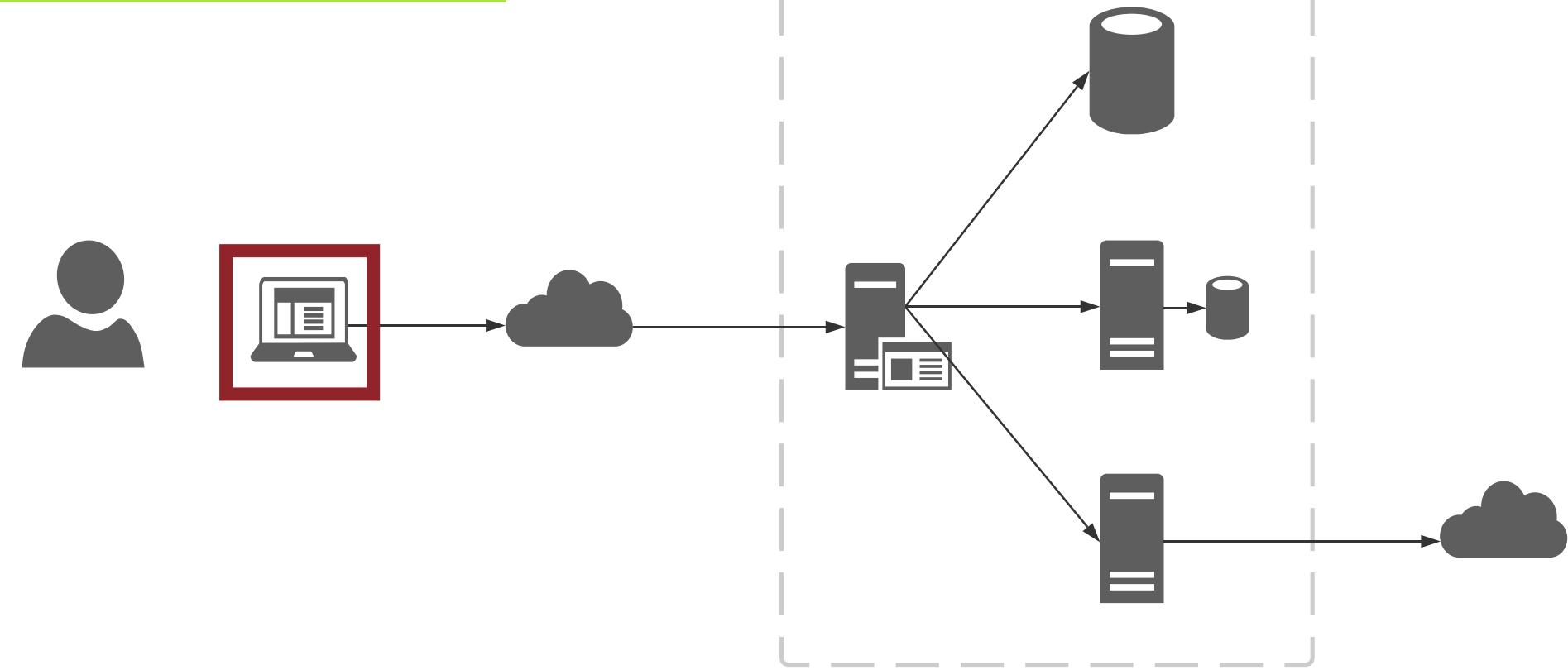
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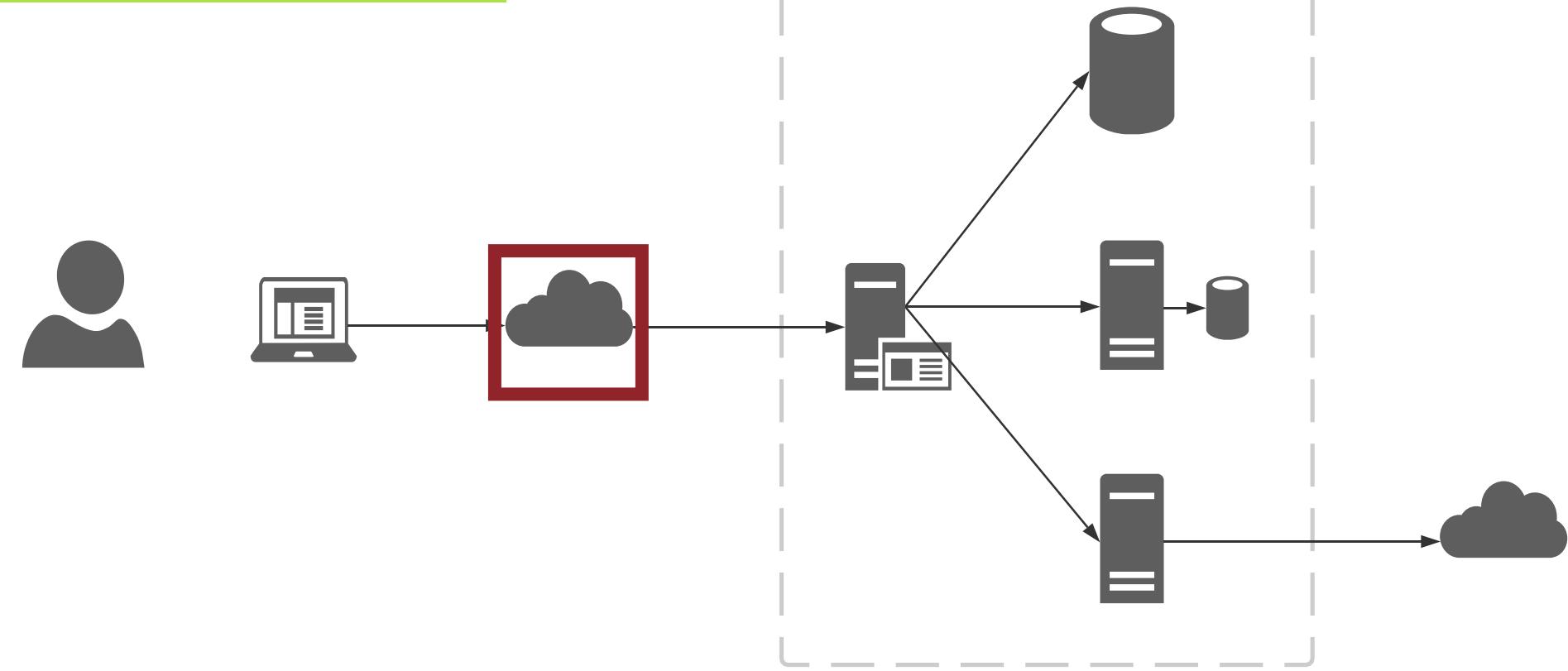
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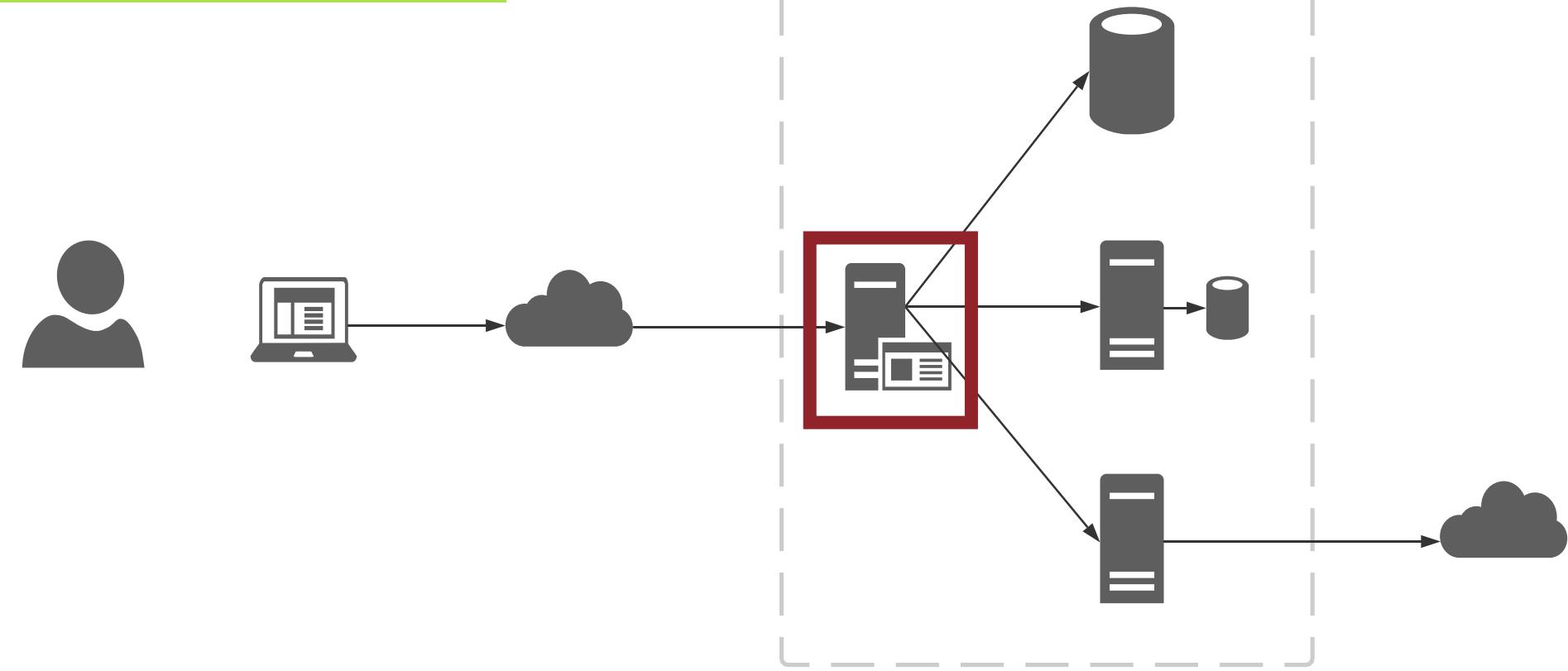
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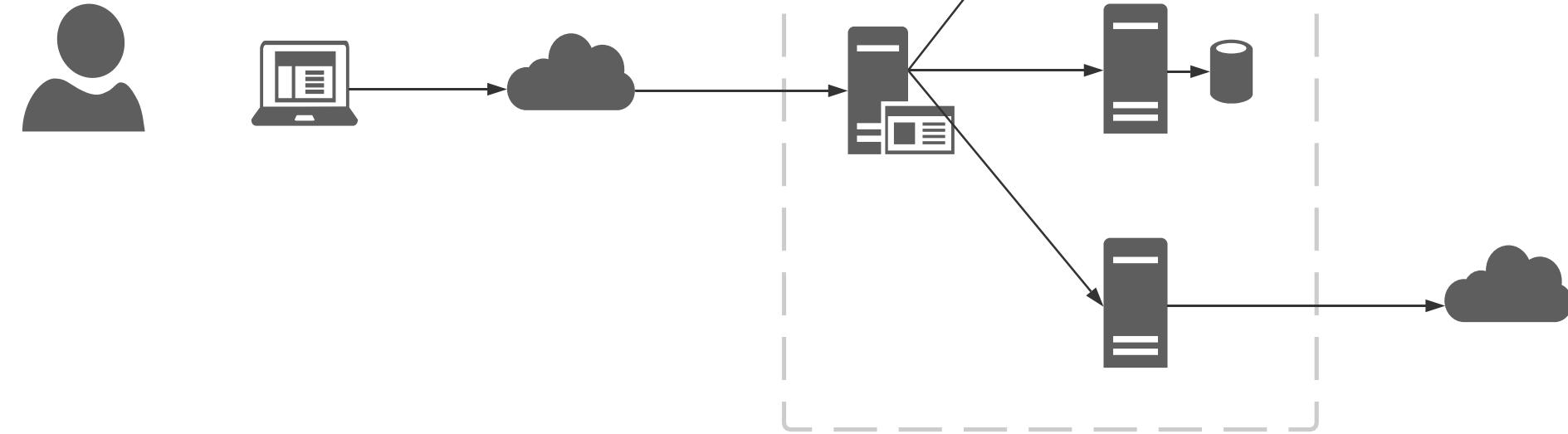
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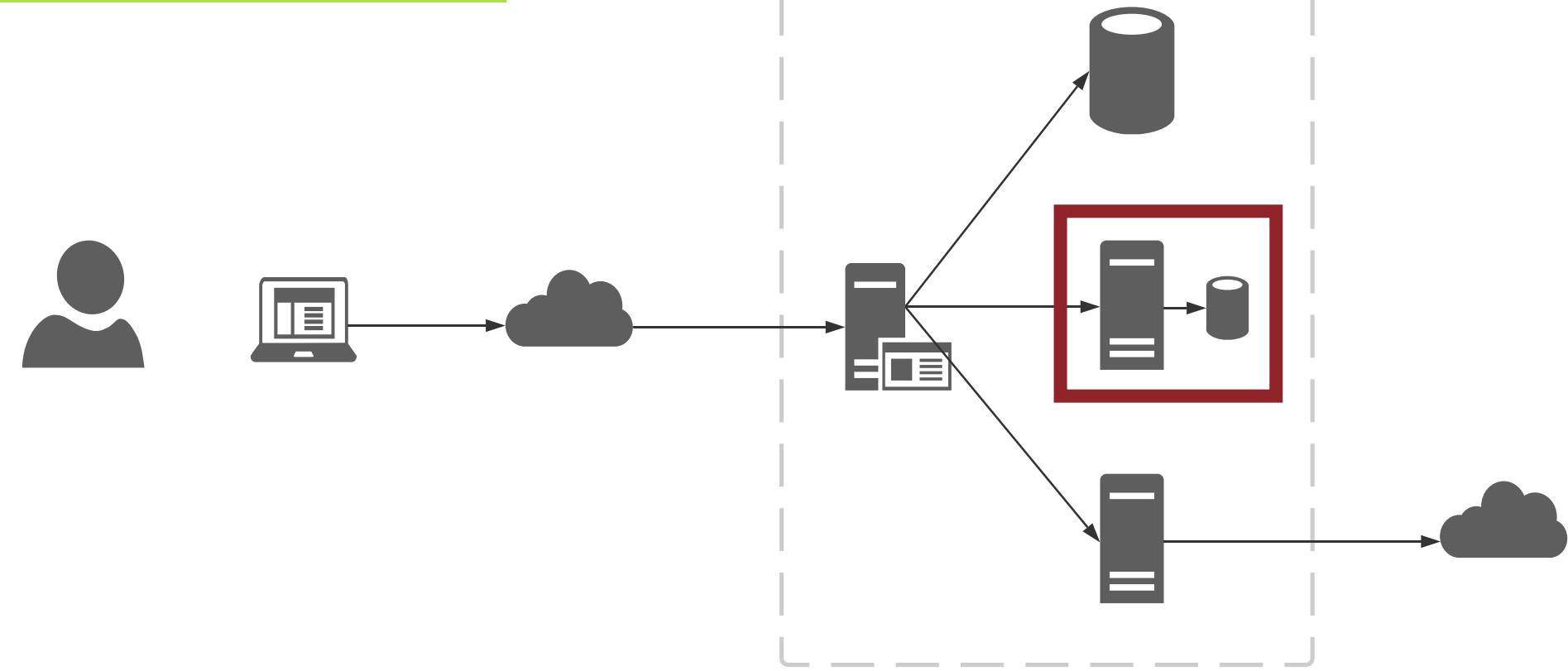
