The Fourth International Workshop on Large-Scale Testing (LT 2015)

Large-Scale Testing: Load Generation

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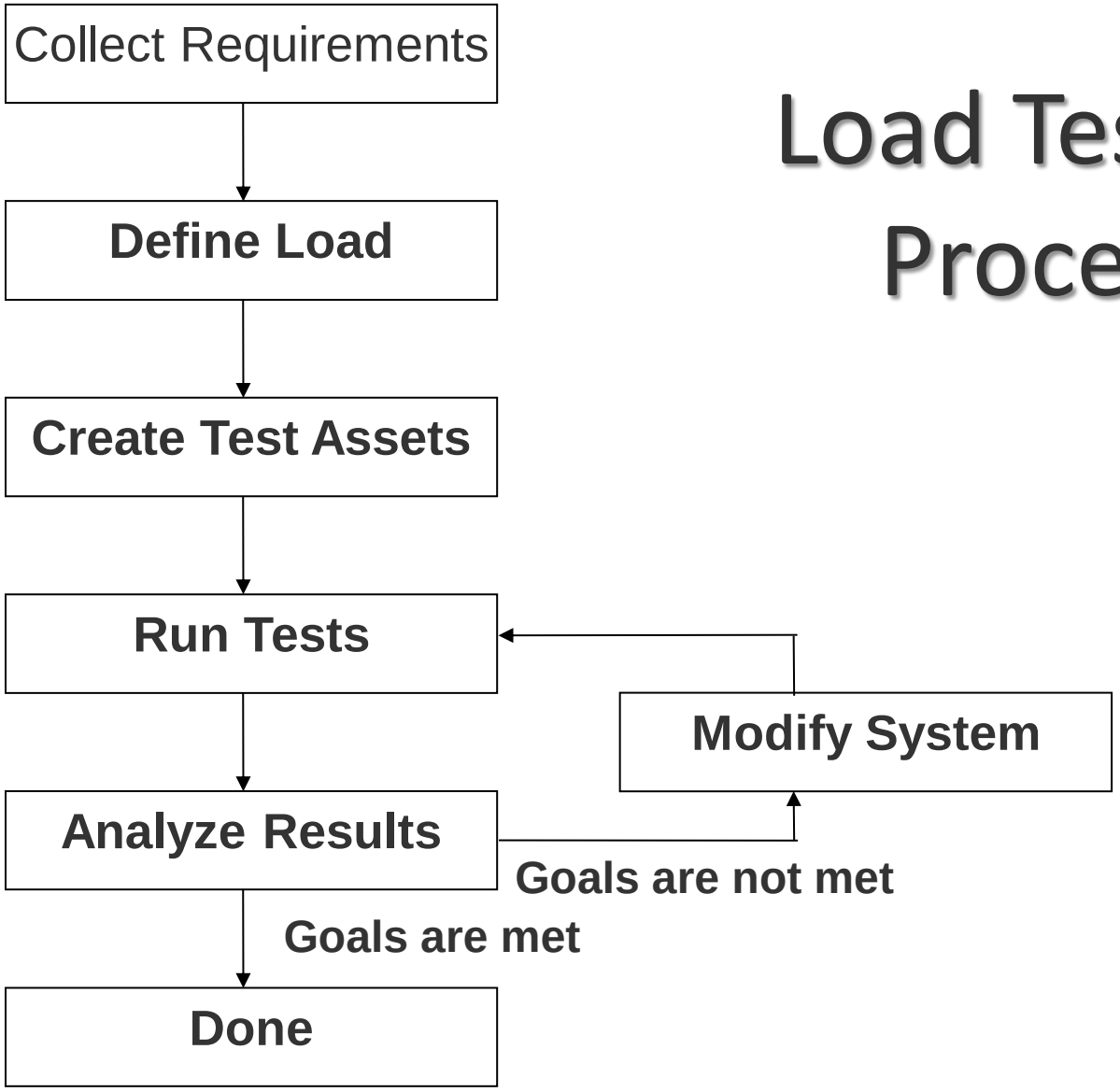
About Me

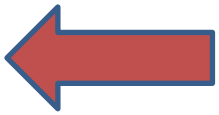
- Have specialized in performance for the last 17 years
- Currently performance testing and optimization of Hyperion products at Oracle
- Board director at CMG (http://cmg.org), organization of performance and capacity professionals
  - Next conference November 2-5, 2015 in San Antonio, TX

