

# Approximate Semantics for Wirelessly Networked Applications

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Algorithms ✓

Programming Languages ✓

Compilers ✓

Storage ✓

Arithmetic Units ✓

Algorithms ✓

Programming Languages ✓

Compilers ✓

Storage ✓

Arithmetic Units ✓



Communication ✗



A screenshot of a web browser displaying the ASPLOS 2014 website. The browser's address bar shows the URL [www.cs.utah.edu/asplos14/](http://www.cs.utah.edu/asplos14/). The page features a large header with the text "ASPLOS 2014" and a subtitle "Nineteenth International Conference on Architectural Support for Programming Languages and Operating Systems, Salt Lake City, Utah | March 1-5, 2014". Below the header is a navigation menu with links: HOME, REGISTRATION, HOTEL, PROGRAM, CO-LOCATED EVENTS, WACI, ORGANIZATION, and CALLS. The main content area contains three images: a cityscape of Salt Lake City, a natural rock archway, and a snowy ski slope. Below the images is a "Welcome" section with a paragraph of text. At the bottom of the page, a status bar indicates "Waiting for www.cs.utah.edu..." and "w ways."

ASPLOS 2014 | Nineteenth x

www.cs.utah.edu/asplos14/

# ASPLOS 2014

Nineteenth International Conference on Architectural Support for Programming Languages and Operating Systems  
Salt Lake City, Utah | March 1-5, 2014

[HOME](#) [REGISTRATION](#) [HOTEL](#) [PROGRAM](#) [CO-LOCATED EVENTS](#) [WACI](#) [ORGANIZATION](#) [CALLS](#)



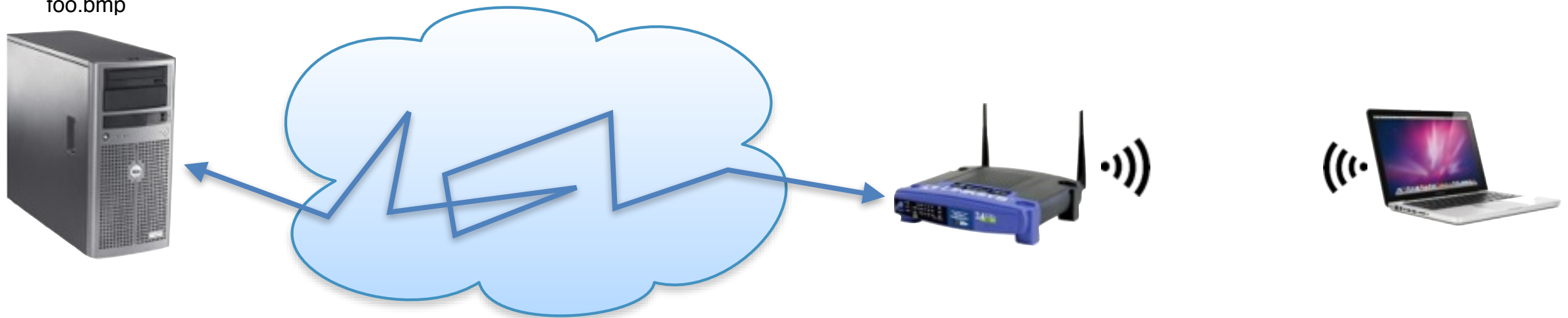
## Welcome

ASPLOS is the premier forum for multidisciplinary systems research spanning computer architecture and hardware, programming languages and compilers, operating systems and networking, as well as applications and user interfaces. The research may target diverse goals such as performance, energy and thermal efficiency, resiliency, security, and sustainability. The importance of such cross-cutting research continues to grow as we grapple with the end of Dennard scaling, the explosion of big data, scales ranging from ultra-low power wearable devices to exascale parallel and cloud computers, the need for sustainability, and increasingly human-centered applications. ASPLOS embraces

Waiting for www.cs.utah.edu... w ways.



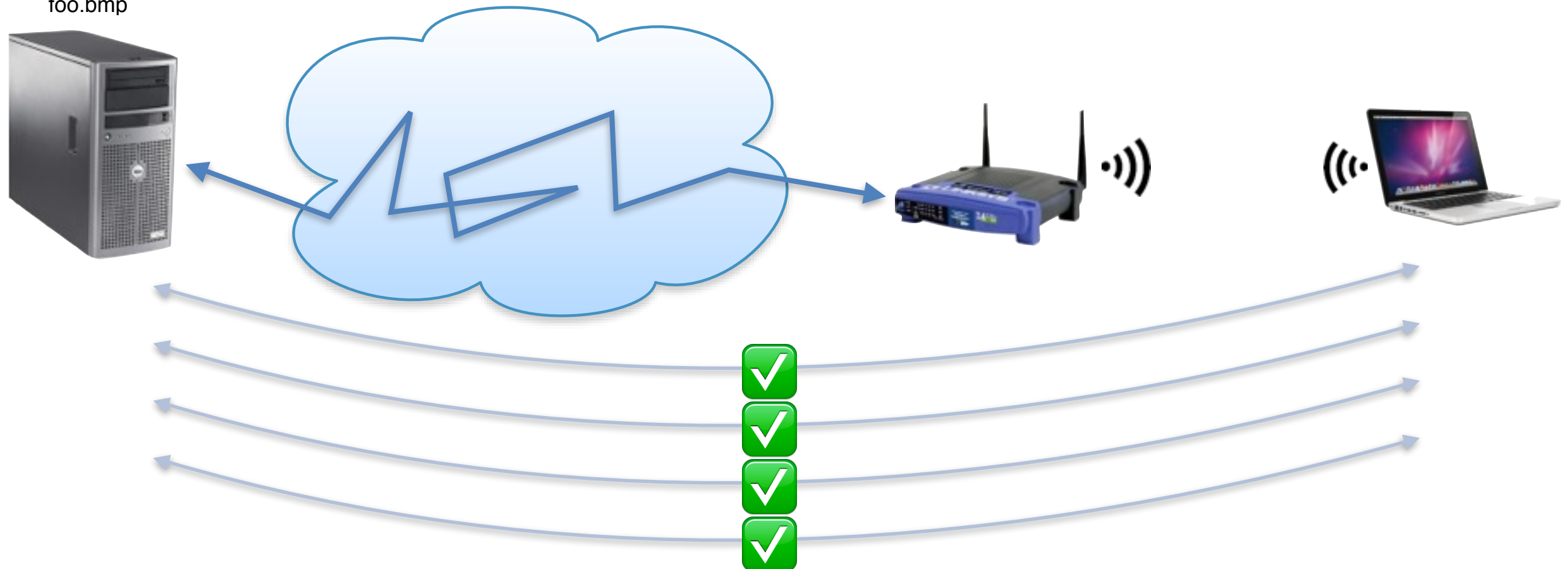
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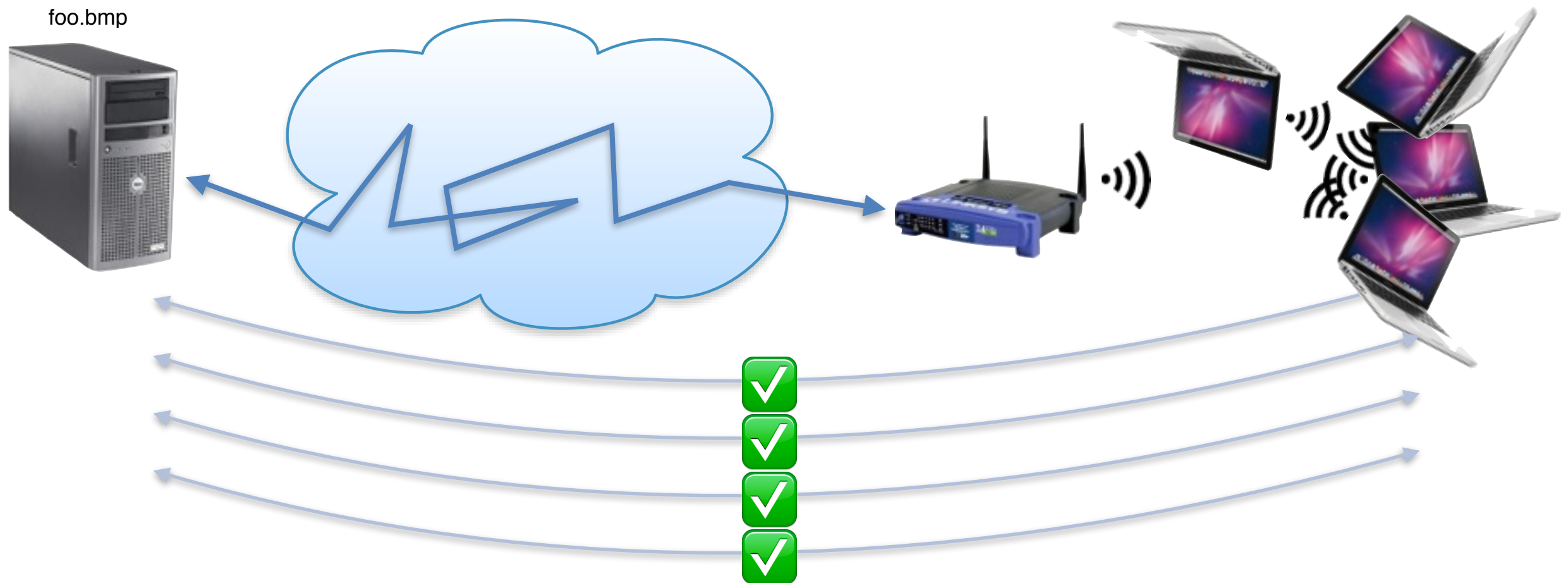


