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Labeled Network Stack

A High-concurrency and Low-tail Latency Cloud Server Framework for Massive IoT Devices

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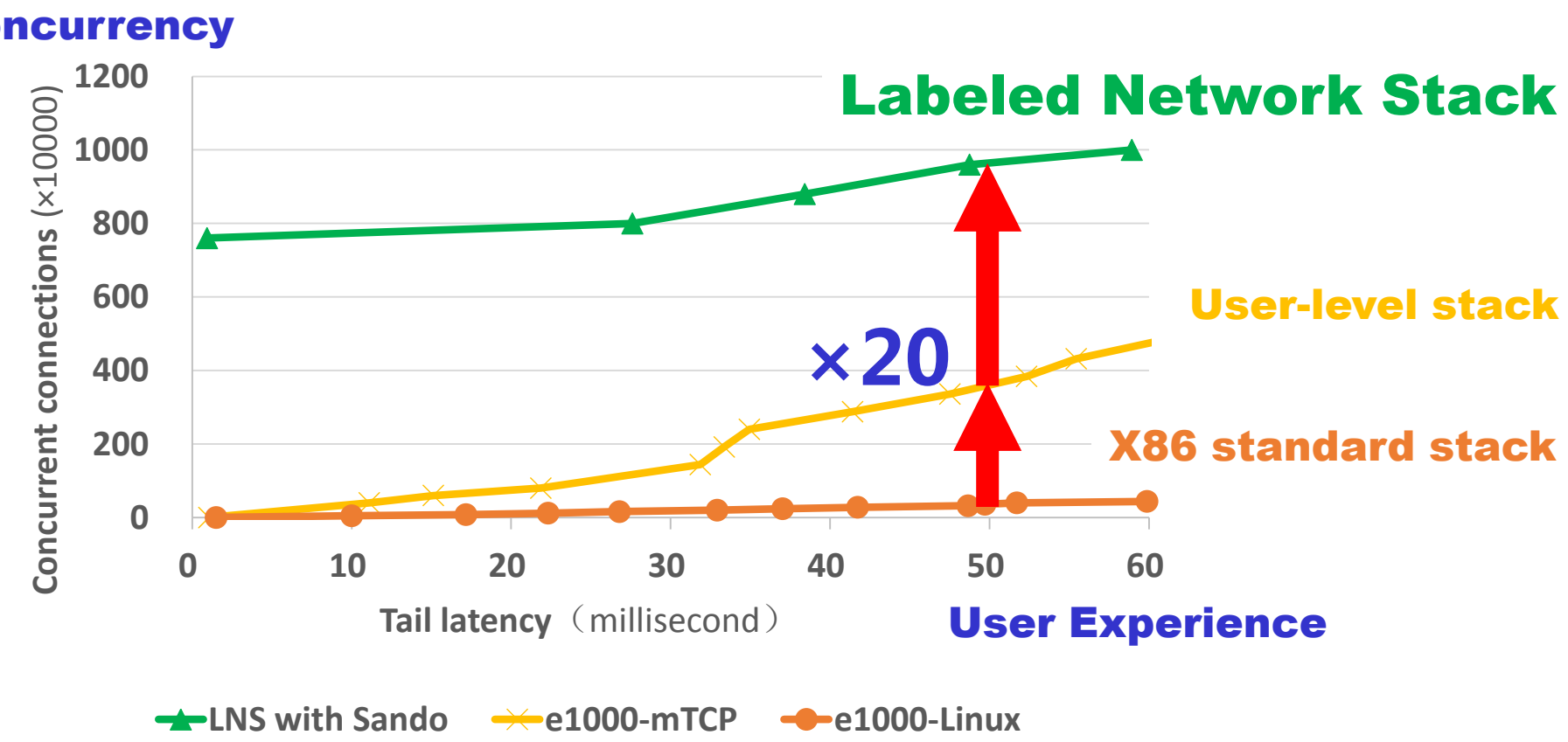
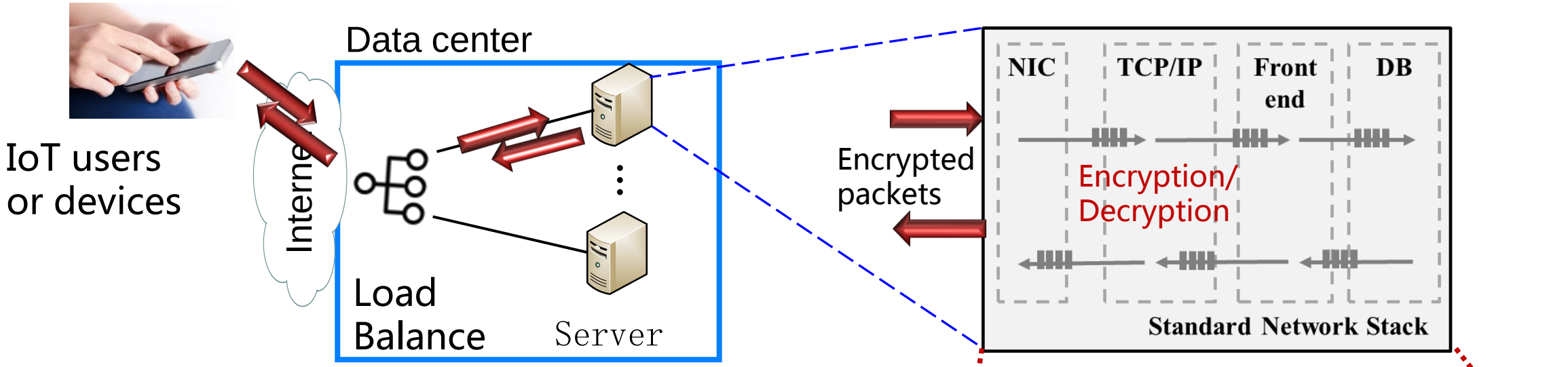
Research Findings

The Labeled Network Stack (LNS) got 20 times mass concurrency improvement compared with X86 standard network stack with user experience threshold of 50ms. While tail latency ranges from 1-60ms, the concurrency improves an order of magnitude.



Research Objectives and Method



To provide high concurrency and low tail latency for IoT scenario, **Labeled Network Stack features**

- ✓ Decryption/Encryption offload
- ✓ User-level driver and TCP/IP with label priority support
- ✓ Hardware-software codesigned full data path QoS guarantee

Research Conclusion

- **Labeled Network Stack (LNS)** is a cloud server framework for IoT, including labeled NIC, labeled TCP/IP stack and labeled server framework, which can be used together to get full path optimization, or only used in part to get less performance.

- In addition to IoT scenario, the Labeled Network Stack would be widely beneficial to both concurrency and tail latency for an increased number of applications featuring long connection, high concurrency, and user experience requirement, since it features (1) low-tail latency; (2) high concurrency; (3) low overhead; (4) low interference; and (5) low ecosystem effect.

Thank you !

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