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Facebook Tao

Distributed Data Store for the Social Graph

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Introduction

What is TAO?

Tao

is a geographically distribute store

- deployed at Facebook
- with efficient and timely access to social graph
- using a fixed set of query
- replacing memcache
- running on thousands of machines
- provide access to many PB of data
- process a billion reads ad millions of writes each second!

The social graph

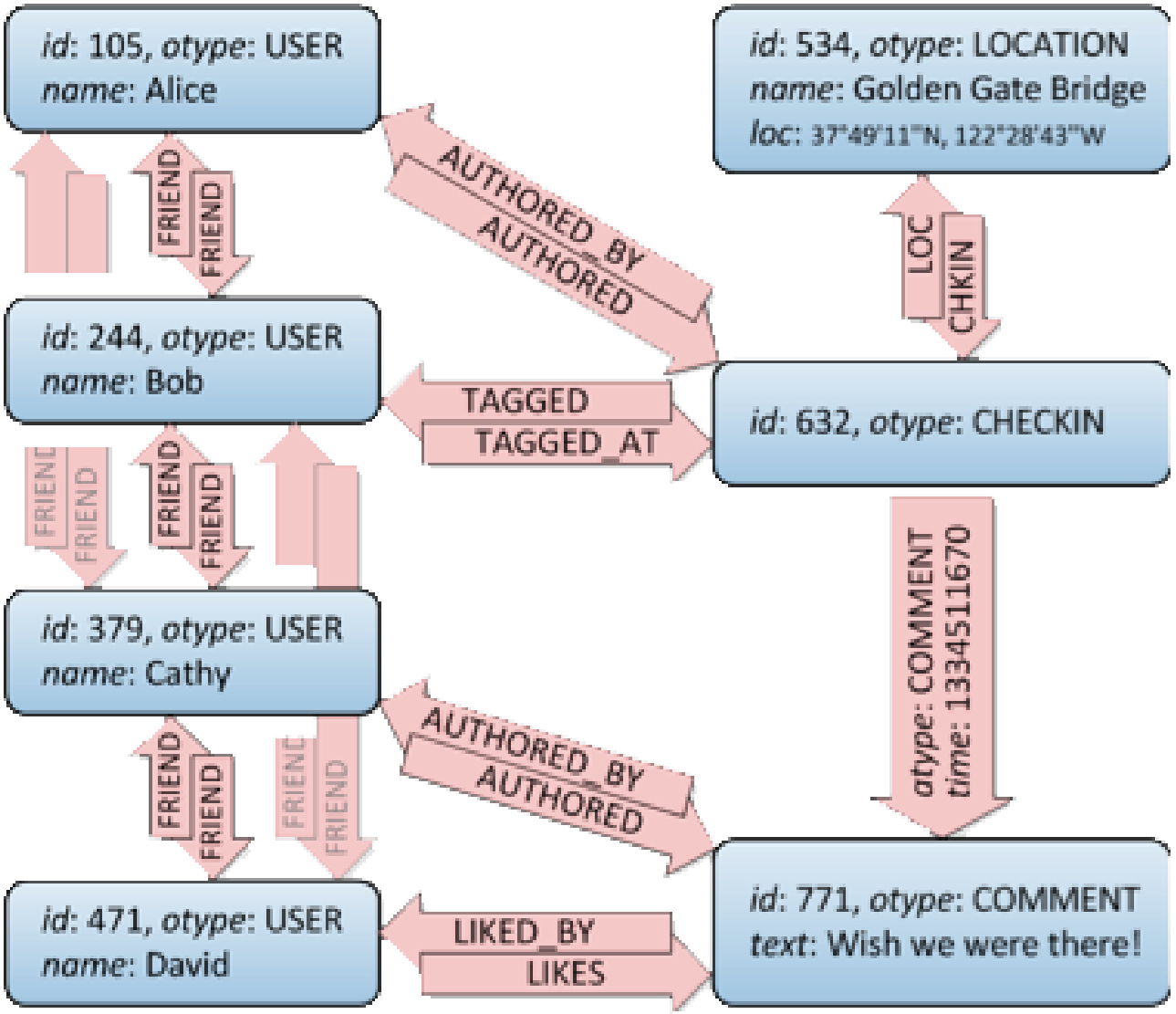
Facebook has more than 1 billion active user

- recording relationships,
- sharing interests,
- uploading pictures and …

The user experience of Fb comes from rapid, efficient and scalable access to the *social graph*

What's behind an entry in yours Fb page?