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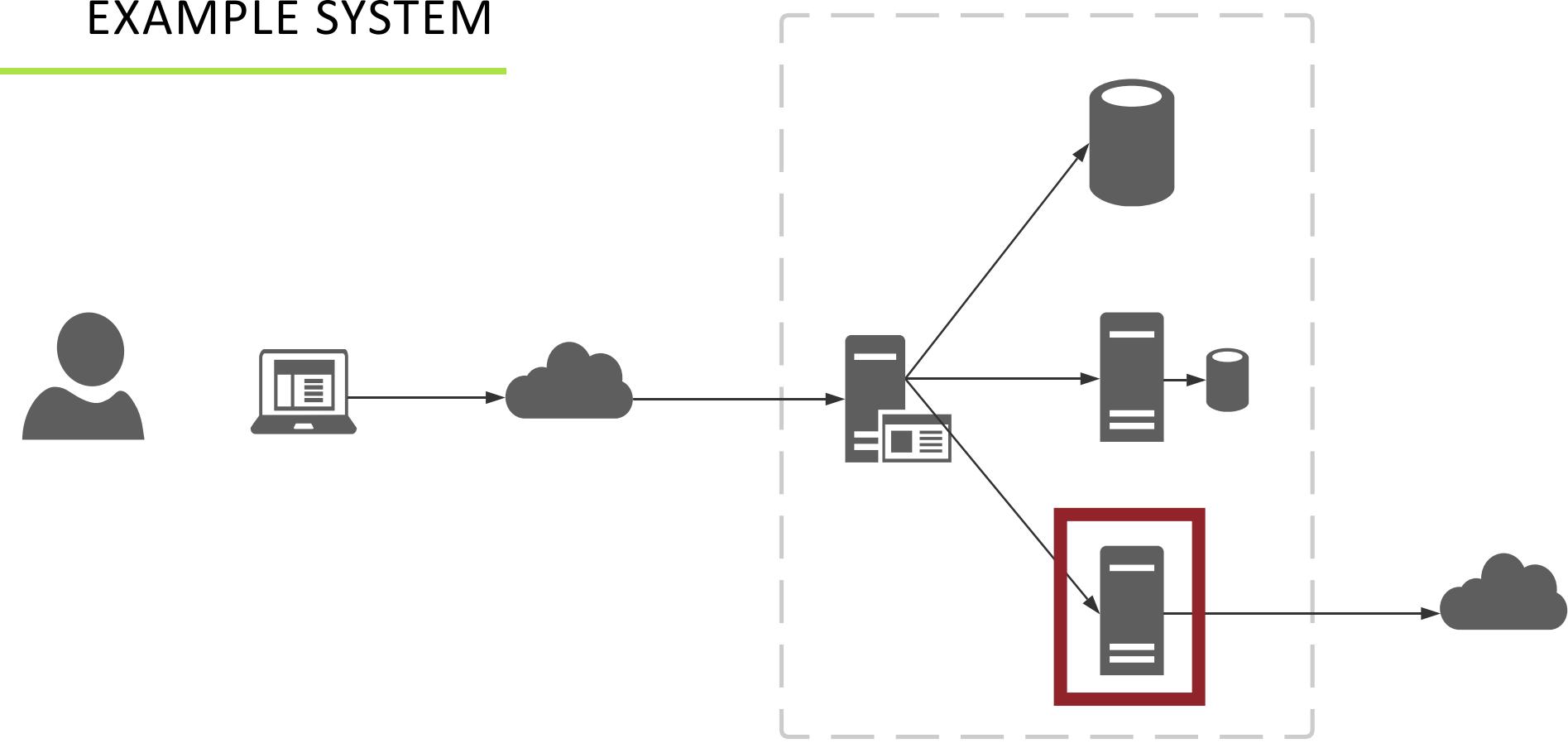
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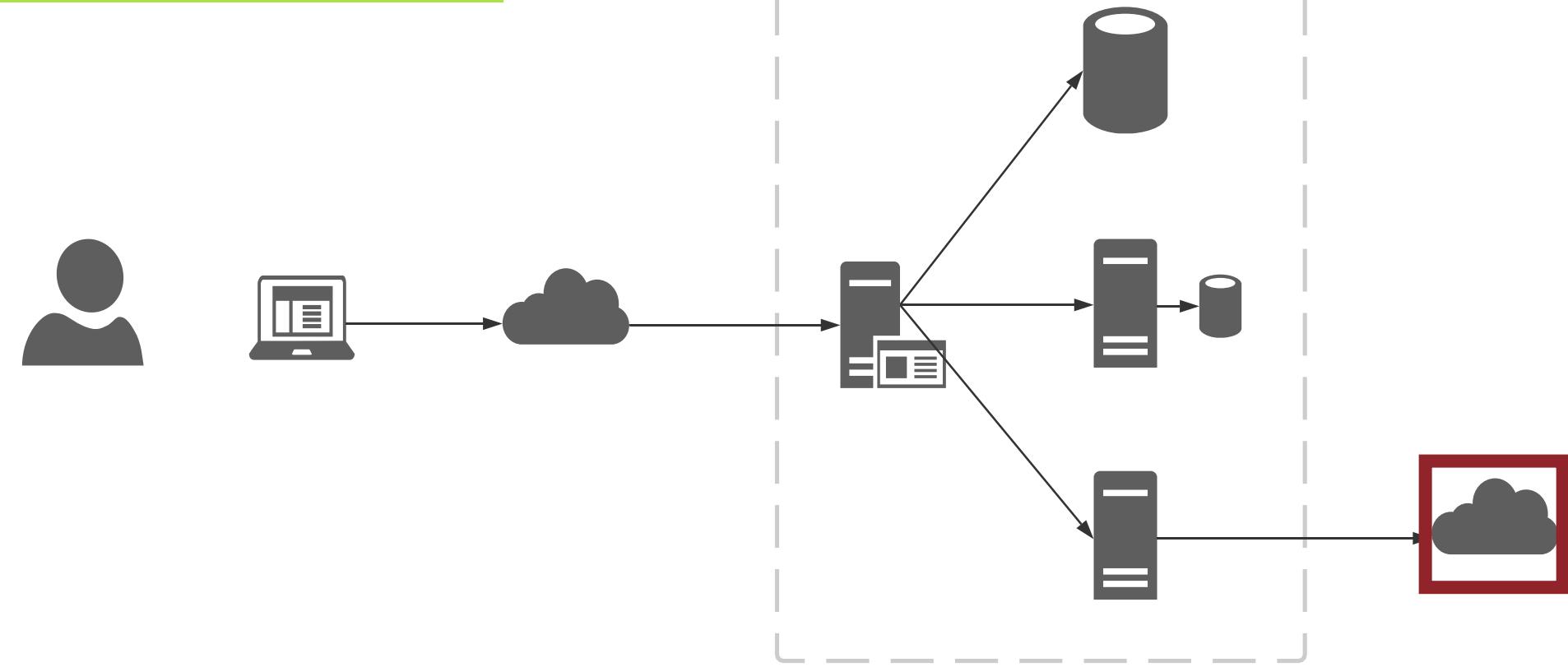
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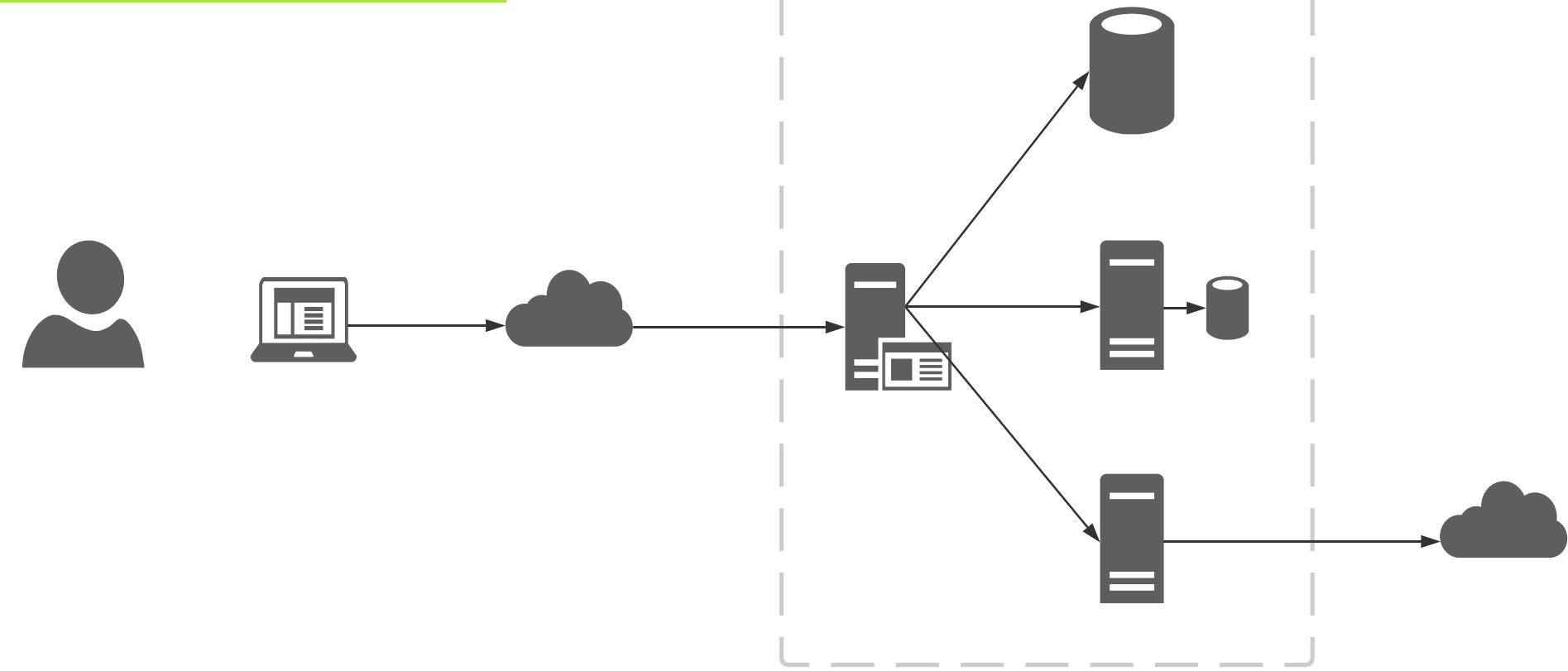
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# WHAT?