Load Testing Process



Challenges of LT

- How can we create load?
  - Workload generation

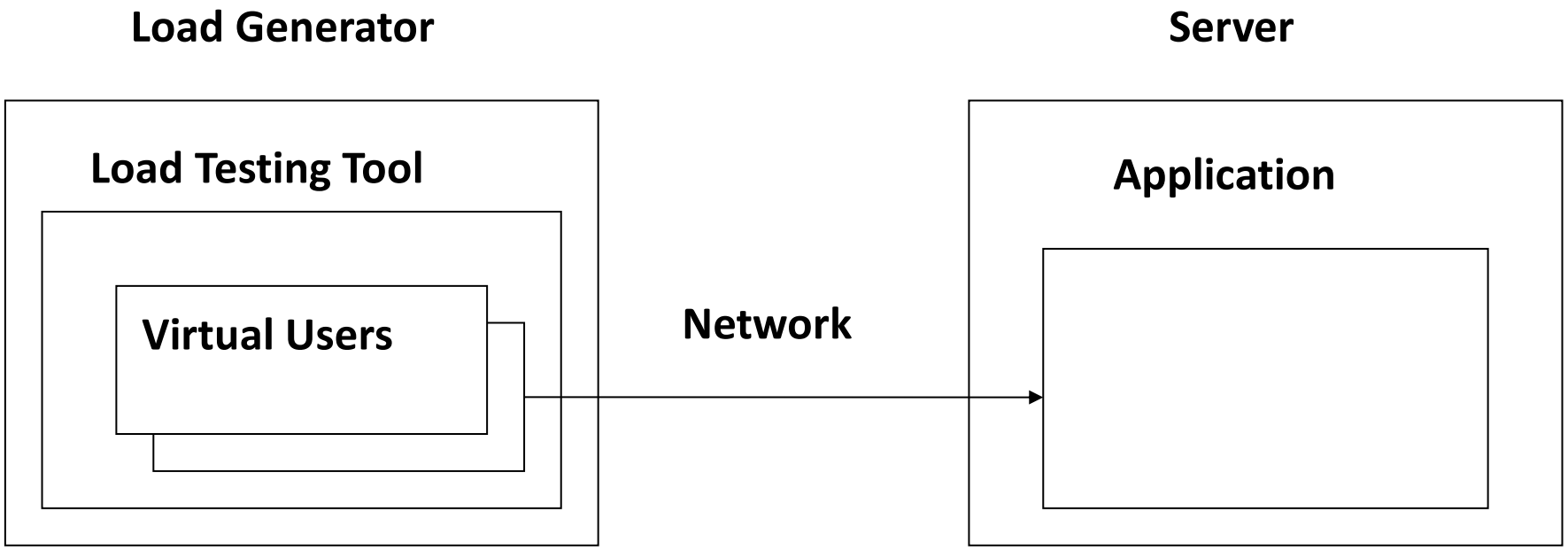


- What load do we want to generate?
  - Test design

Manual

- Not an option for a large number of users
- Always variation in human input times
- Can be a good option to simulate quickly a few users
- Can be used with other methods to verify correctness

