# Measuring Packet Processing Overheads In the Linux Kernel

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Motivation

- Increasing popularity of Cloud Computing leading to increased remote procedure calls.
- Accessing remote machine faces high latency.
- Protocol processing overheads of source and destination machines a key cause of latency.
- Measuring and studying the processing overheads may lead to finding improvements in current implementation and reduction of latency.
- Various computing platforms responsible for packet processing and latency.
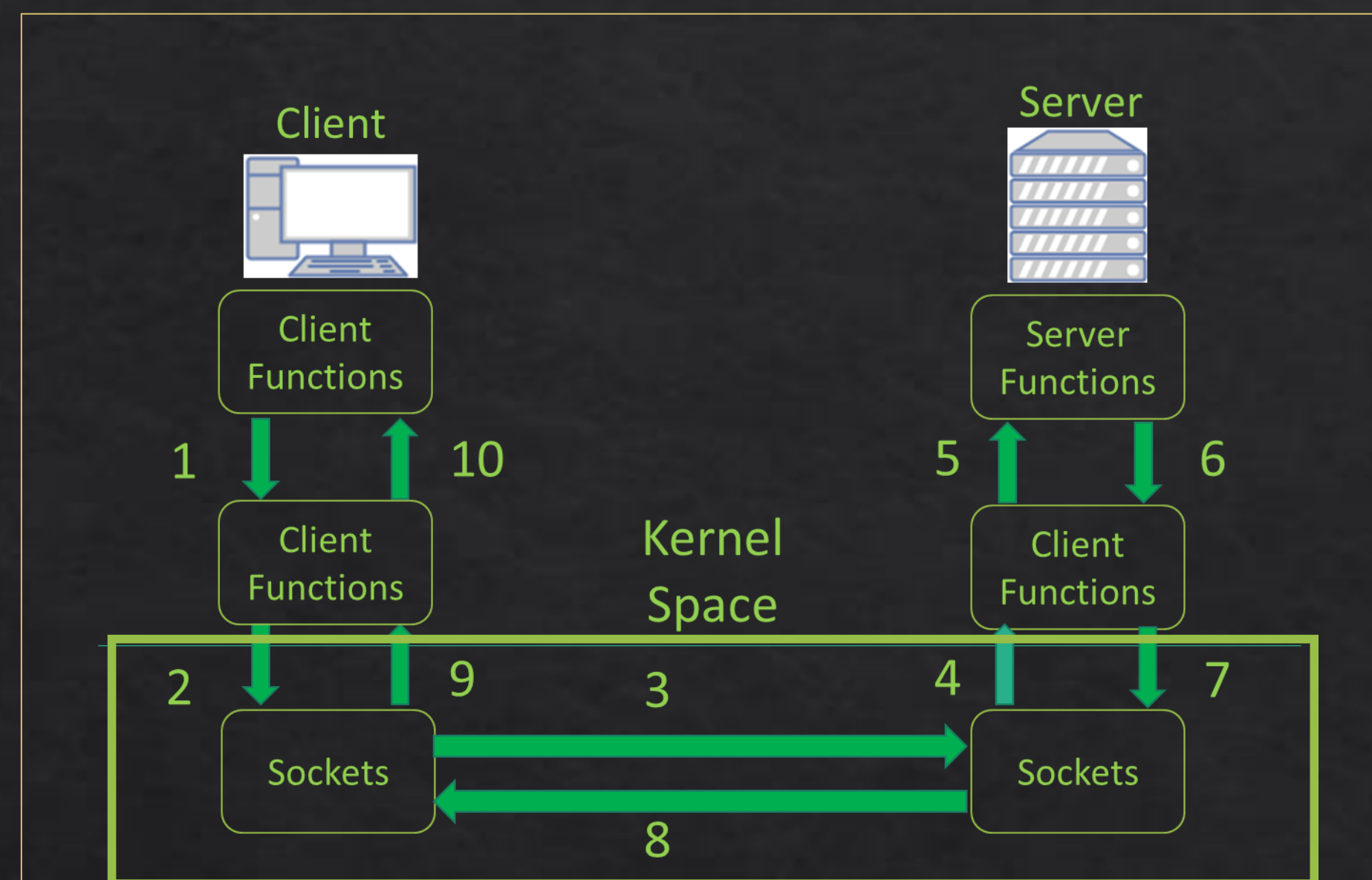
Remote Procedure Calls in Linux