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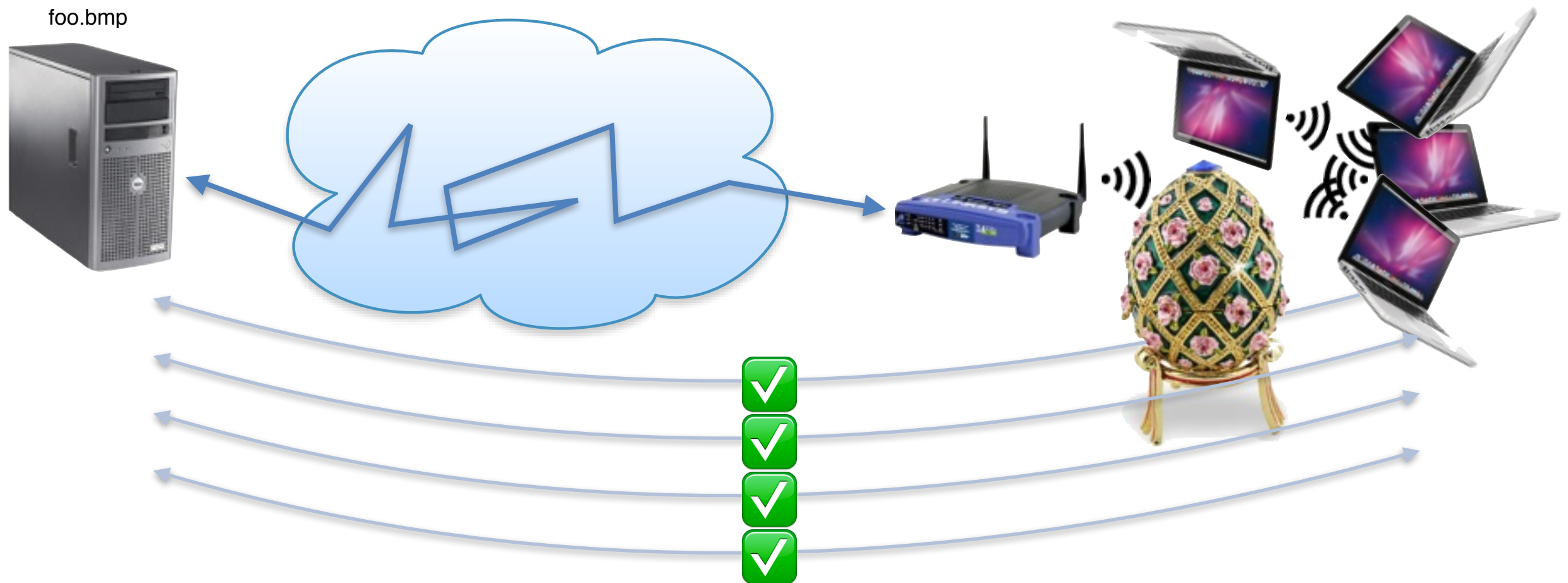