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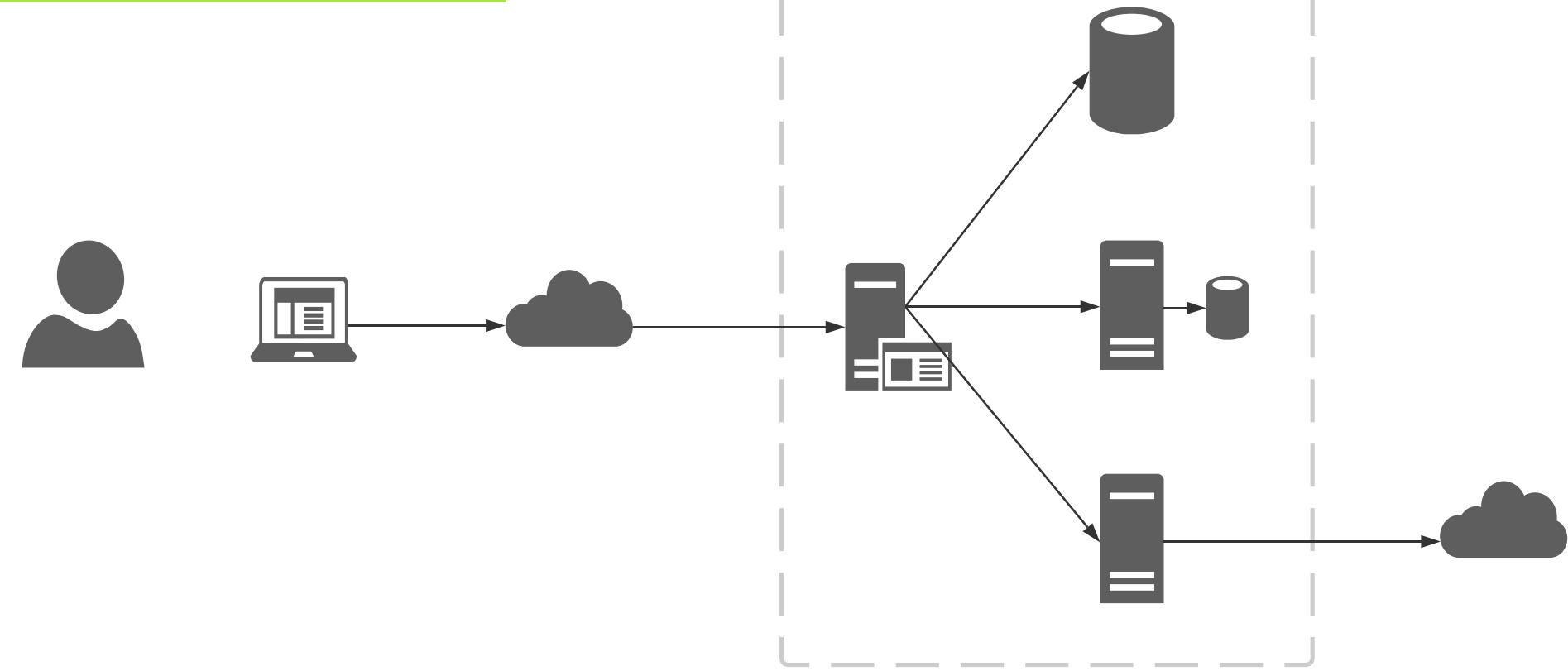
- Availability
- Response time
- Channel capacity
- Latency
- Throughput

