



Couchbase





Couchbase for Mobile

Couchbase Lite & Sync Gateway



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Couchbase

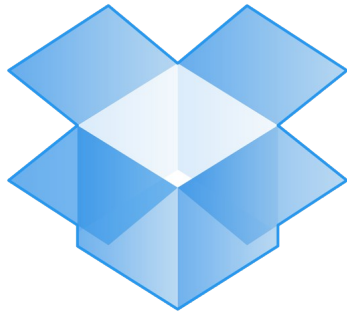




Sync is the Future of Mobile Data



What is Sync?



Dropbox



iCloud

Your database can sync, too.



Couchbase

for Mobile



Why Sync Matters

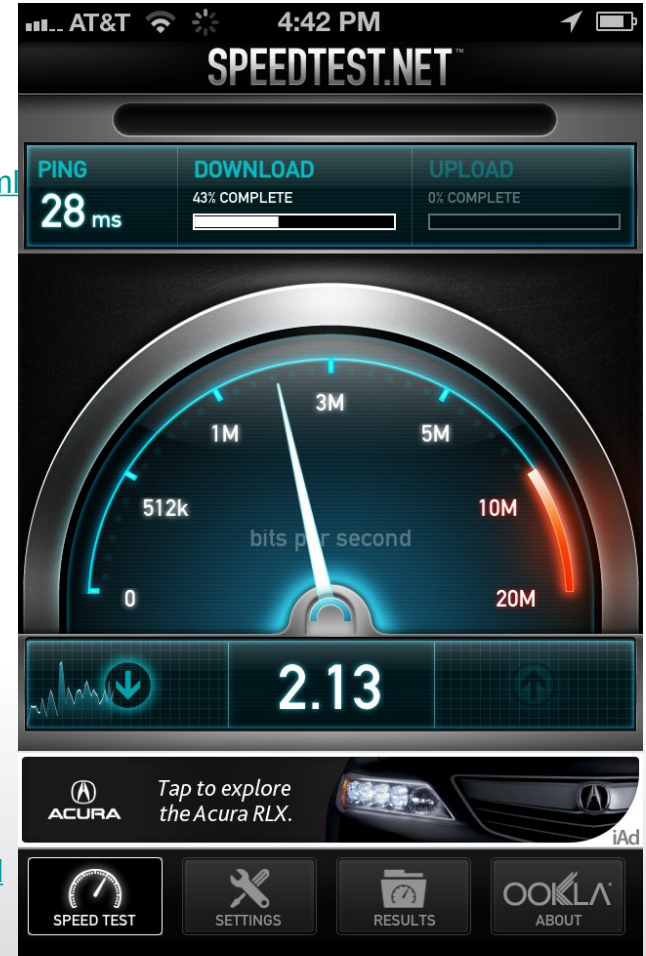
Faster is Better

- “Half a second delay caused a 20% drop in traffic.”

– <http://glinden.blogspot.com/2006/11/marissa-mayer-at-web-20.html>

- “Google Search found that a 400 millisecond delay resulted in a -0.59% change in searches/user. What's more, even after the delay was removed, these users still had -0.21% fewer searches, indicating that a slower user experience affects long term behavior.” – Steve Souders

– <http://radar.oreilly.com/2009/07/velocity-making-your-site-fast.html>



<http://perspectives.mvdirona.com/2009/10/31/TheCostOfLatency.aspx>

The Cloud is Unpredictable

- Network latency is not in your control
- Developers LOVE writing error handling code

```
-(void) viewWillAppear:(BOOL)animated
{
    // check for internet connection
    [[NSNotificationCenter defaultCenter] addObserver:self selector:@selector(checkNetworkReachability) name:nil object:nil];

    internetReachable = [[Reachability reachabilityForInternetConnection] retain];
    [internetReachable startNotifier];

    // check if a pathway to a random host exists
    hostReachable = [[Reachability reachabilityWithHostName: @"www.apple.com"] retain];
    [hostReachable startNotifier];

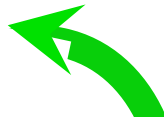
    // now patiently wait for the notification
}
```

Fallacies of Distributed Computing



- The network is reliable.
- Latency is zero.
- Bandwidth is infinite.
- The network is secure.
- Topology doesn't change.
- There is one administrator.
- Transport cost is zero.
- The network is homogeneous.