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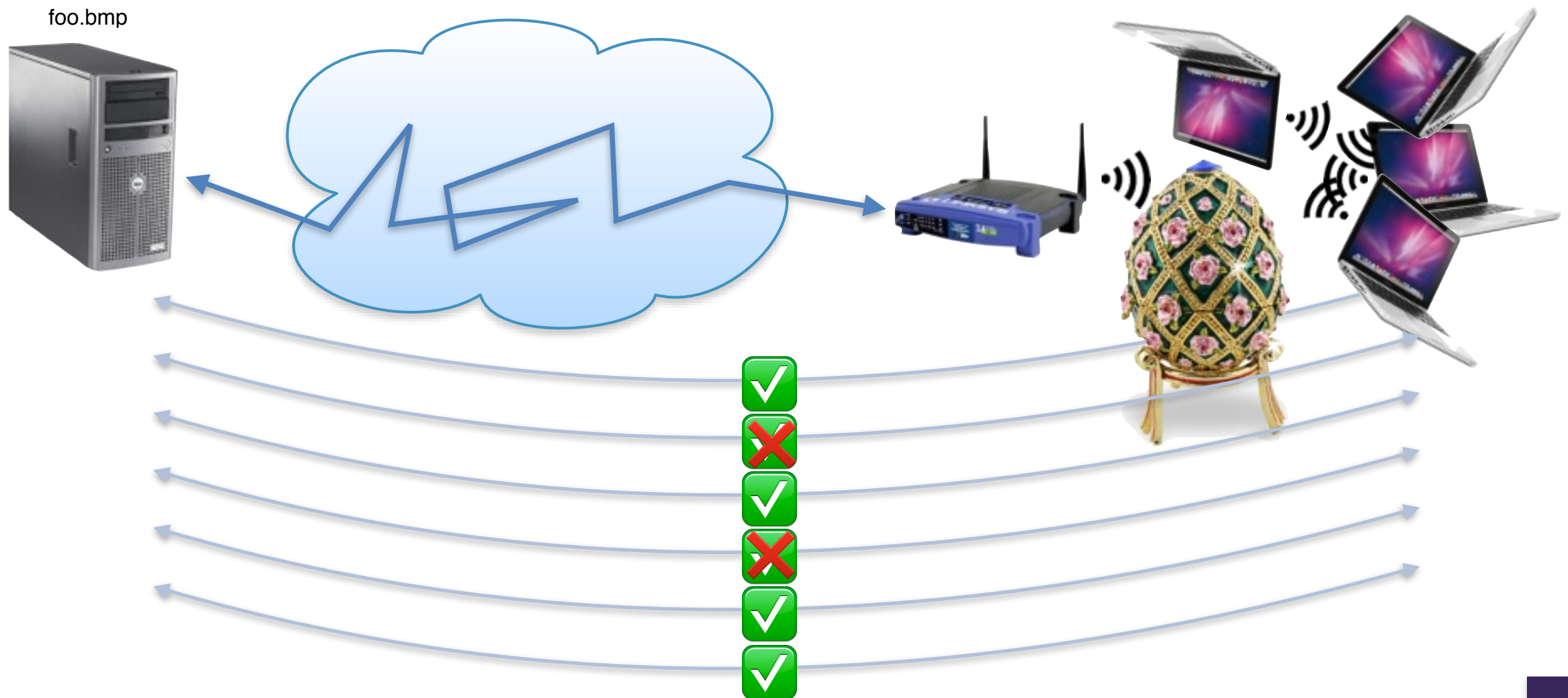
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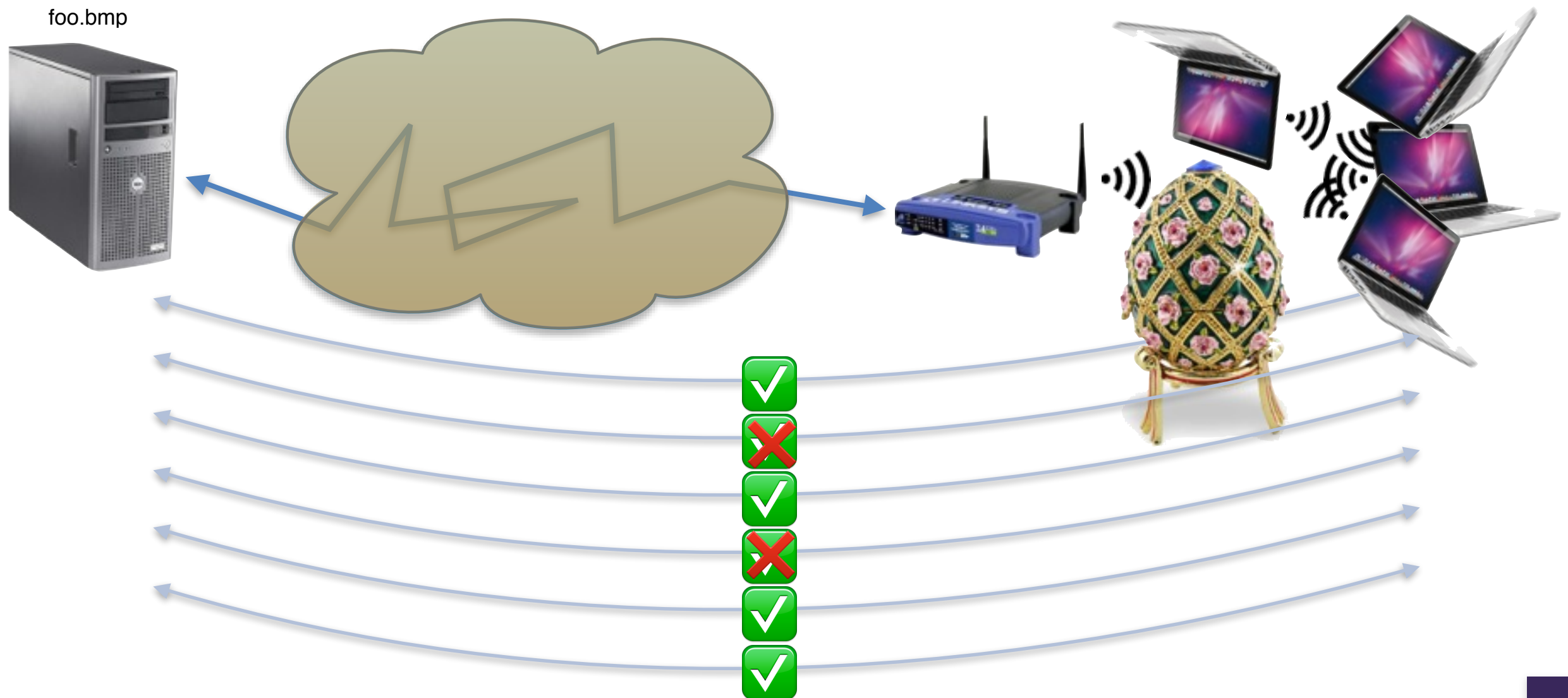


