DoCR:
DNS query with strong consistency

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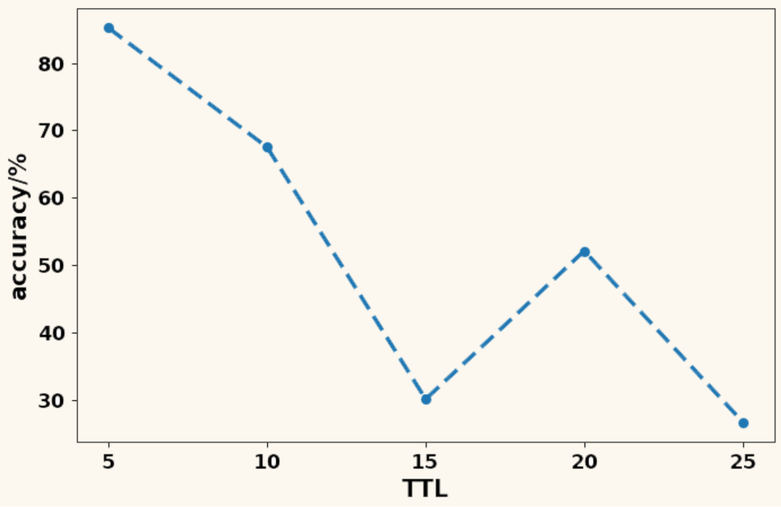
Implementation, more details:
https://github.com/HumphreyChou/DNS-on-CRAQ

MOTIVATION / DNS server lacks strong consistency

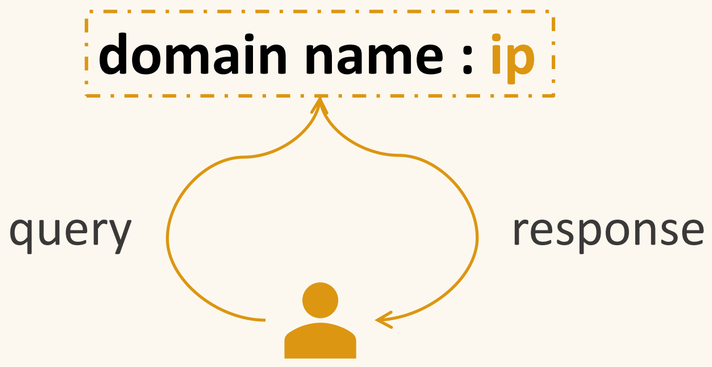
Observation 1

DNS with TTL mechanism reaches *weak consistency*



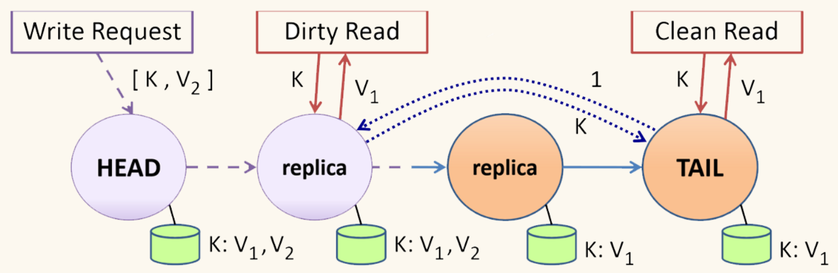
Observation 2

DNS server behaves like *a K-V database*



Observation 3

CRAQ for strong consistency
Head for write request
Each node for read request
Clean/dirty state for consistency



MAIN IDEA / DNS on CRAQ

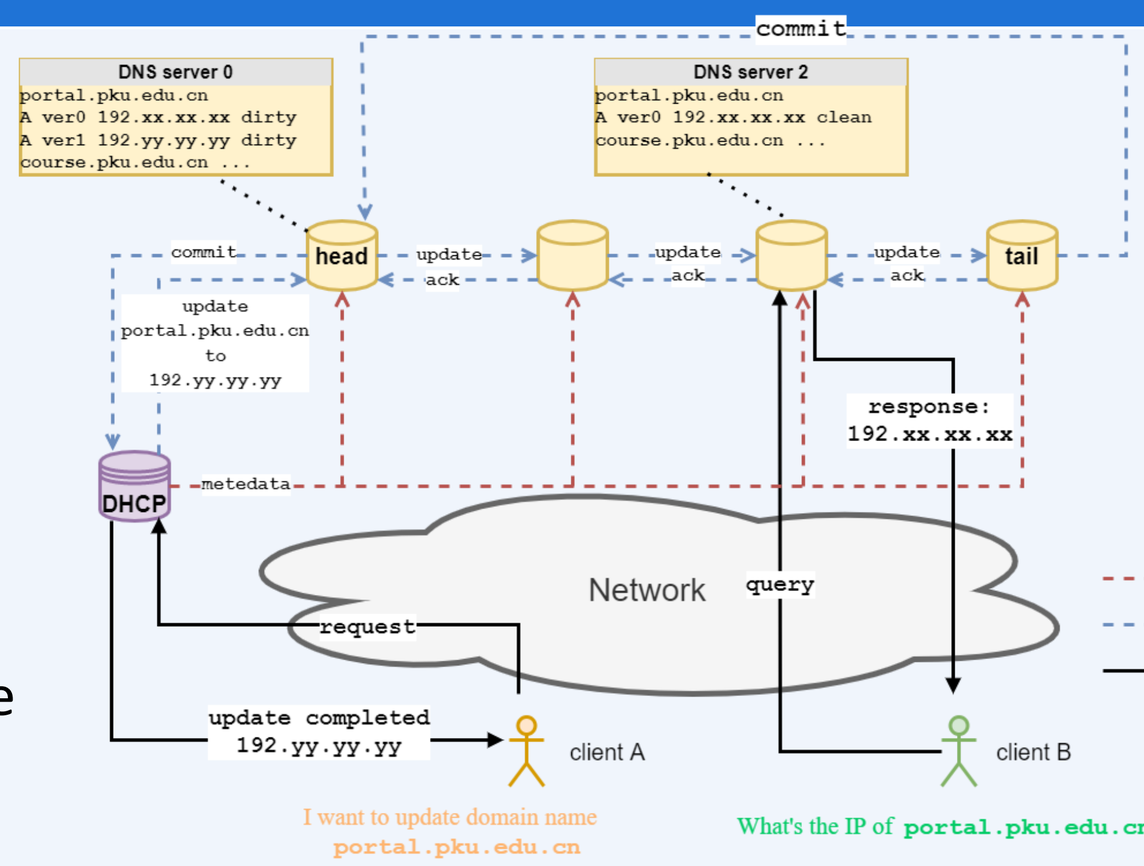
How do they work?