A perspective view of a server room aisle. On both sides, there are tall, dark server racks filled with glowing blue and white LED lights. The floor is a light-colored polished concrete with a metal grating. The ceiling is made of dark panels with integrated linear lighting. In the distance, at the end of the aisle, there is a set of double doors. The overall atmosphere is cool and futuristic.

AVAILABILITY

# AVAILABILITY

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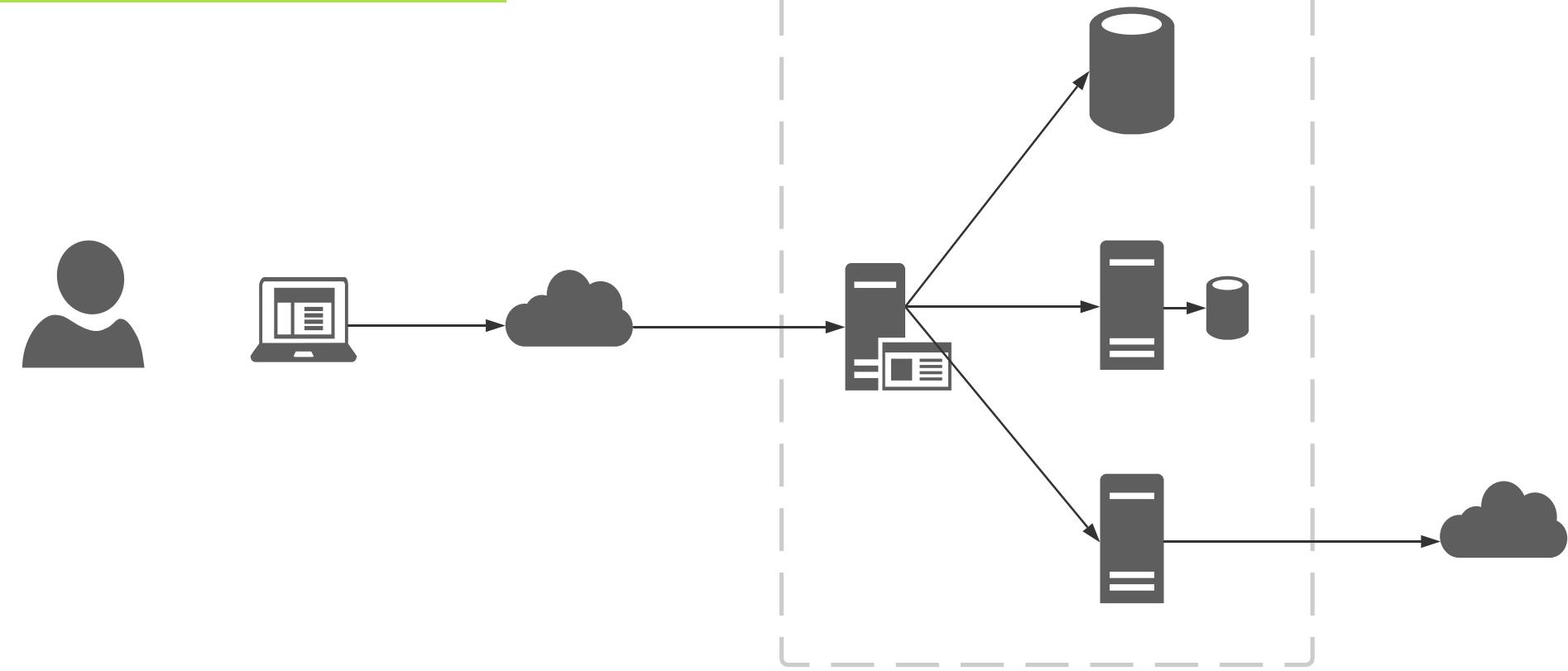