A single Fb page aggregate and filter hundreds of items from the social graph.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name: Alice
id: 534, otype: LOCATION
name: Golden Gate Bridge
loc: 37°49'11"N, 122°28'43"W
AUTHORED_BY
AUTHORED
FRIEND
FRIEND
LOC
CHKIN
id: 244, otype: USER
name: Bob
TAGGED
TAGGED_AT
id: 632, otype: CHECKIN
FRIEND
FRIEND
FRIEND
FRIEND
atype: COMMENT
time: 1334511670
id: 379, otype: USER
name: Cathy
AUTHORED_BY
AUTHORED
FRIEND
FRIEND
FRIEND
FRIEND
id: 771, otype: COMMENT
text: Wish we were there!
id: 471, otype: USER
name: David
LIKED_BY
LIKES

Before Tao

- Facebook was storing the social graph to MySql
  - Quering it from PHP
  - Storing result in memcache

Over time Fb deprecated direct access to MySQL in favor of a graph (associations, nodes) abstraction

Limits

- Operations on lists are inefficient in memcache (update whole list)
- Complexity on clients managing cache
- Hard to offer read-after-write consistency

Also they want to access social graph from non-PHP services

TAO's Goals

- Efficiency at Scale
- Low read latency
- Timeliness of writes
- High read availability

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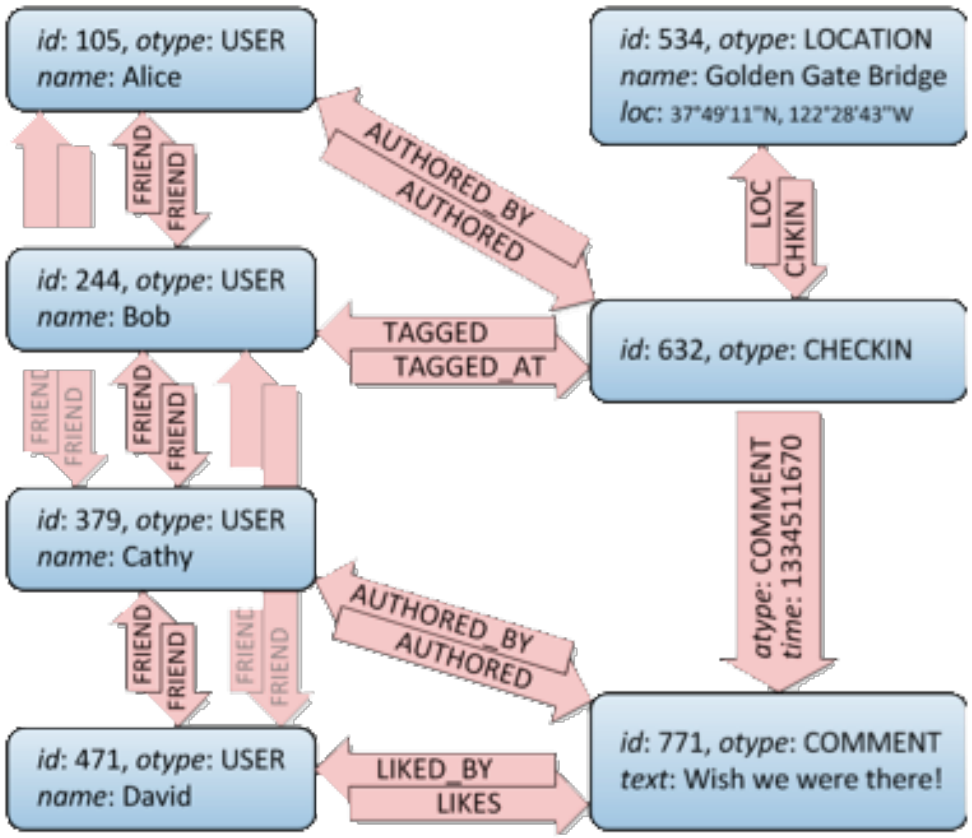
Tao Data Model

T.A.O. stands for “The Associations and Objects”



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