DNS query

User can send **DNS query** to **any node** for the corresponding IP address of the domain name

IP change

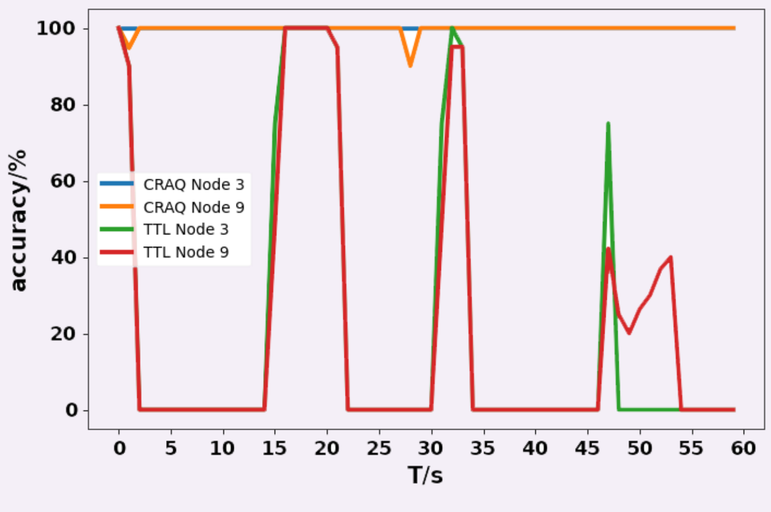
Domain name owner sends an **IP change request** to *DHCP*
DHCP implements IP change action, sends **write request** to the DNS-on-CRAQ head and **returns new IP address** to the owner



PERFORMANCE / Accuracy and RTT

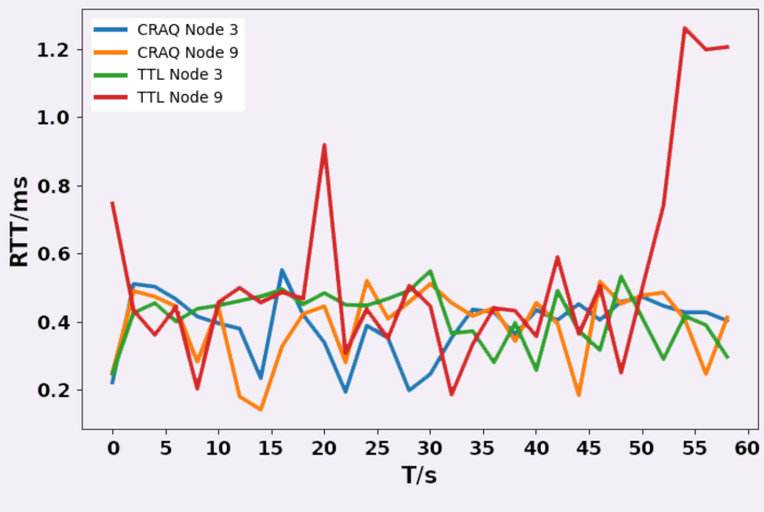
Accuracy:

DoCR introduces high accuracy



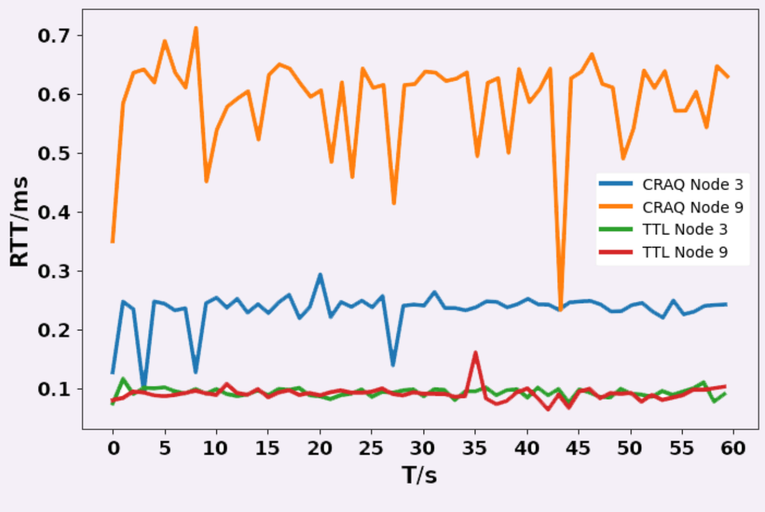
DNS query RTT:

DoCR has no query overhead



Write RTT:

DoCR has IP change overhead



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CRAQ paper: https://pdos.csail.mit.edu/6.824/papers/craq.pdf
CRAQ on Go:https://github.com/despreston/go-craq