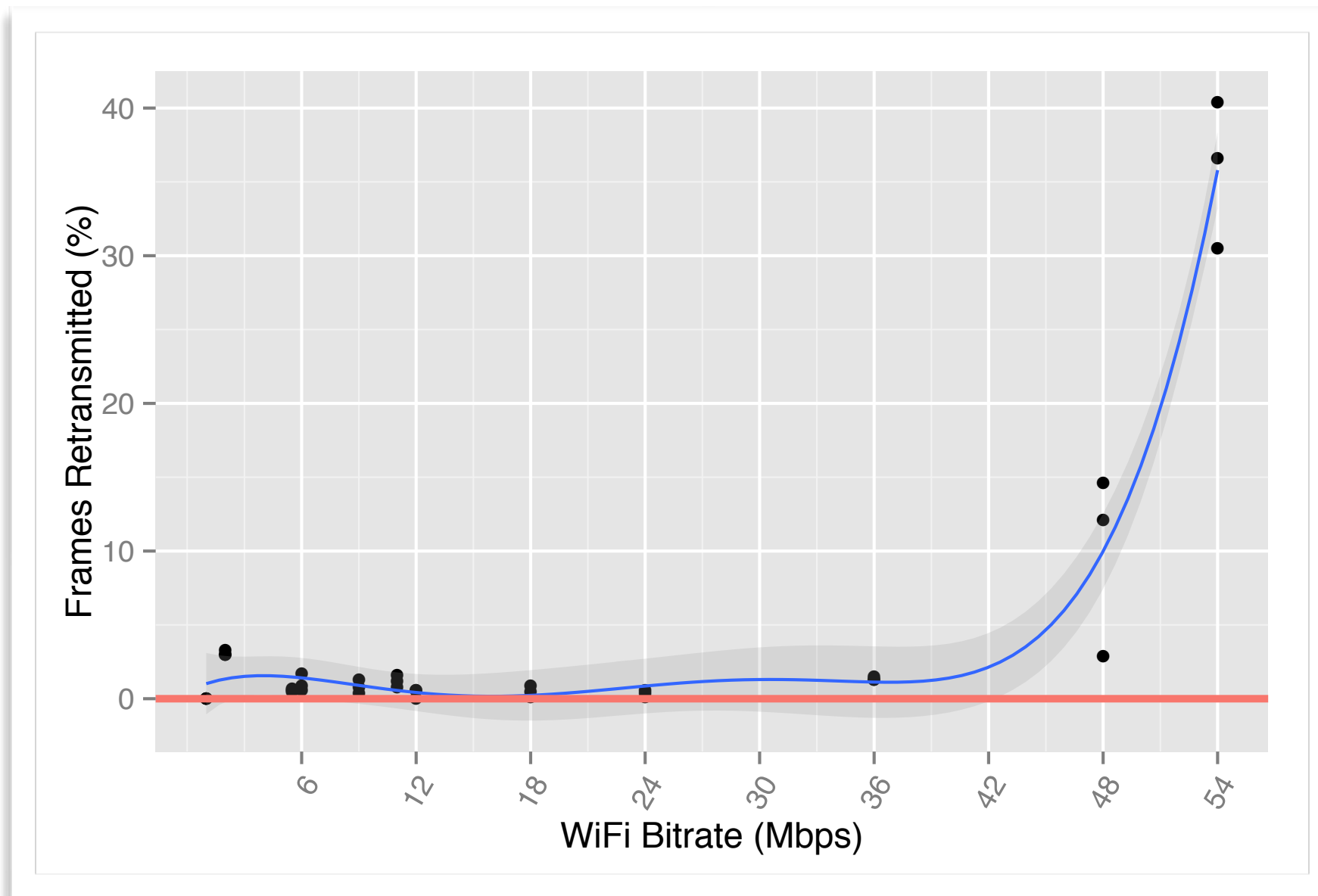
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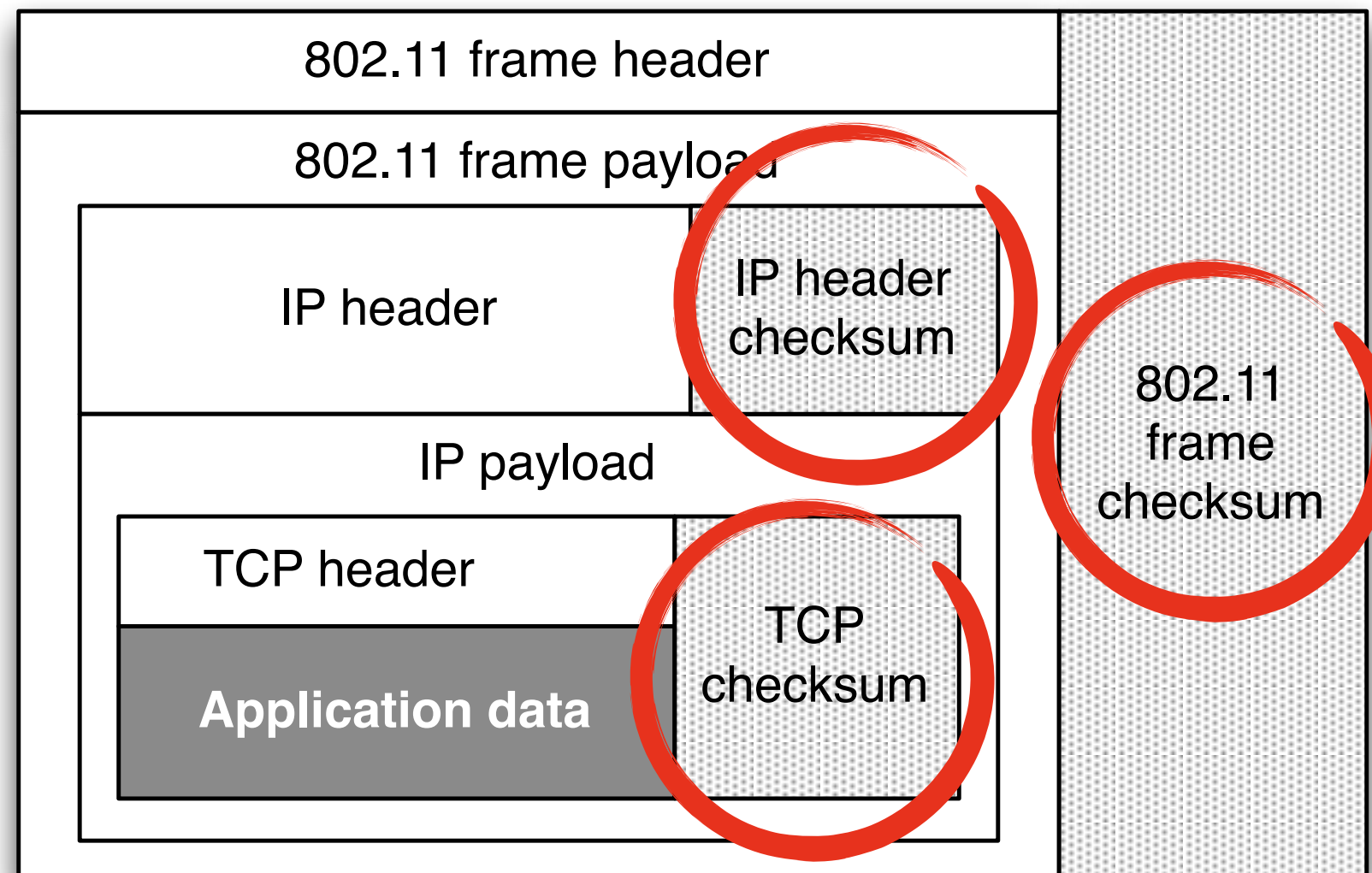


