PERFORMANCE TESTING

PAGE PERFORMANCE & LOAD TESTING

GABI KIS – UBB – APRIL 2022

*"**Performance testing** is a testing practice performed to determine **how a system performs** in terms of **responsiveness** and **stability** under a particular **workload**."* – Wikipedia.

PERFORMANCE TESTING TYPES

❑ Load

- ✓ under expected specific load
- ✓ find bottlenecks

❑ Stress

- ✓ above expected load
- ✓ upper limits of capacity
- ✓ determine the breaking point

❑ Spike

- ✓ short period of time
- ✓ extreme load
- ✓ recovery of the system

❑ Volume

- ✓ large volume/amount of data
- ✓ check performance with large data

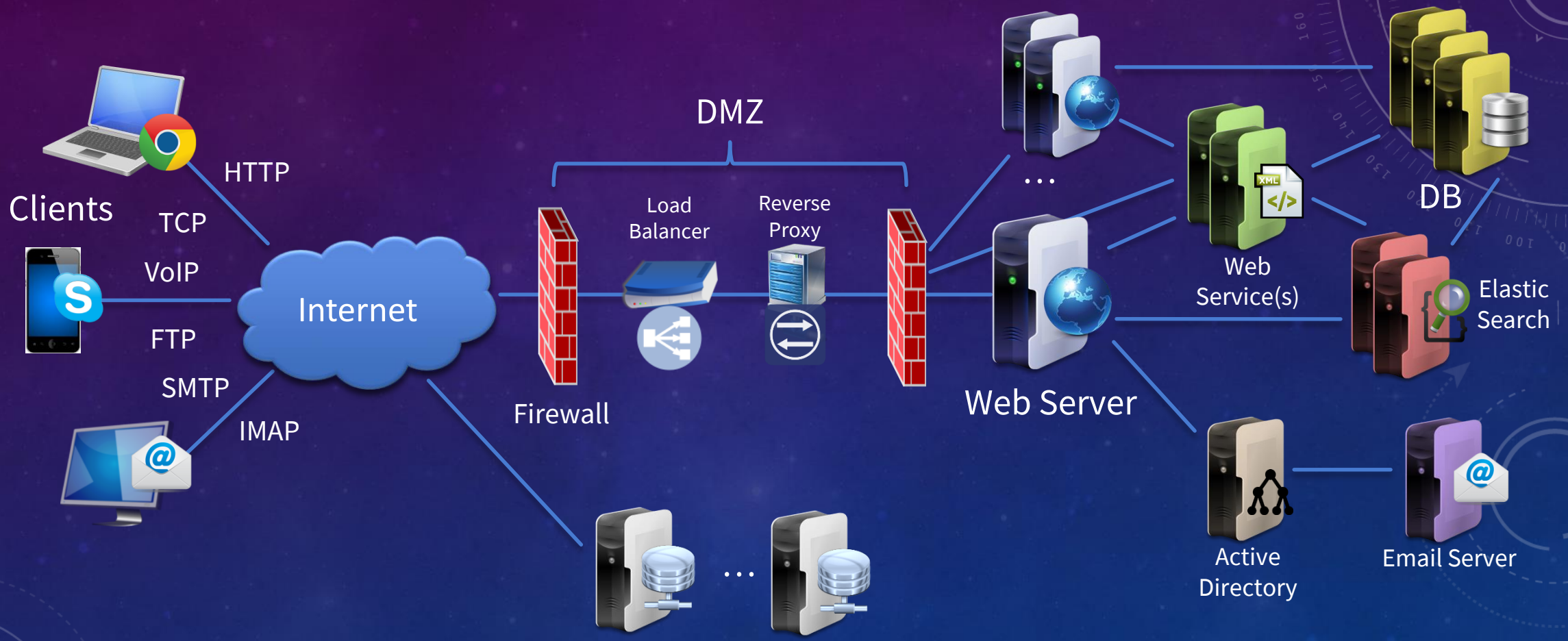
❑ Endurance/Soak

- ✓ long periods of time
- ✓ memory leaks
- ✓ performance degradation
- ✓ reliability of the system

❑ Scalability

- ✓ ability to handle a growing amount
- ✓ scale up, scale out

APPLICATION NETWORK ARCHITECTURE



WEB PAGE PERFORMANCE ANALYSIS

- ✓ Analyze the content of a web page
- ✓ Generate suggestions to make that page faster

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WEB PAGE PERFORMANCE ANALYSIS

Good practices

- Minify HTML / CSS / JavaScript
- Prioritize visible content
- Avoid landing page redirects
- Leverage browser caching
- Optimize images
- Enable compression
- Remove Render-Blocking JavaScript
- …