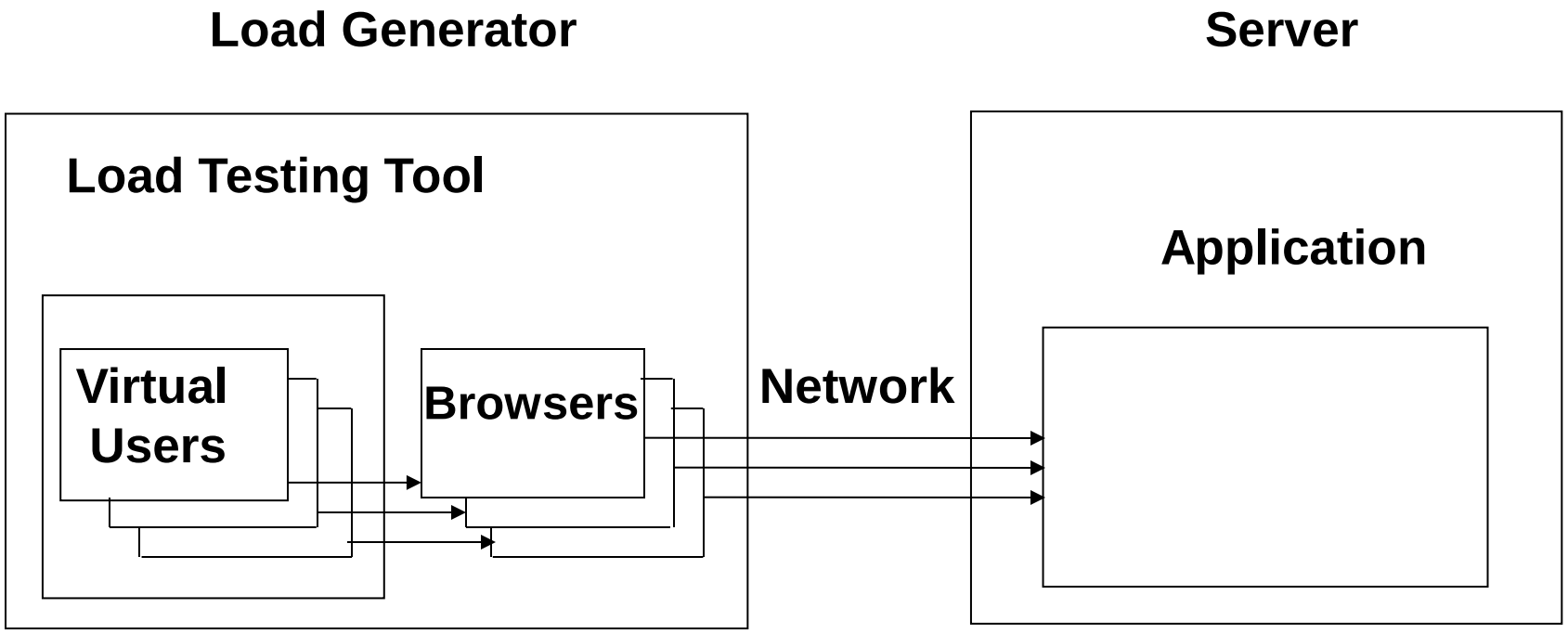
Record and Playback: Protocol Level



Considerations

- Usually doesn't work for testing components
- Each tool support a limited number of technologies (protocols)
- Some technologies are very time-consuming
- Workload validity in case of sophisticated logic on the client side is not guaranteed
- Client-side timing is not included

Record and Playback: UI Level



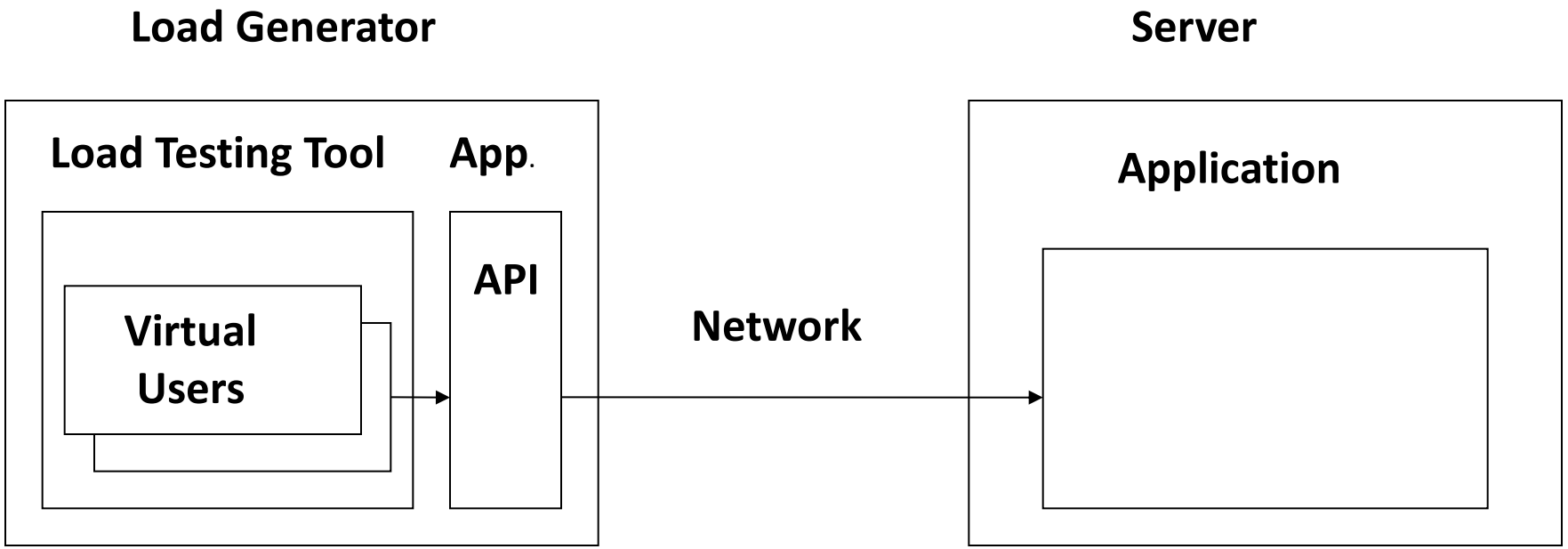
Different Approaches

- Traditional tools, fat clients
  - Require a separate machine (or a terminal session) per user
- Low-level graphical protocols
  - Citrix, Remote Desktop
- Web tools, browser
  - Require a separate browser instance
- Web tools, light-weight browser
  - Require a separate light-weight browser instance
  - For example, HtmlUnit or PhantomJS

Considerations

- Scalability
  - Still require more resources
- Supported technologies
- Timing accuracy
- Playback accuracy
  - For example, for HtmlUnit

Programming



Considerations

- Requires programming / access to APIs
- Tool support
  - Extensibility
  - Language support
- May require more resources
- Environment may need to be set

Real Users

- Testing in production
  - Full load
  - Partial load (A/B testing, canary testing)
- You trade in the need to generate and validate workload for a possibility of performance issues and load variability

Considerations

- May make sense for the following conditions
  - Potential issues have minimal impact on user satisfaction and company image
  - Easy rollback of the changes
  - Homogenous workload and a way to control it
  - Fully parallel and scalable architecture

Summary

- ***There is no best approach*** – it depends
  - More of an art in non-trivial cases
- ***Does the taxonomy make sense?***
  - Any suggestions / corrections?
- ***Can load generation be more of an science***?

Questions?

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