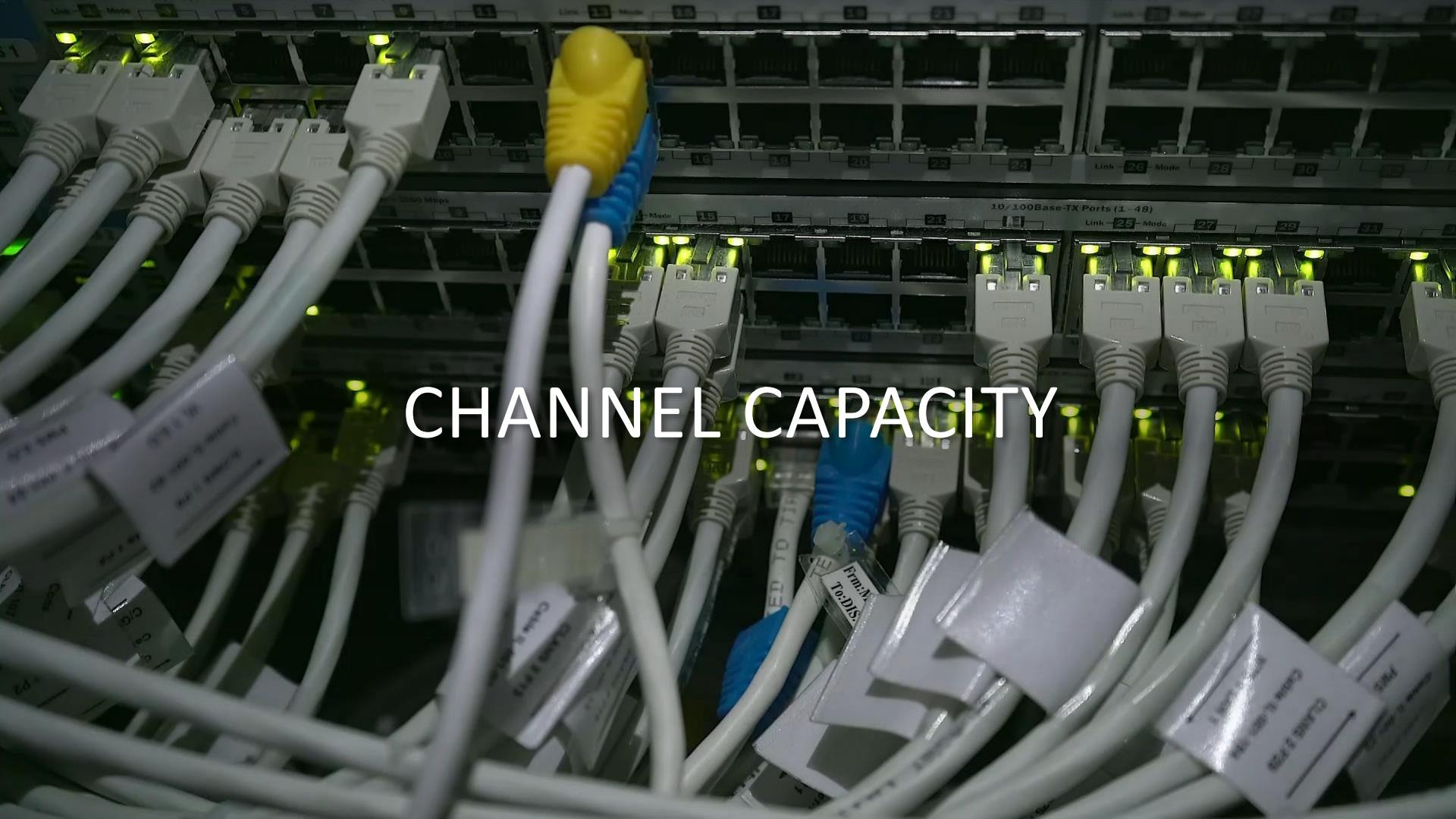


RESPONSE TIME

# RESPONSE TIME

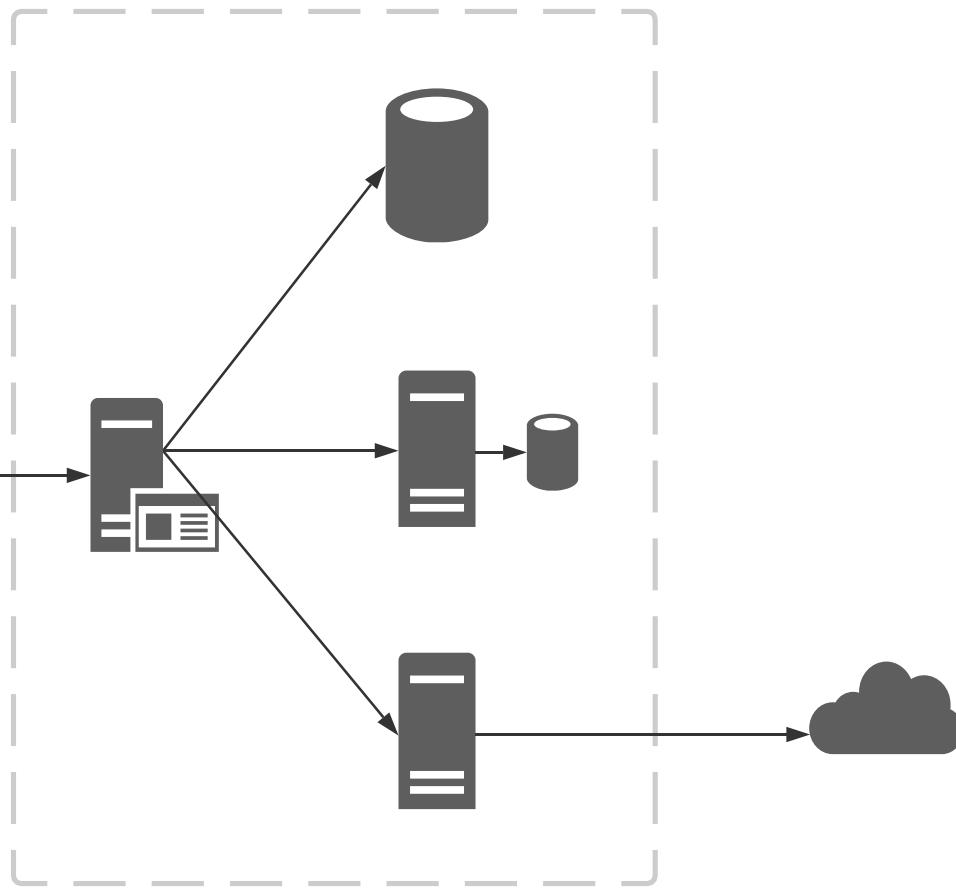
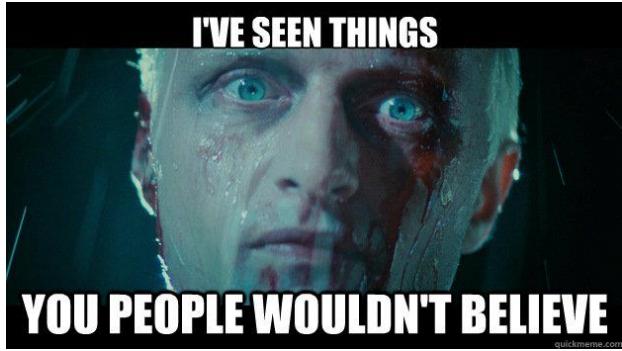
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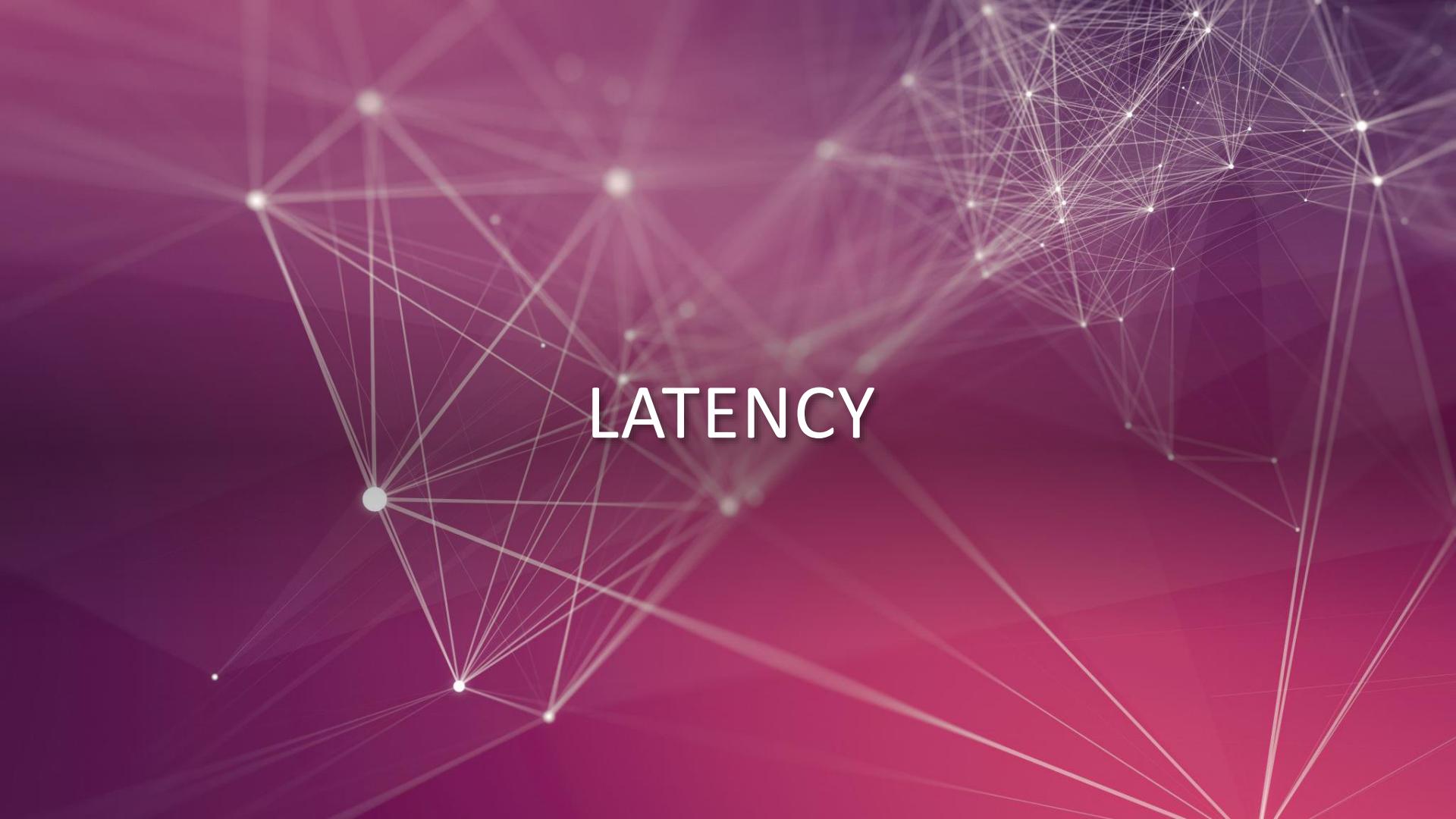


A close-up photograph of a network switch or hub. Numerous white Ethernet cables are plugged into ports, with their blue and yellow RJ-45 connectors visible. Small green LED lights are illuminated on each port, indicating active connections. The switch has a dark metal frame with a light-colored faceplate showing port numbers and status indicators.

# CHANNEL CAPACITY

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A complex network graph is displayed against a red gradient background. The graph consists of numerous small, semi-transparent white dots representing nodes, connected by thin white lines representing edges. The nodes are more densely packed in the upper right and lower right areas, while the lower left area shows a more sparse distribution. The overall effect is a sense of data connectivity and complexity.

LATENCY

# WHAT IS LATENCY

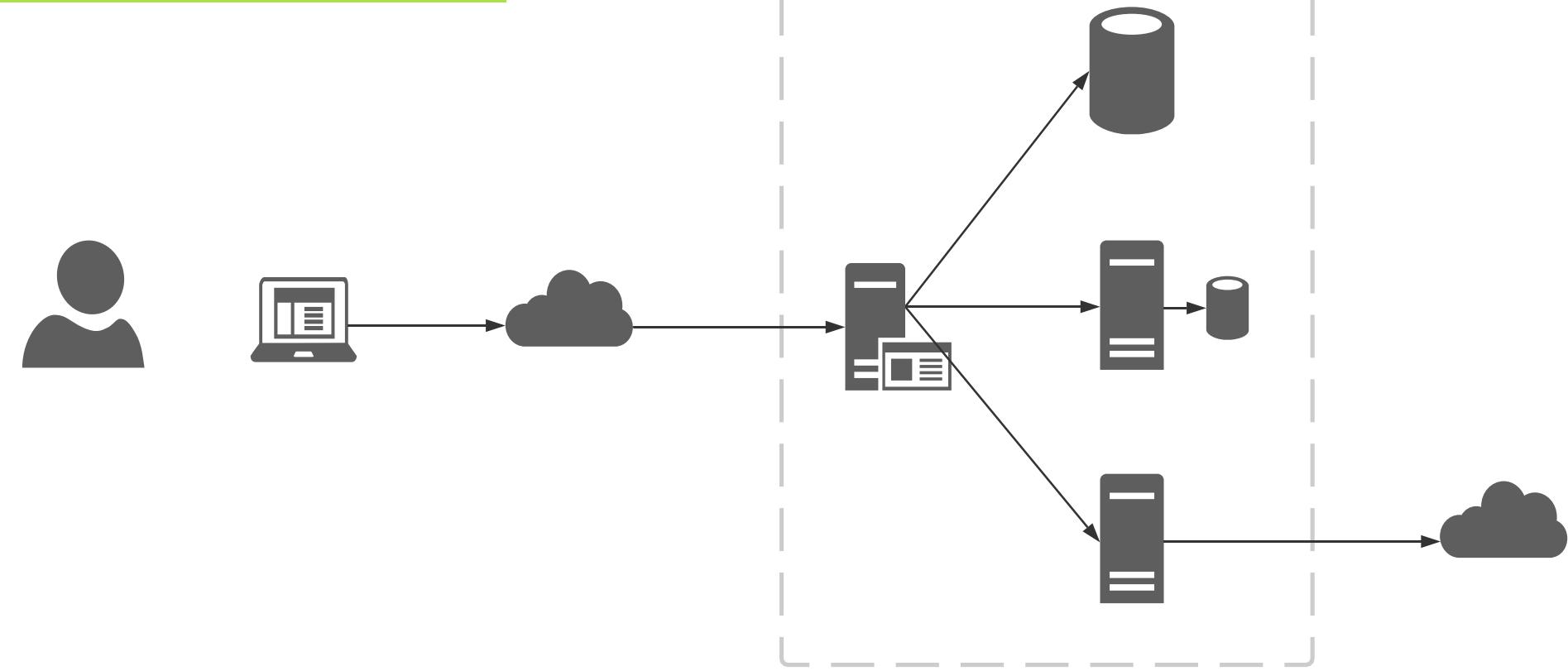
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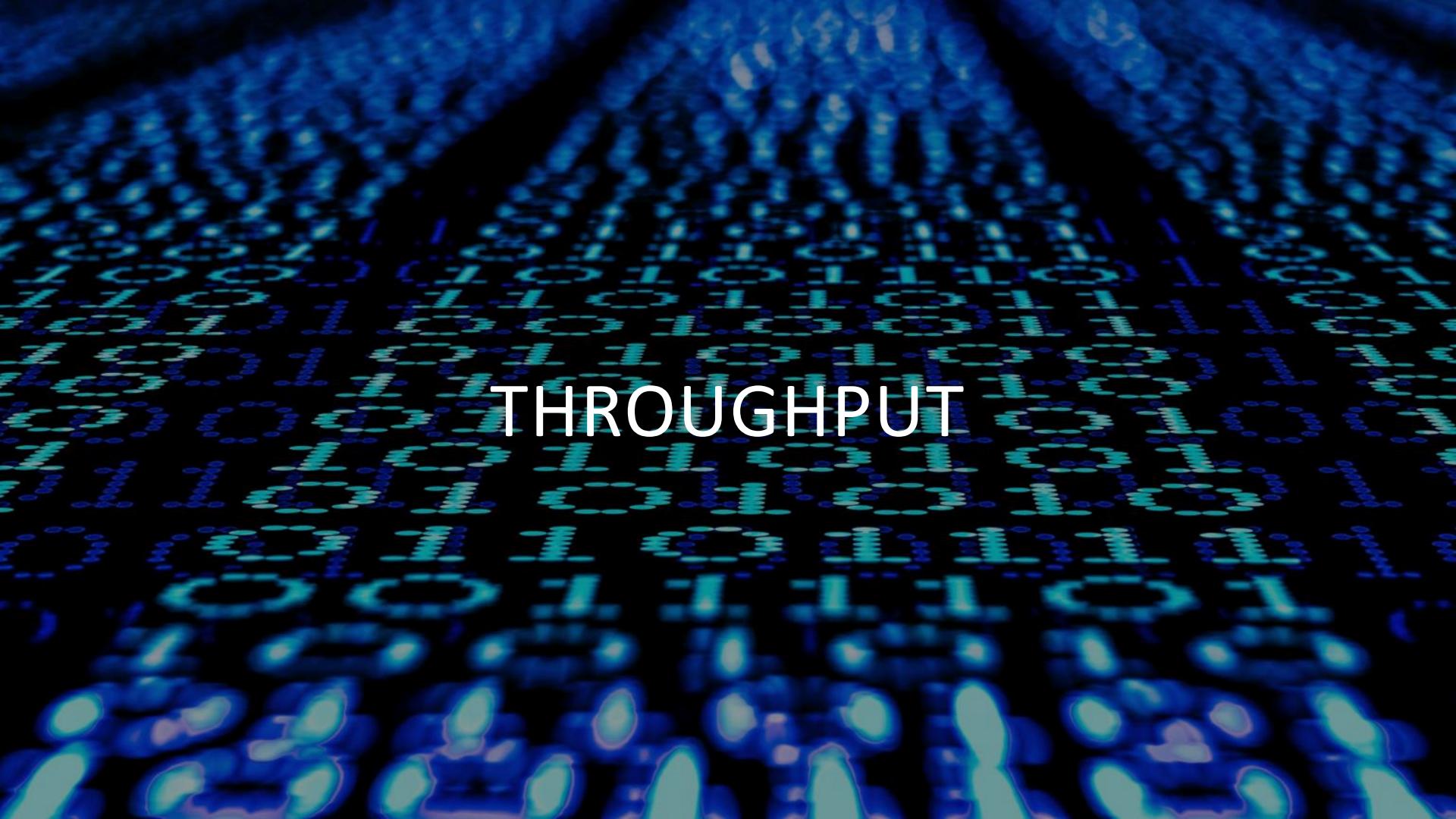
- Transmission medium
- Propagation
- Routers
- Storage delays
- Last mile delays



