Low Energy Requirements for WebPush

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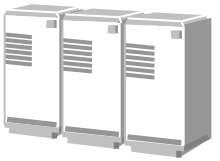
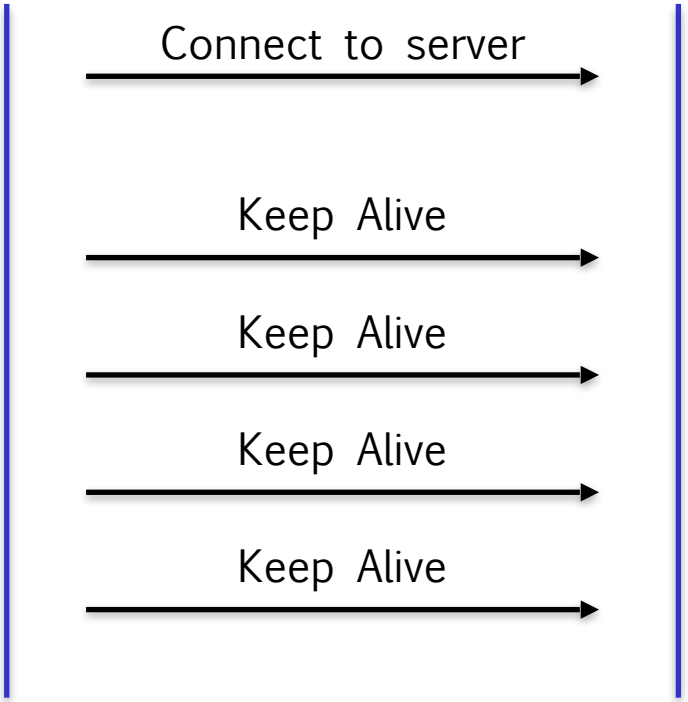
Introduction

- Devices receive notifications from the cloud
  - Wish to receive real-time notifications
- Wireless communication consumes lot of energy
  - WebPush is a good step for reducing energy consumption
- This could be further improved

TCP Keep-Alive

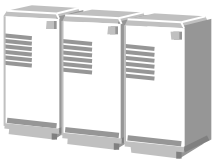
- TCP Keep-Alive: required by some intermediaries to keep connection open
- Wang2011
  - 15% of cellular ISPs have timeout of less than 10 min
  - Increase energy consumption by 10 %

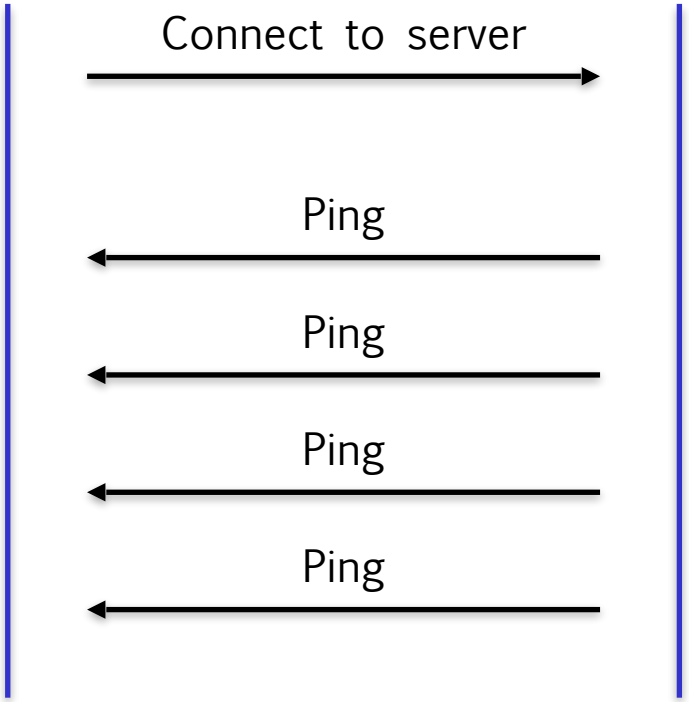




HTTP/2 Ping

- HTTP/2 Ping
  - Could be used by push server to check if TCP connection is alive
  - Would generate unnecessary traffic, increasing energy consumption





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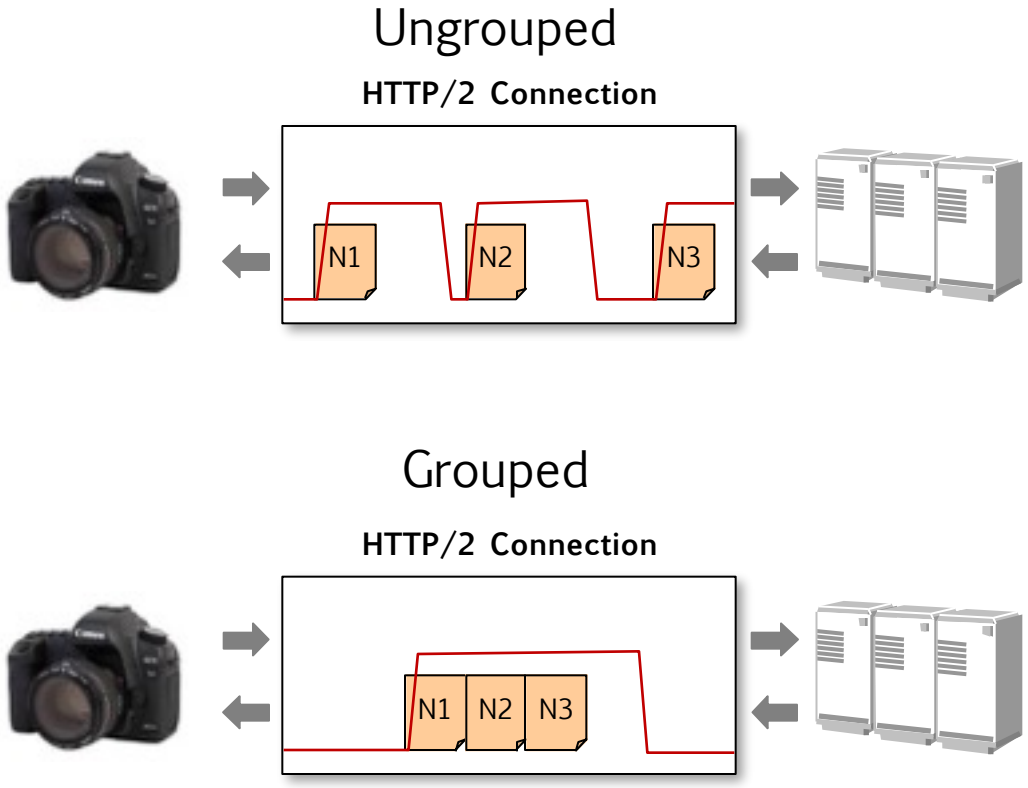
Consecutive Notifications

- Consecutive notifications should be grouped
  - Same active period of wireless sub-system
- Similar to TCP Nagle algorithm



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Conclusion

- WebPush improves energy efficiency of notification systems
- Further improving its energy efficiency is important for lightweight devices

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