Objectives

- Find suitable tool
- Test different protocols
- Use different connection types
- Vary Test environment
- Analyze collected data

Challenges

- Finding suitable OS
- Packet loss issues
- Entry and exit points
- Finding detailed paths
- Transmission/Reception Control
- Garbage packets, unexpected transmission and reception

Constraints

- Availability of OS
- Hardware constraints
- Software constraints
- Types of networks available to test
- Standards and protocols

Applications

- Data over WiFi
- Cloud Computing Practices
- Packet Processing Architectures
- Encryption/Decryption Techniques
- Tethering mobile devices
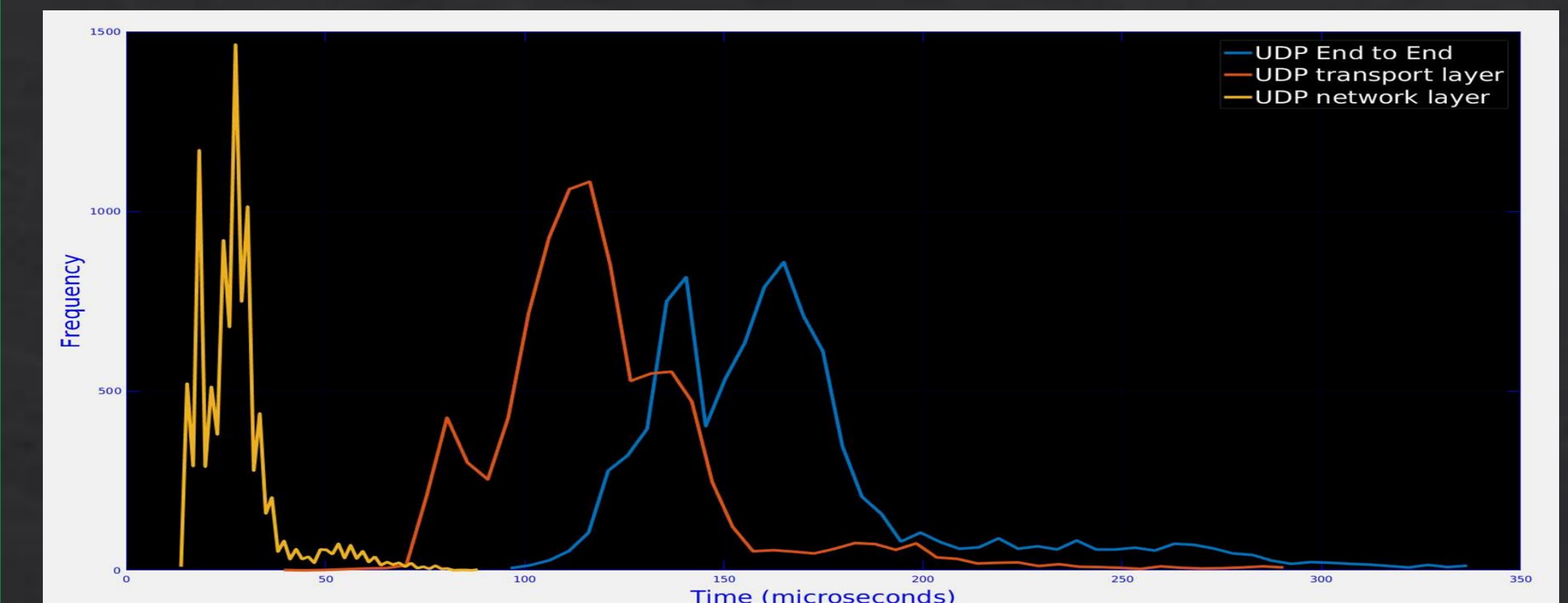- Fog Computing