# LATENCY

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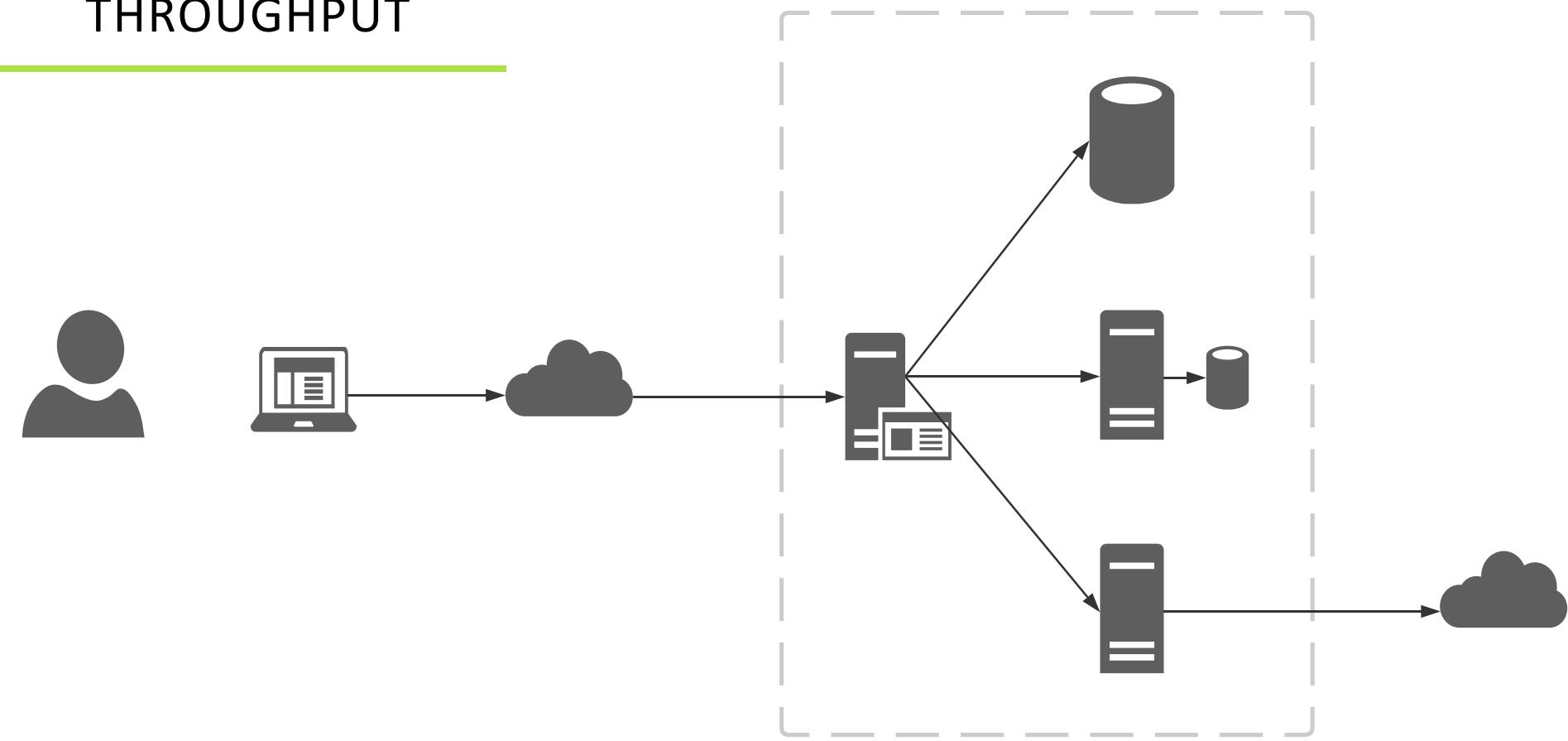


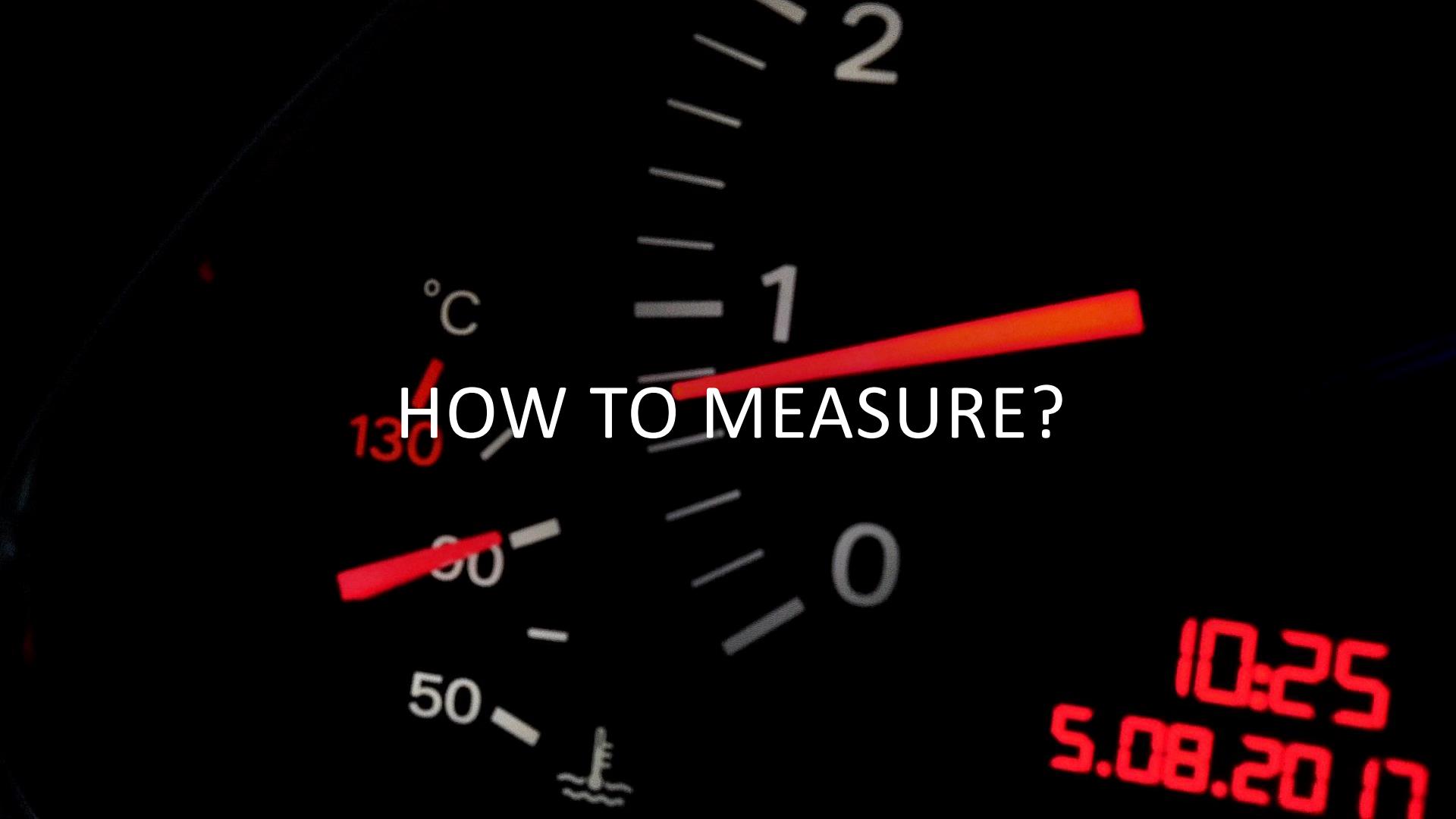


# THROUGHPUT

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# HOW TO MEASURE?