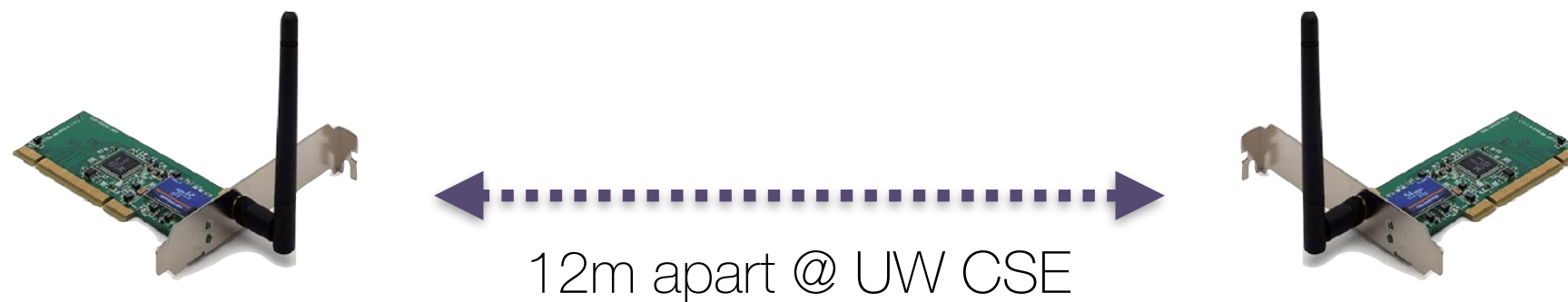
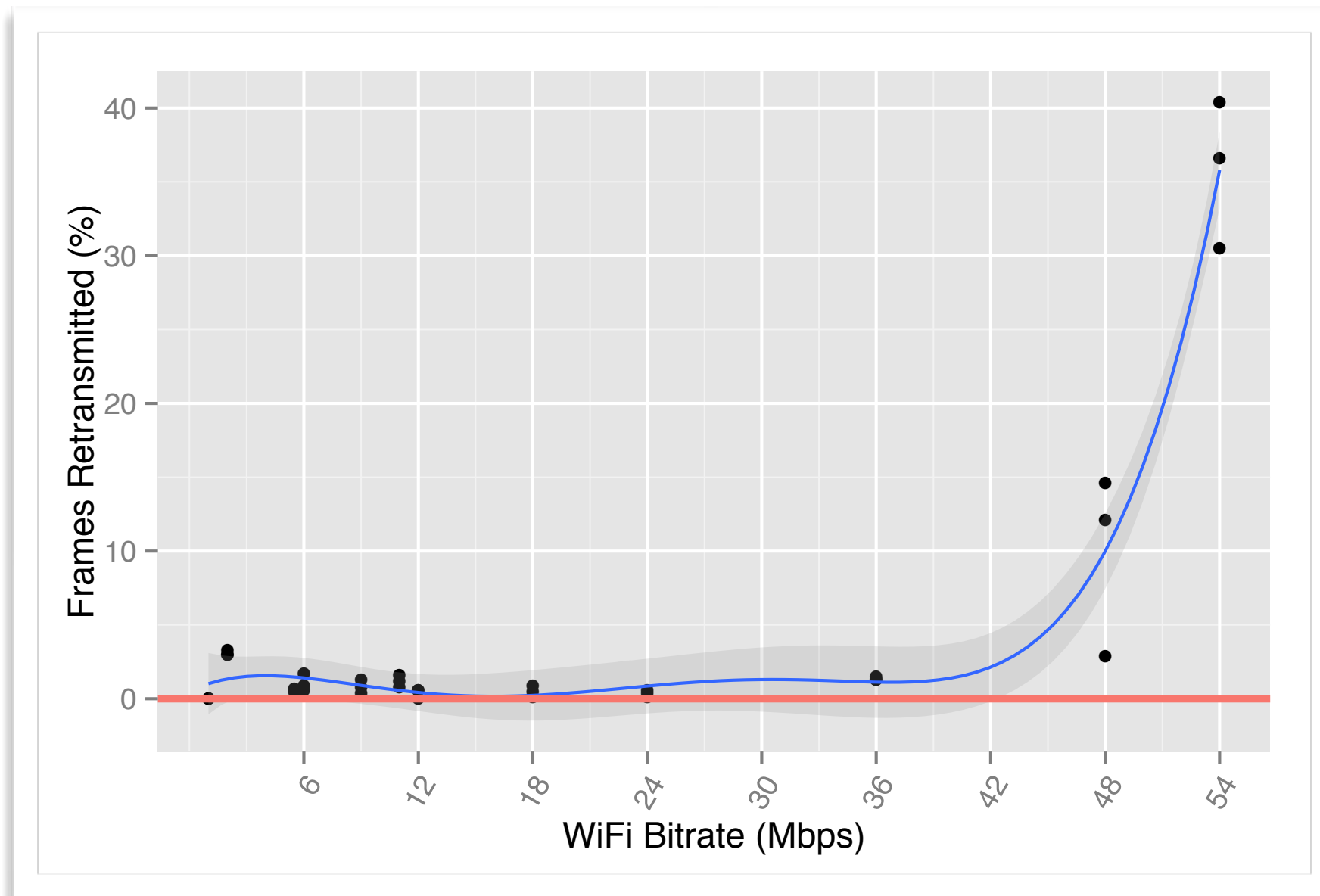


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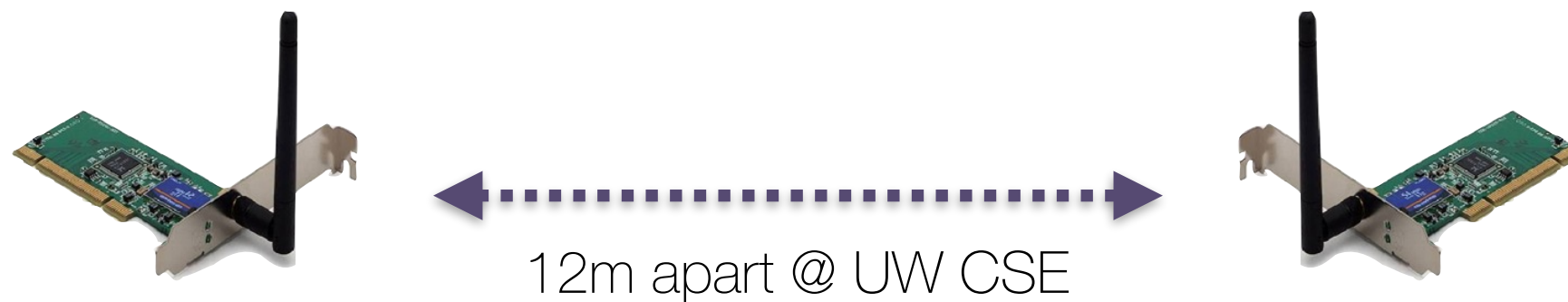
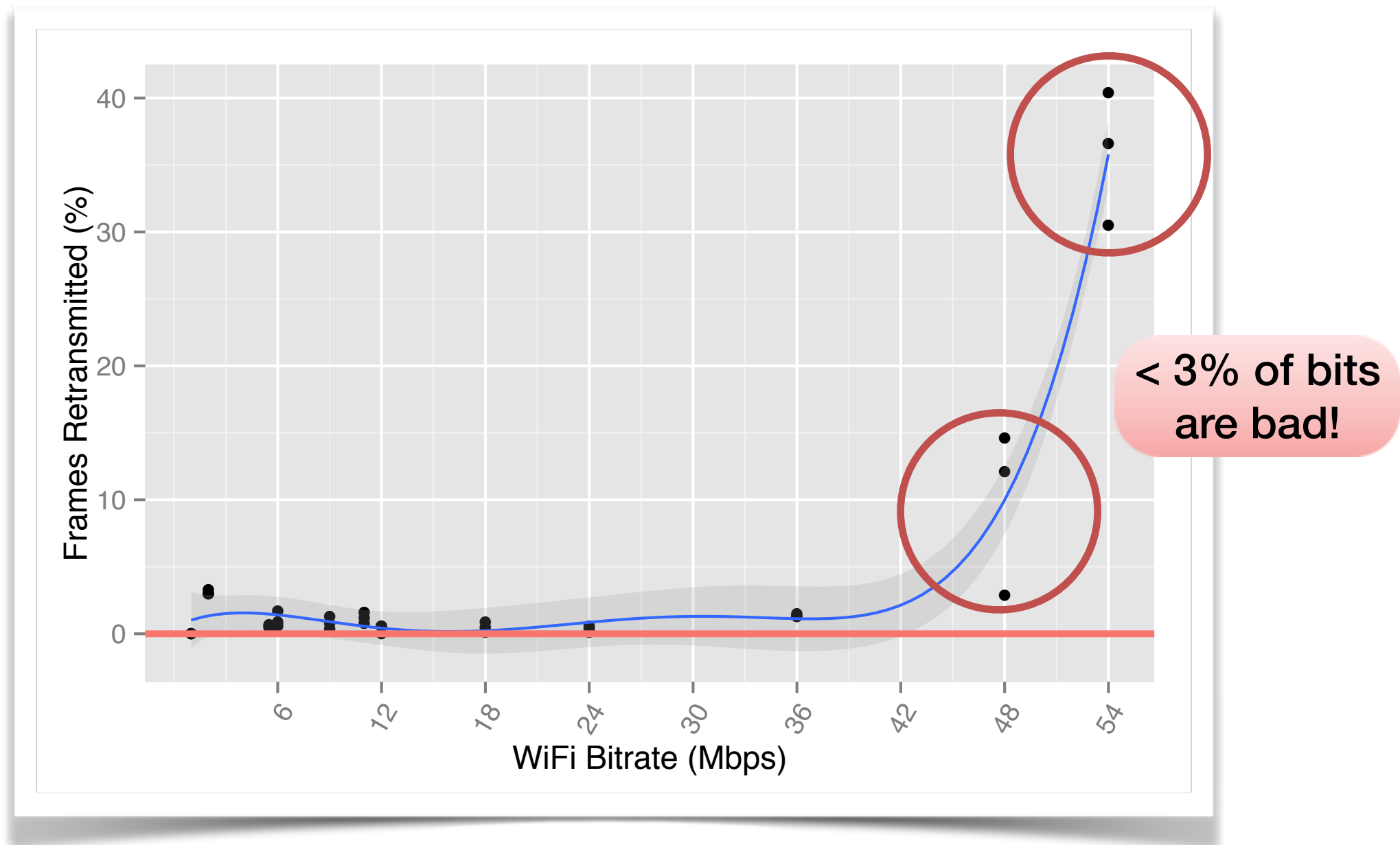