Google

PageSpeed Insights

Online / Free

https://pagespeed.web.dev/

DEMO

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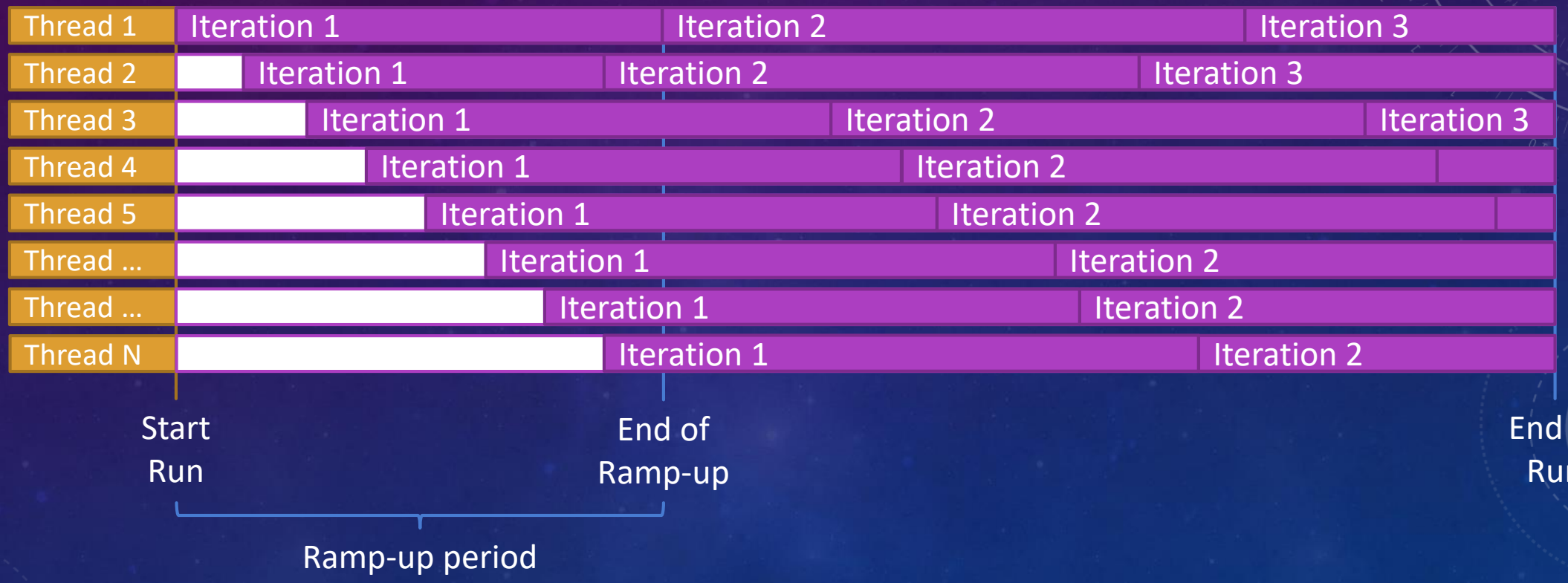
LOAD TESTING

- ✓ To understand the behavior of the system under a **specific expected load** (e.g. multiple users).

STEPS FOR PERFORMANCE (LOAD) TESTING

- Gather requirements
- Define scenario(s) – user journey
- Implement scenario – write JMeter script
- Configure script for execution
- Configure environment
- Run (on different configurations – if needed)
- Interpret and analyze results
- Report findings and possible improvements

THREADS, ITERATIONS, USERS & RAMP-UP



N – Number of Threads (users)

LOAD TESTING

DEMO

https://jmeter.apache.org/download_jmeter.cgi

https://jmeter-plugins.org/wiki/PluginsManager/

https://blazedemo.com/

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LOAD TESTING – RESULTS

- Gather results and monitoring data
- Track script and execution notes (environment, configuration info)
- Interpret results, suggest improvements
- Plot results (e.g. average response time / # of threads)
- Historical comparison (previous builds)
- Summarize findings on each result type (load times, bottlenecks, errors, improvements, performance degradation)
- Include an executive summary

DID YOU KNOW?

1 IN 4 VISITORS
would abandon a website that takes more than 4 seconds to load

46% OF USERS
don't revisit poorly performing websites

64% OF SHOPPERS
who are dissatisfied with their site visit will shop somewhere else next time

1 SECOND DELAY
reduces customer satisfaction by 16%

Most marketers' landing pages don't hit acceptable speeds

Sources: Unbounce, LoadStorm, Econsultancy

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TAKEAWAYS

Cannot cover everything, therefore, a subset of journeys/pages can be used and balanced based on the real/estimated usage.

Configure and adjust the testing based on the real usage of the application and the behavior of the end-users.