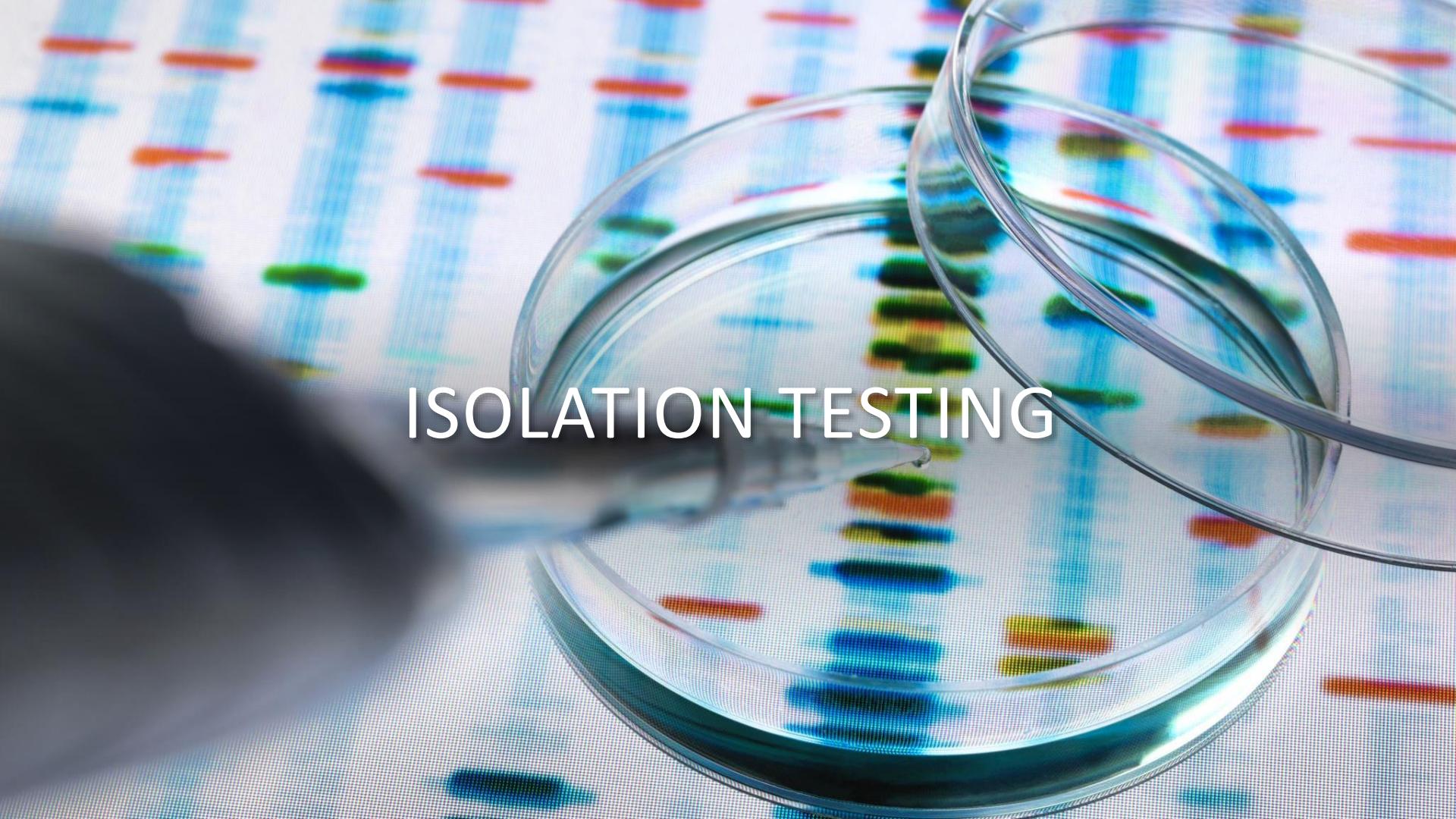
10:25  
5.08.2017

# TESTING TYPES

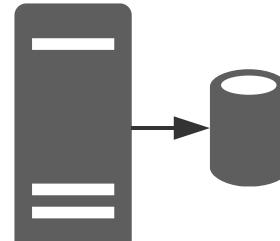
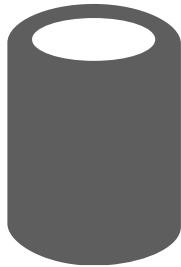
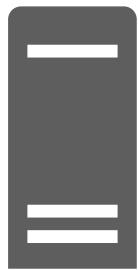
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- Isolation testing
- Load testing
- Stress testing
- Soak testing
- Spike testing
- Breakpoint testing
- Configuration testing
- Internet testing

# ISOLATION TESTING



# ISOLATION TESTING

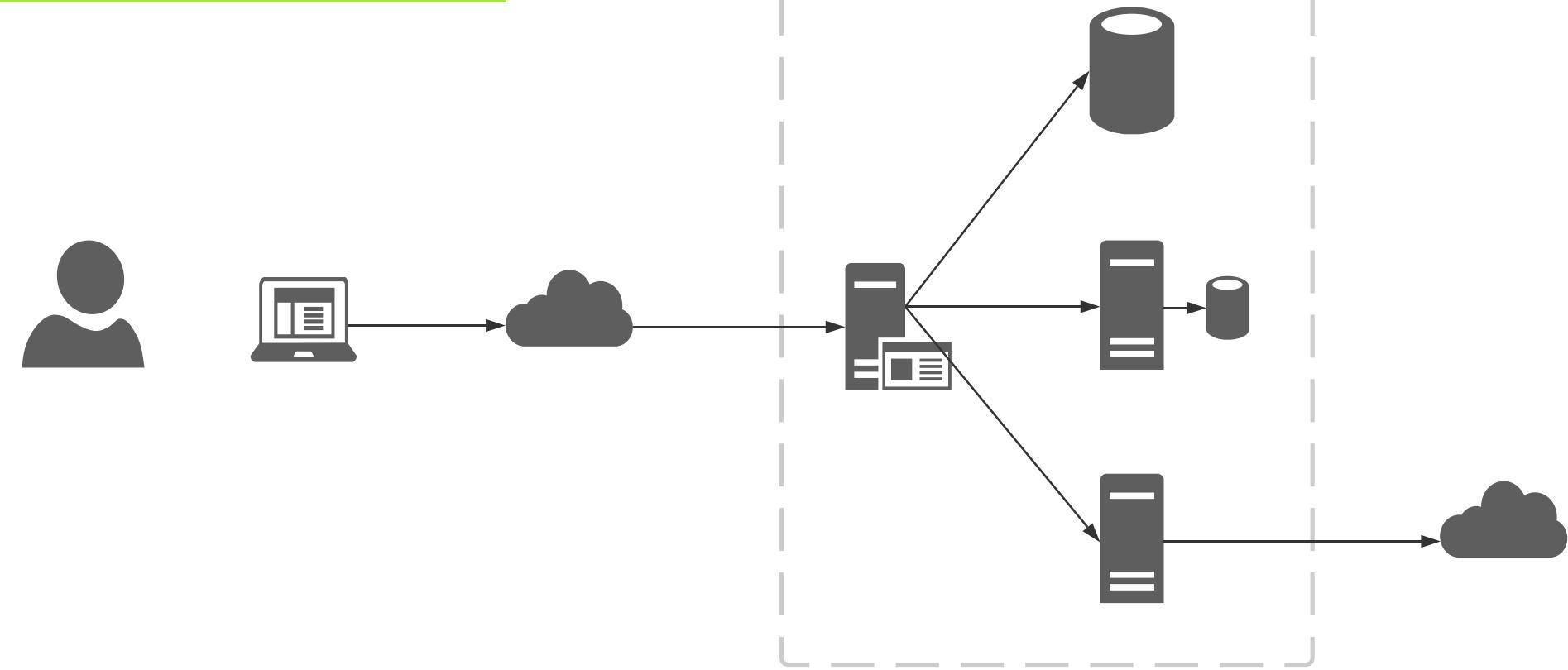


An aerial photograph of a large cargo ship sailing on a deep blue ocean. The ship is viewed from above, showing its full length. It is heavily loaded with numerous shipping containers stacked in several rows along its deck. The containers are of various colors, including red, blue, green, and white. The ship's superstructure, including funnels and masts, is visible at both ends. A prominent wake is visible behind the ship, indicating its movement through the water.

**LOAD TESTING**

# LOAD TESTING

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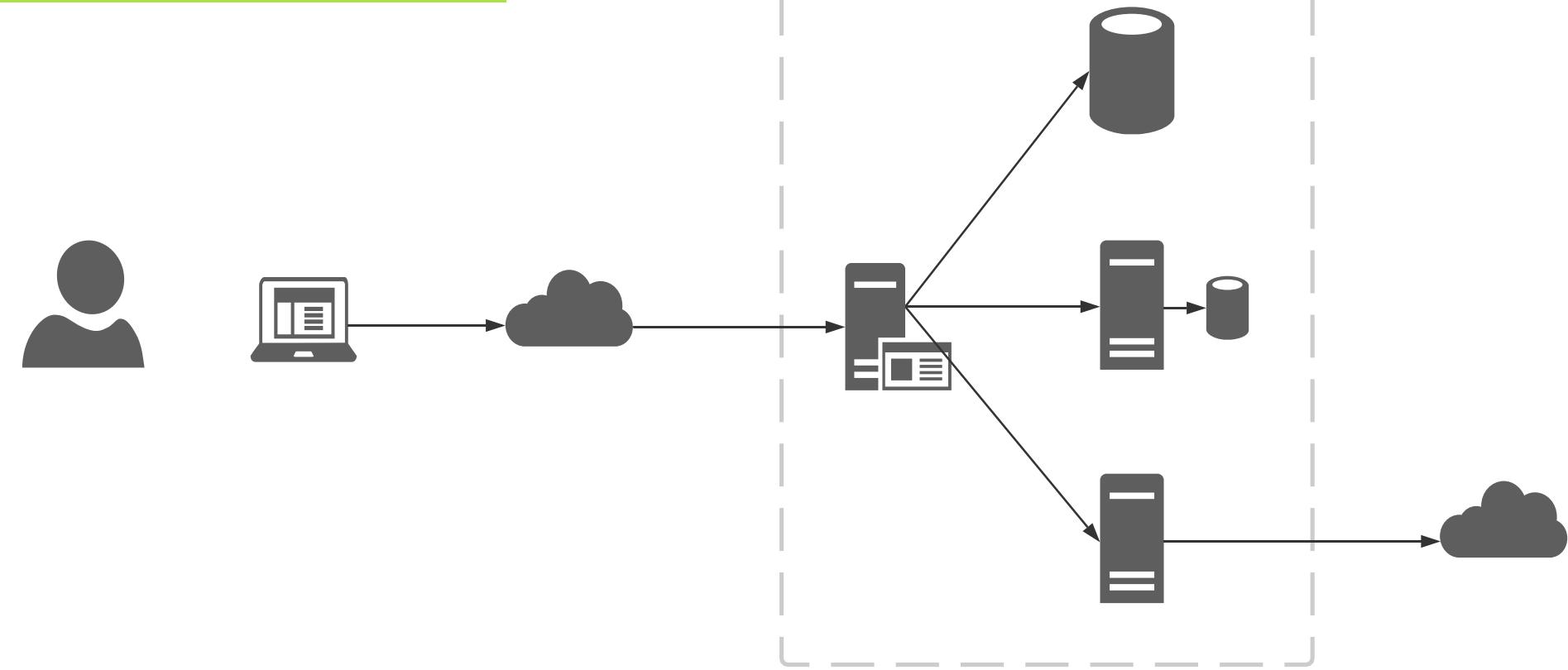




# STRESS TESTING

# STRESS TESTING

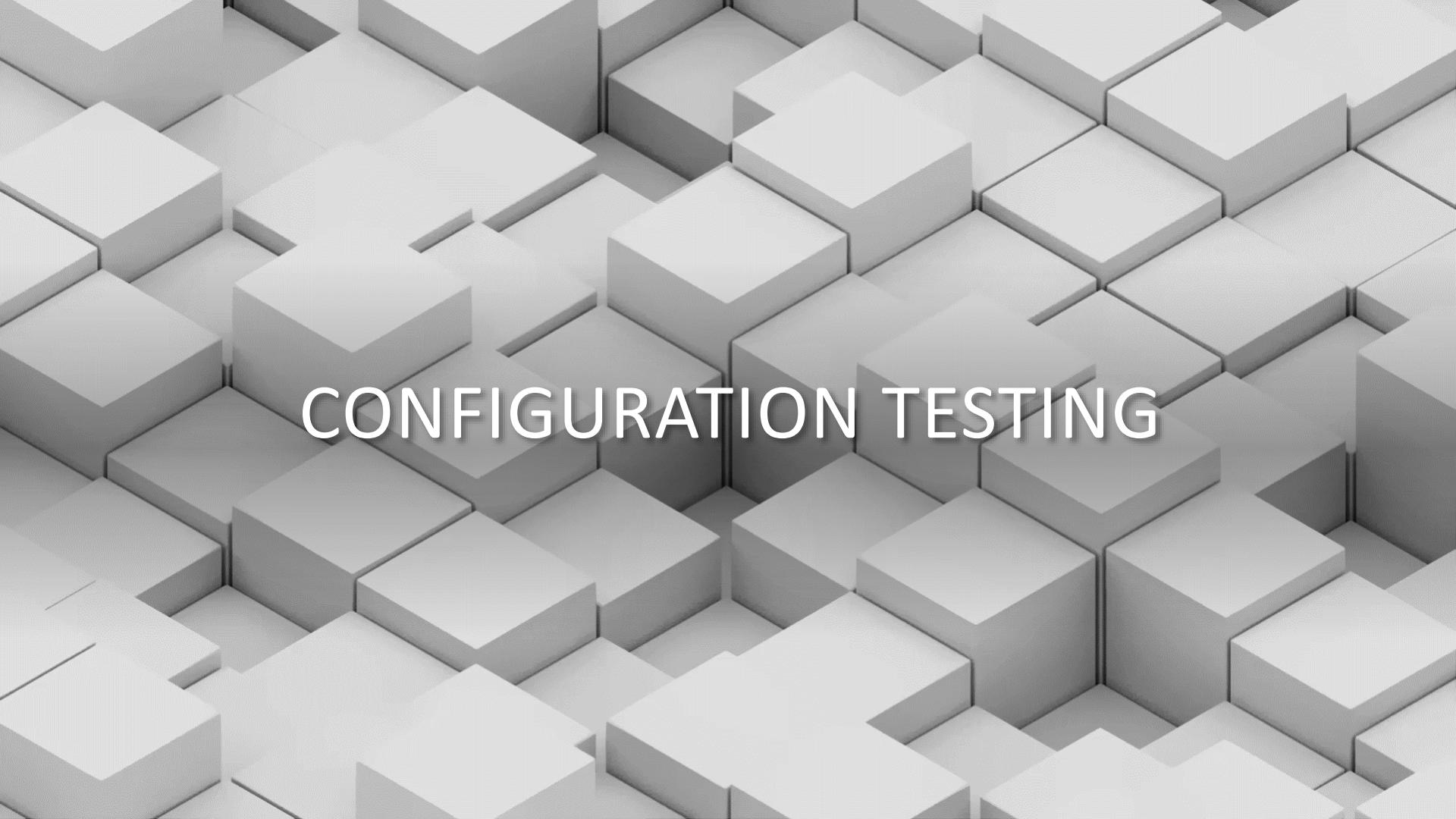
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# SOAK TESTING