Design Decisions

SystemTap

- Native to Linux
- Debuggable kernel image
- Recompilation Unnecessary
- C like syntax
- Monitors kernel functions, variables and data structures.
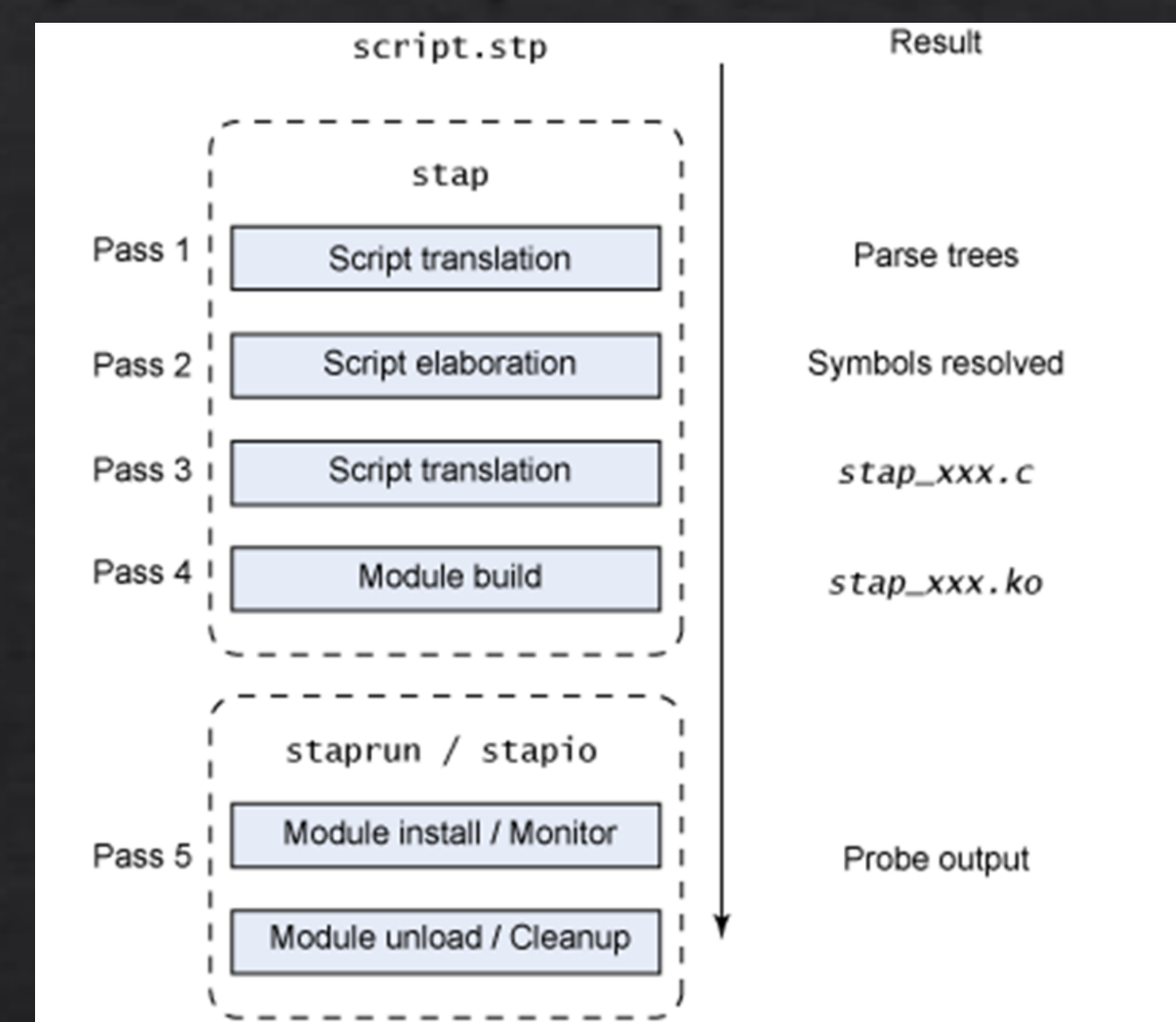
Netcat

VirtualBox

Results

Wired UDP Results

Conclusion