# Selective **A**pproximate **P**rotocol

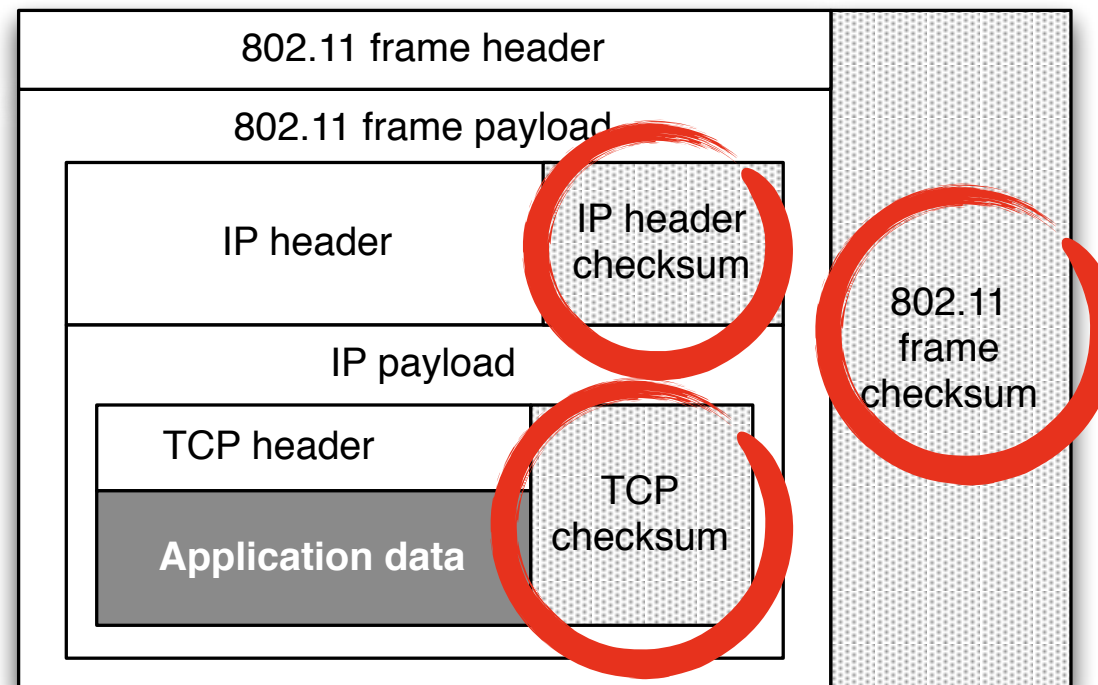
- **Optional, partial** integrity checks
- Suitably **generic** (can work with “your” apps)
- Backward **compatible** with existing networks
- Simple **API**

“SAP”



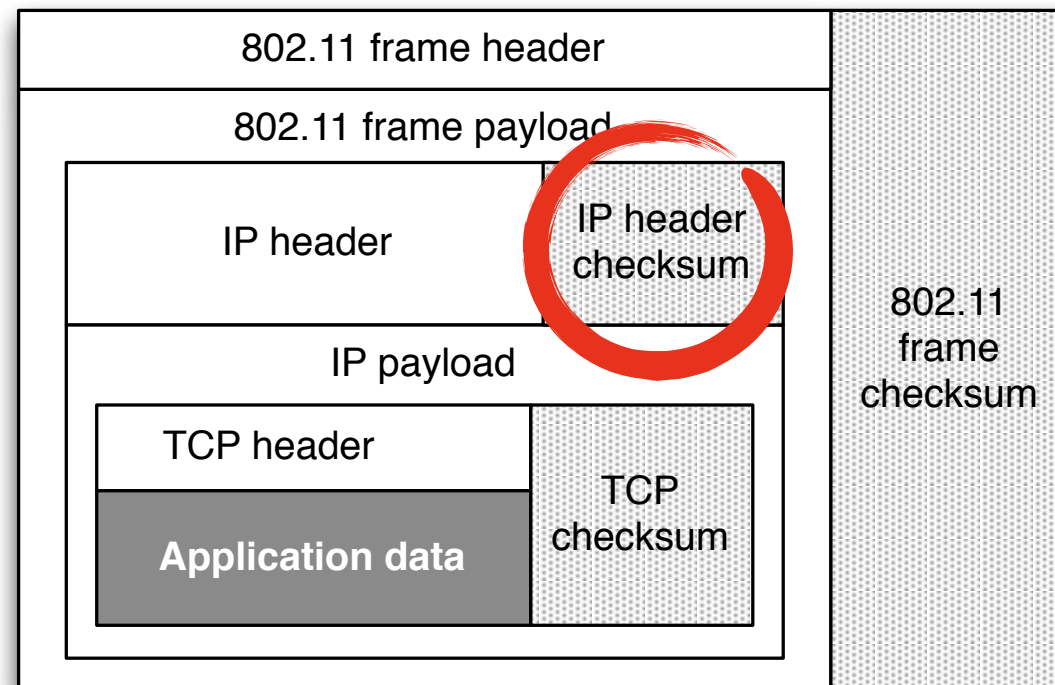
# Selective Approximate Protocol

Move error checking to the application layer!