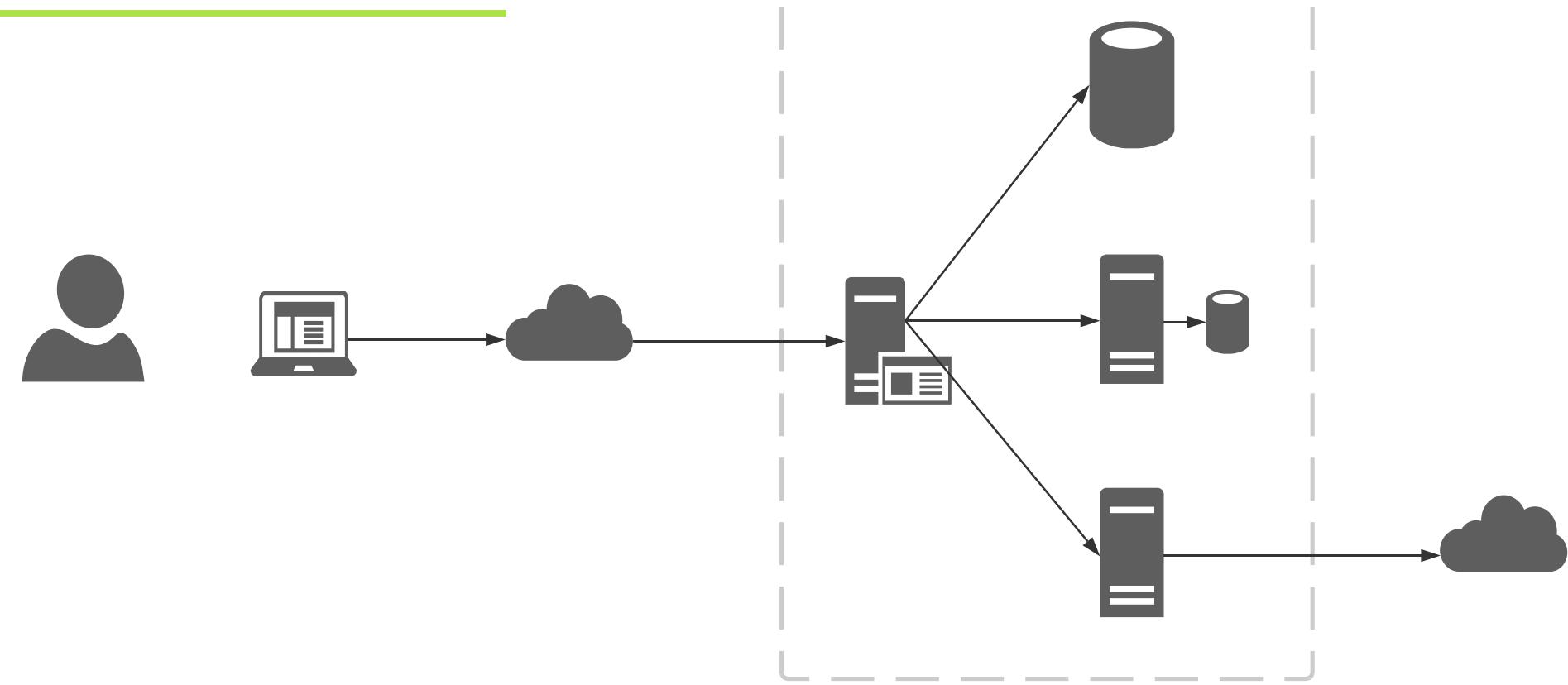
# SPIKE TESTING

# BREAKPOINT TESTING

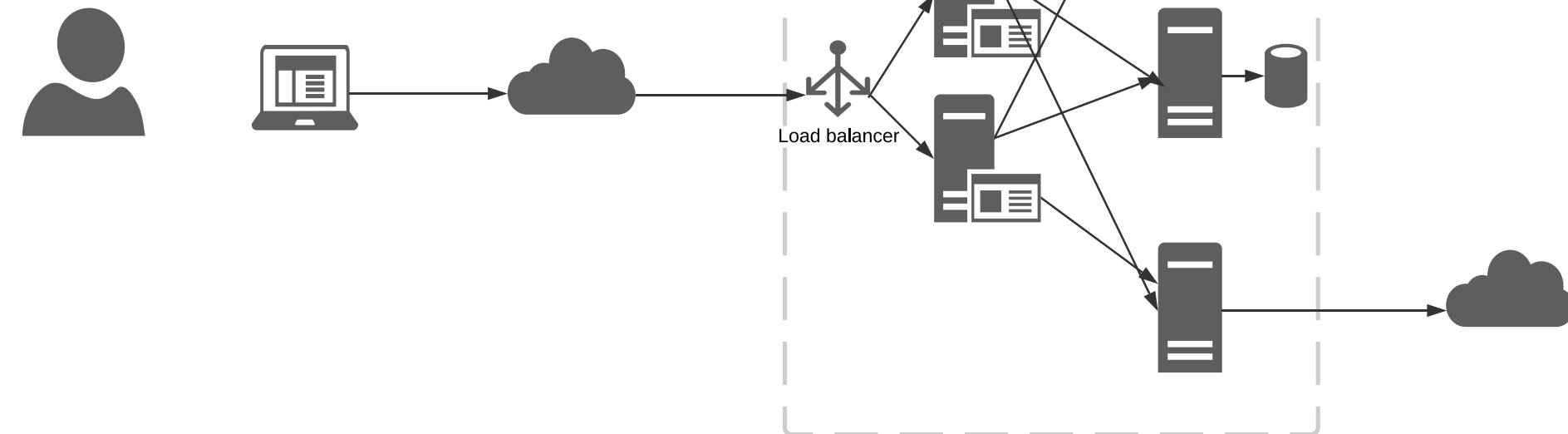


CONFIGURATION TESTING

# CONFIGURATION TESTING



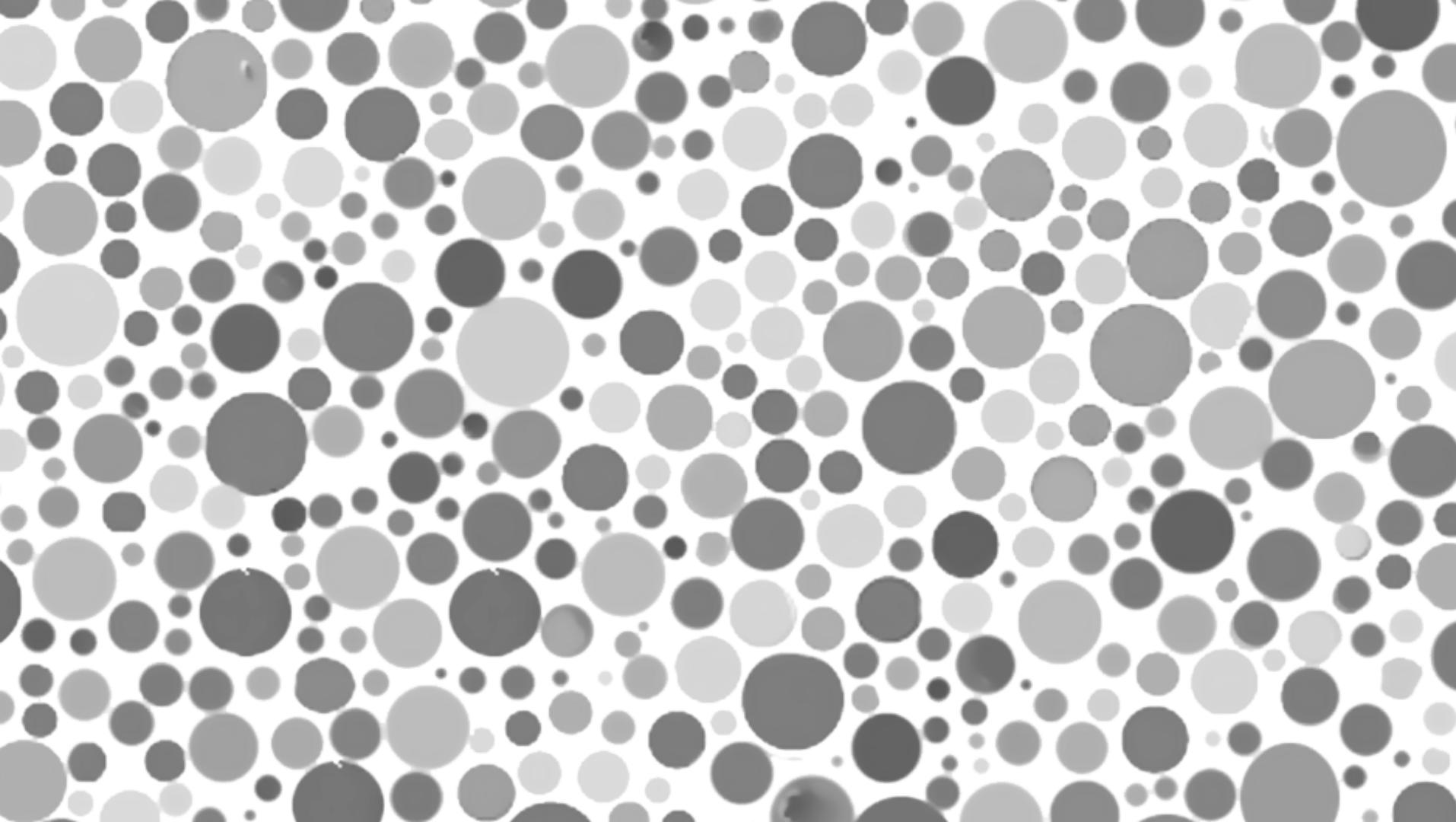
# CONFIGURATION TESTING

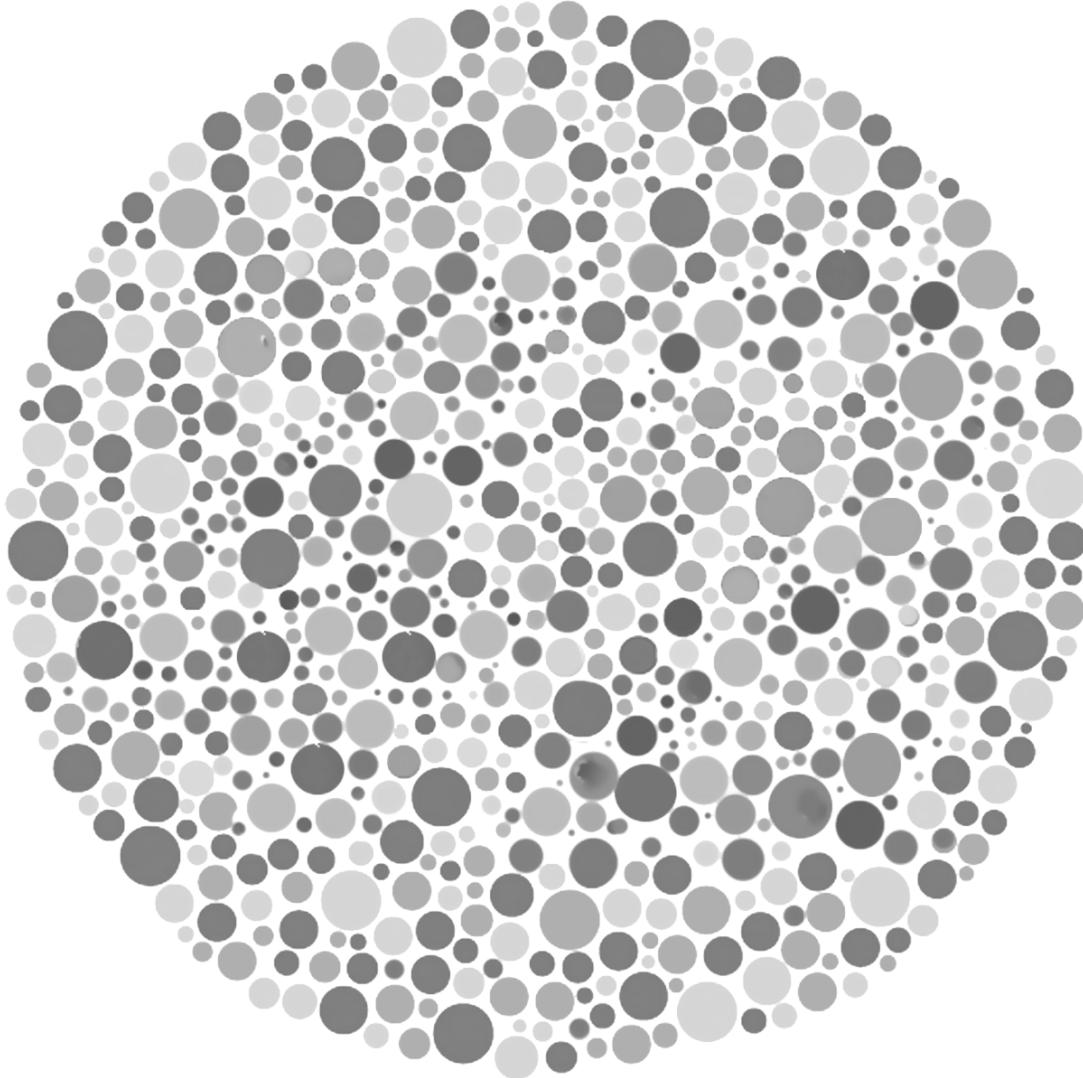


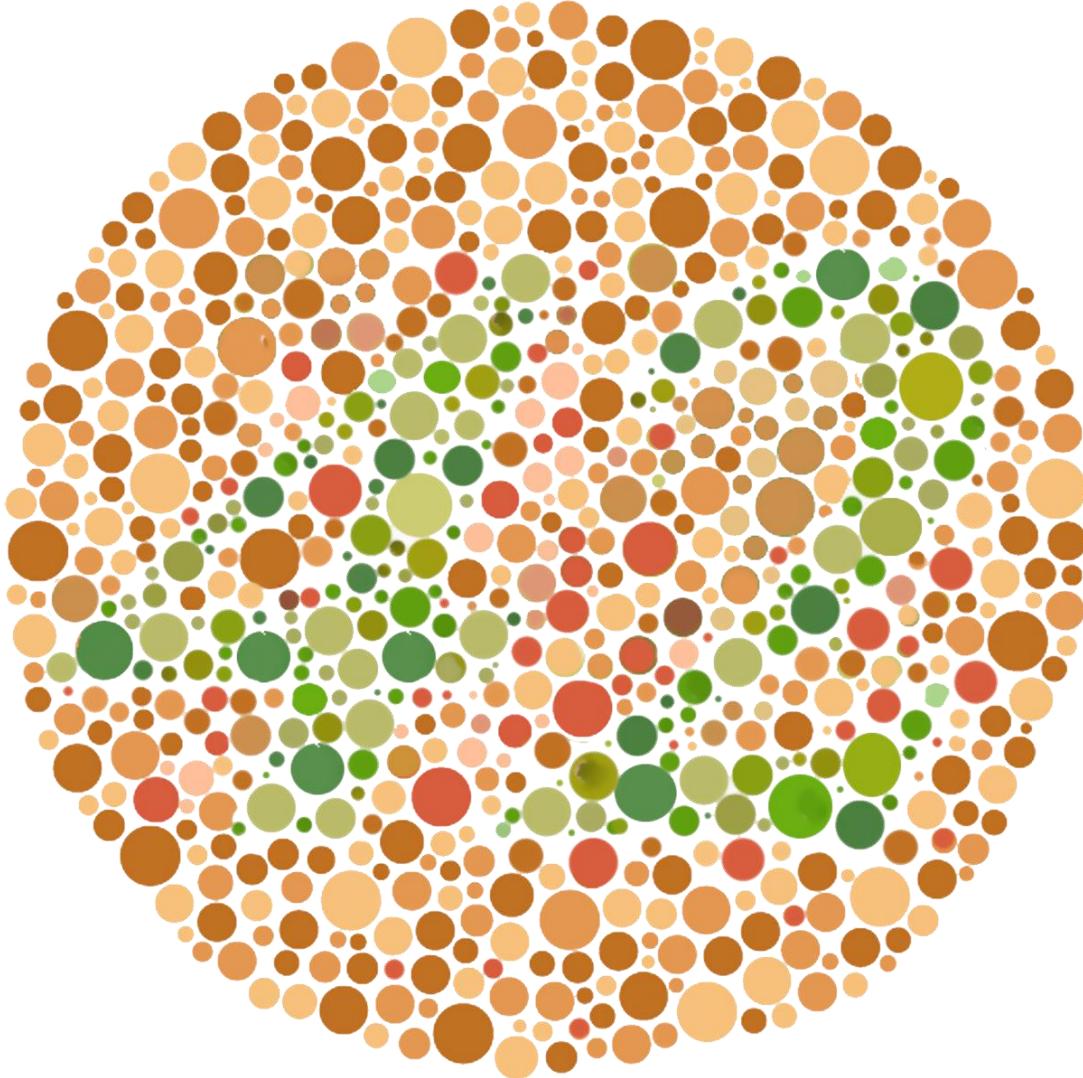
# INTERNET TESTING



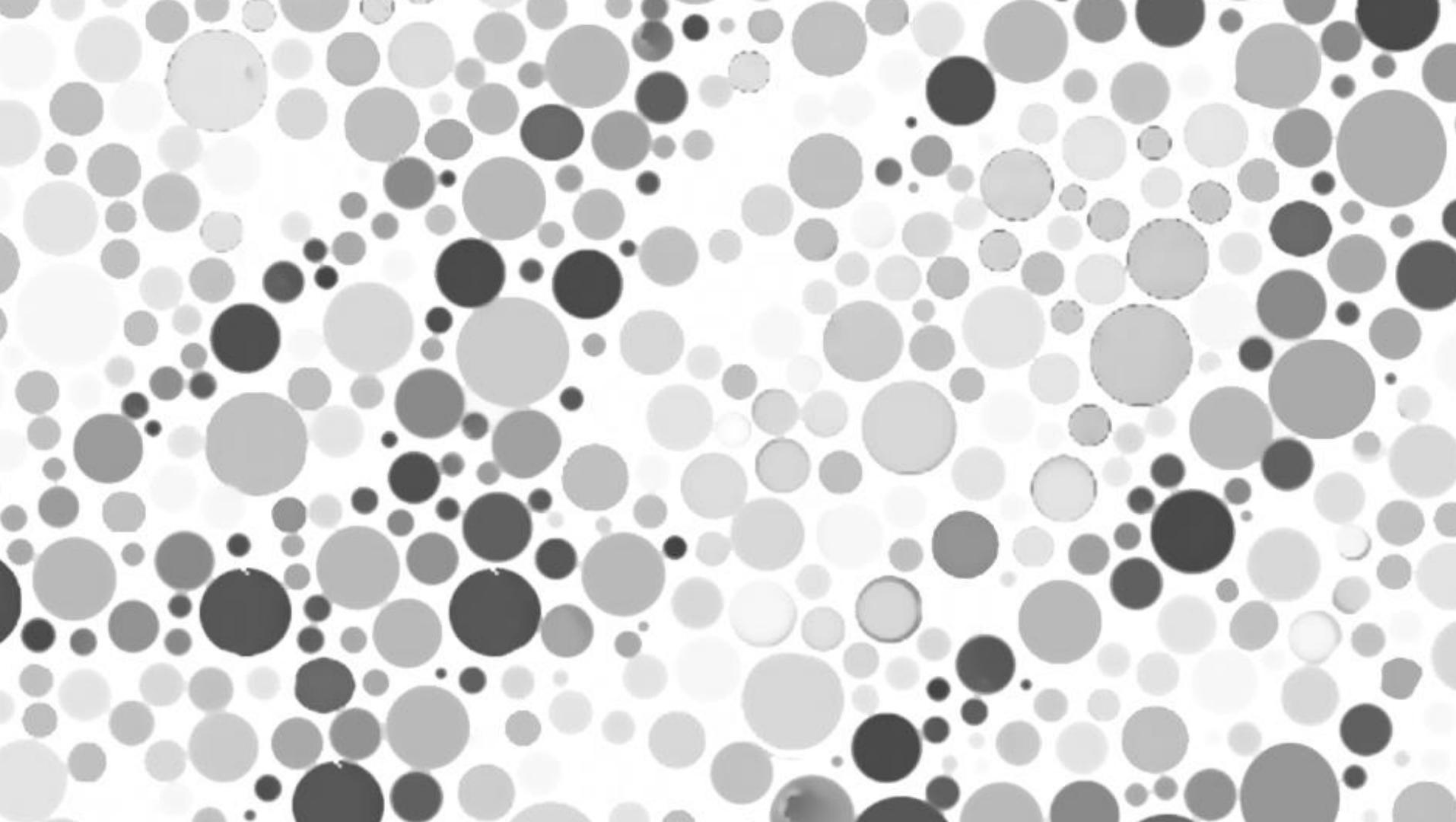












# PRACTICAL ADVICE

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- Testing the wrong things
- Expensive tests
- TTM
- Don't forget about performance
- Impossible standards
- Performance hides
- Caching is not everything, but it helps
- Expectations vs reality

# TOOLS

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- Lighthouse
- Webpage test
- Catchpoint
- New Relic
- Dynatrace
- AppDynamics
- Custom tools

# SUMMARY

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## WHAT TO MEASURE

- Availability
- Response time
- Channel capacity
- Latency
- Throughput

## HOW TO MEASURE

- Isolation
- Load
- Stress
- Soak
- Spike
- Breakpoint
- Configuration
- Internet

A black and white photograph of a baseball player in mid-pitch. He is wearing a Los Angeles Angels uniform, featuring the team's signature "A" logo on the back of his jersey. The player is shown from the waist up, with his right arm extended forward holding a baseball, and his left arm bent at the elbow. He is wearing a dark baseball cap and a light-colored wristband on his left wrist. The background is dark and out of focus.

Q & A

# RESOURCES

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<https://hpbn.co/>

<https://web.dev/>

<https://medium.com/@addyosmani>

<https://medium.com/dev-channel/a-netflix-web-performance-case-study-c0bcde26a9d9>

[https://www.youtube.com/playlist?list=PLNYkxOF6rcIAKIQFsNbV0JDws\\_G\\_bnNo9](https://www.youtube.com/playlist?list=PLNYkxOF6rcIAKIQFsNbV0JDws_G_bnNo9)

<https://jakearchibald.com/>

<https://developers.google.com/web/tools/chrome-devtools>

<https://blog.mercury.io/the-psychology-of-waiting-loading-animations-and-facebook/>

<https://alistapart.com/article/improving-ux-through-front-end-performance/>