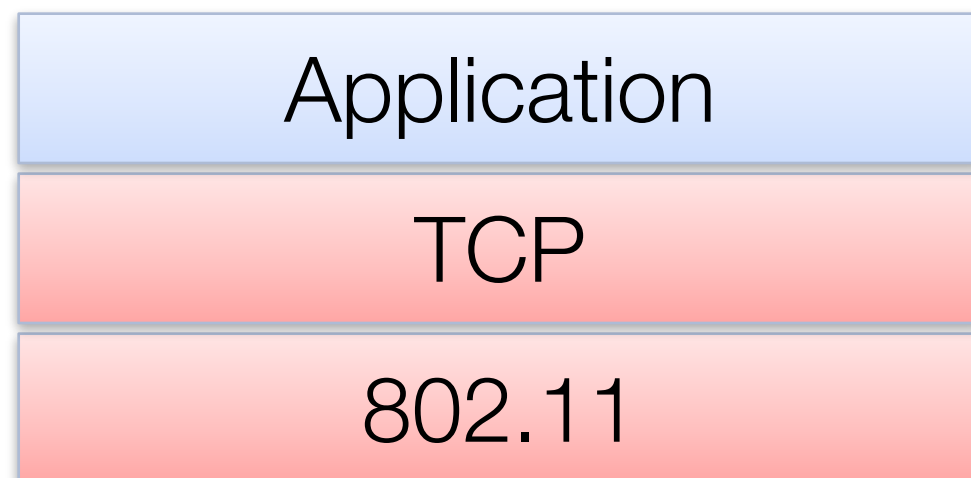
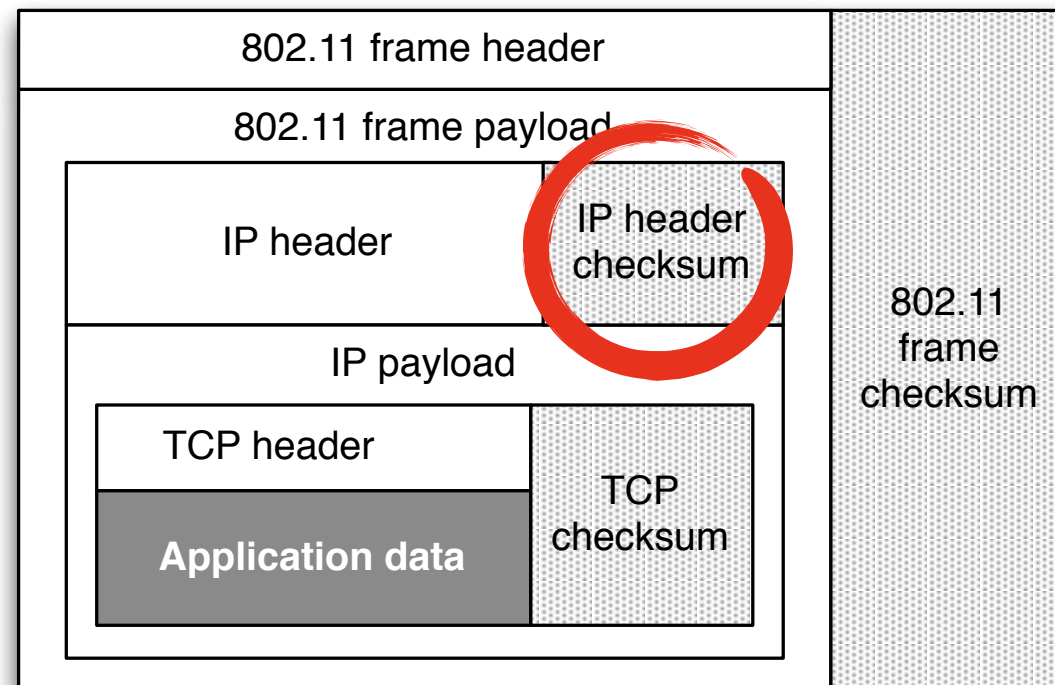
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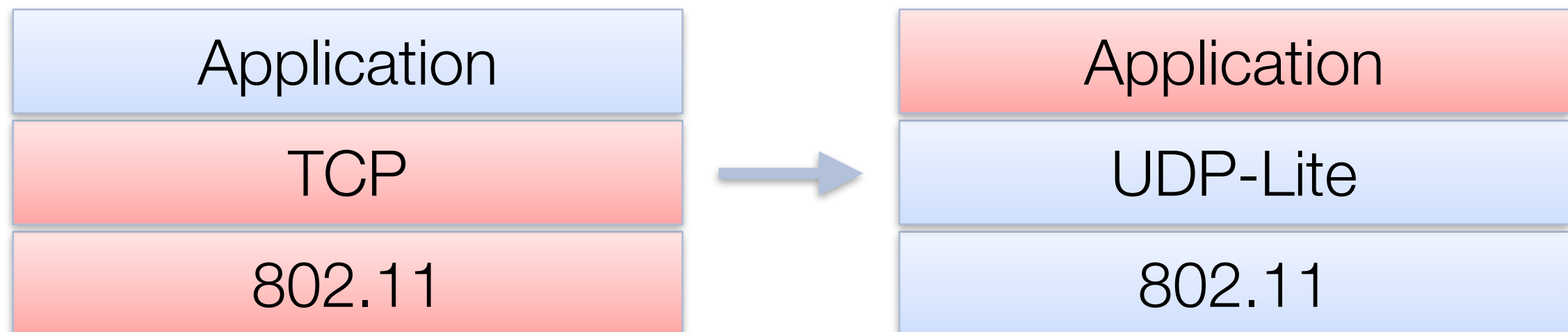
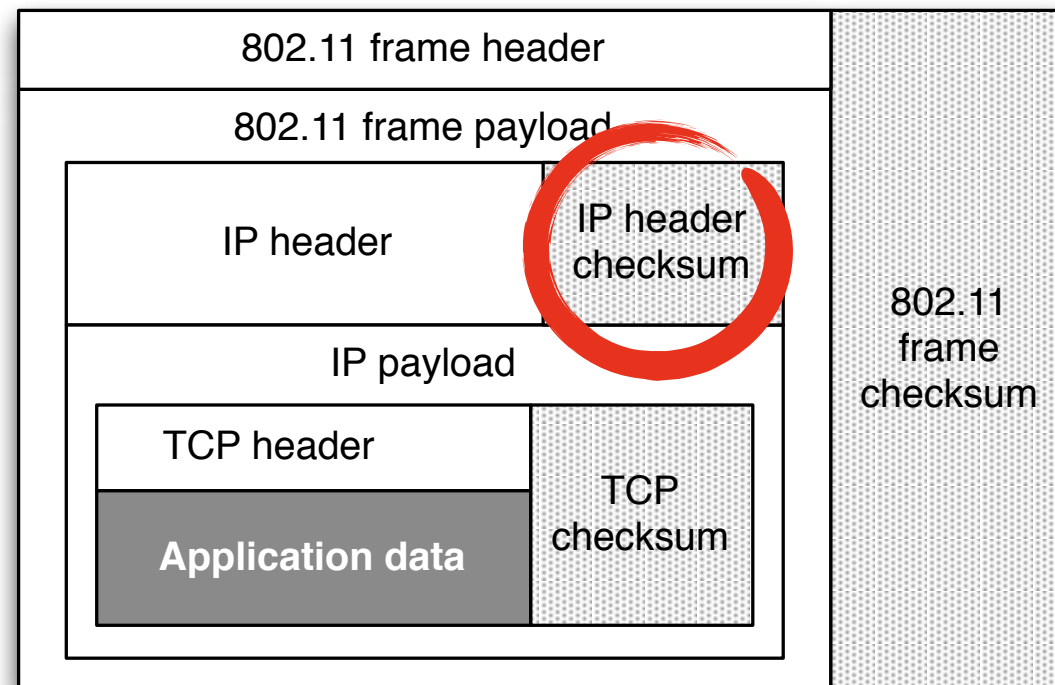
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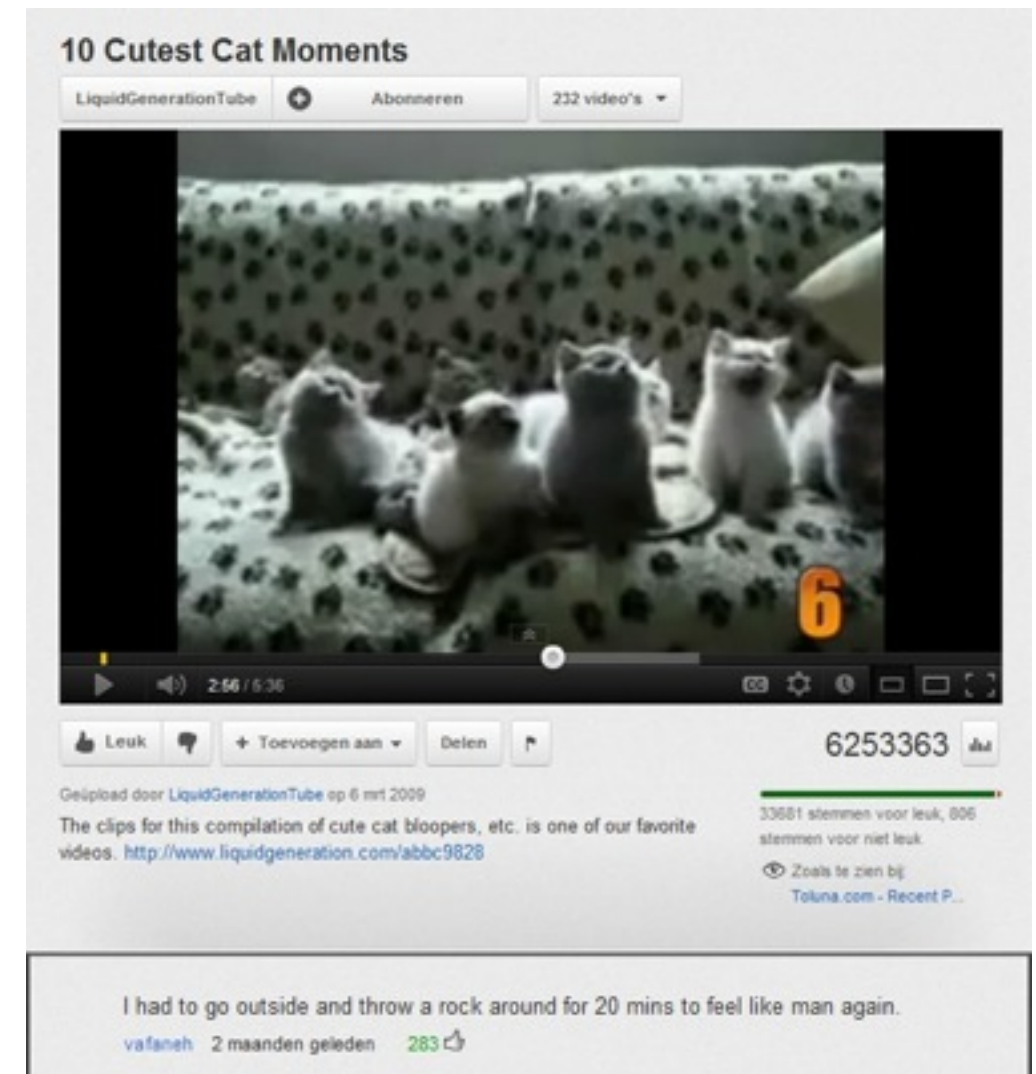
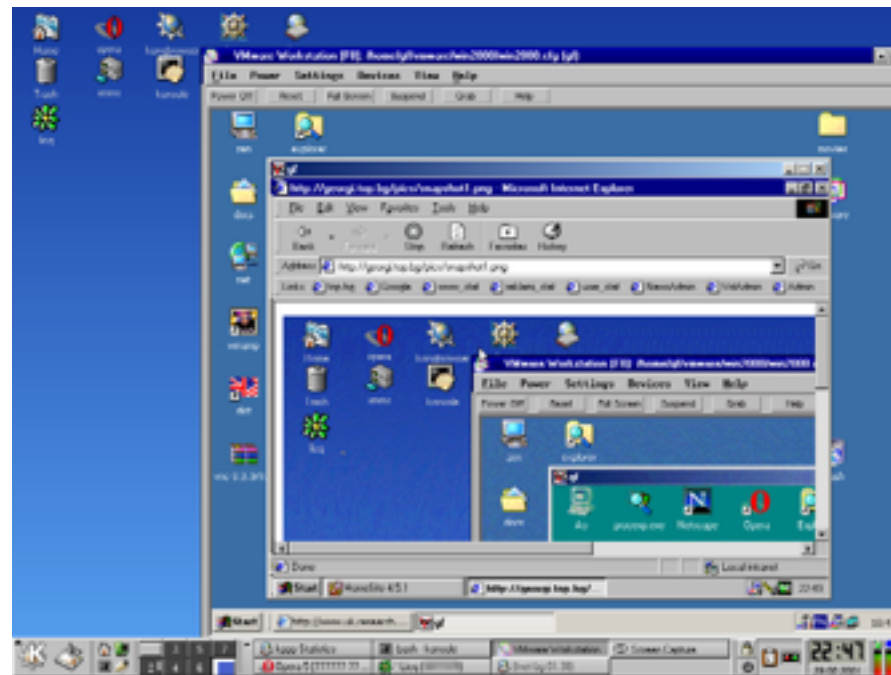


# Selective Approximate Protocol

Move error checking to the application layer!



# Applications



# Open Questions

- Encryption, compression, encoding challenges
- How best to integrate quality metrics?
- How to expose quality controls to apps?

# Summary

- **Mismatch** between approximate computing and precise communication
- **Relax** lower-layer integrity checks
- **Improve** throughput & range

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