Take the Cloud Out of the Critical Path



- Local data
- Predictable latency
- App works offline
- Cloud services can be tuned for throughput
- Developers control the user experience
- Mobile apps can address new use cases



Couchbase for Mobile



Couchbase Lite

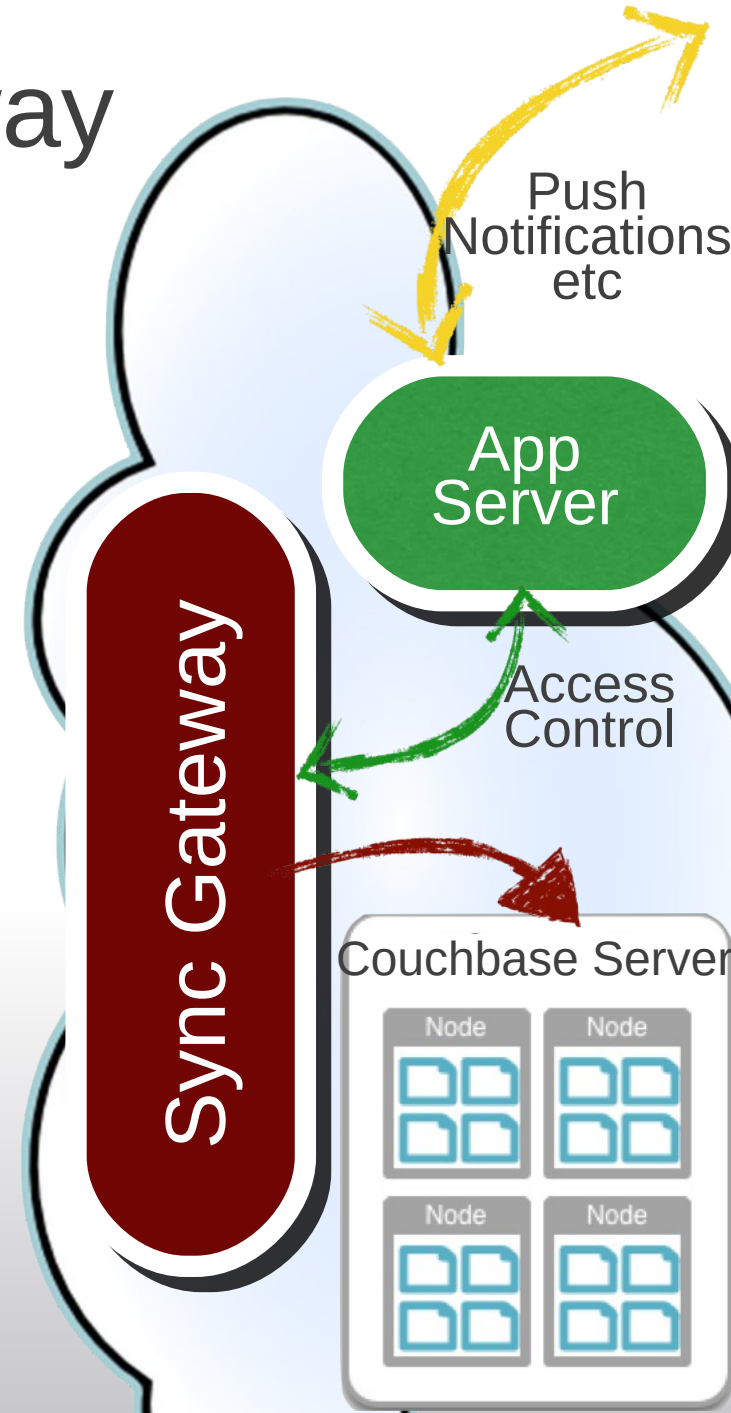
“The best database for mobile devices.”



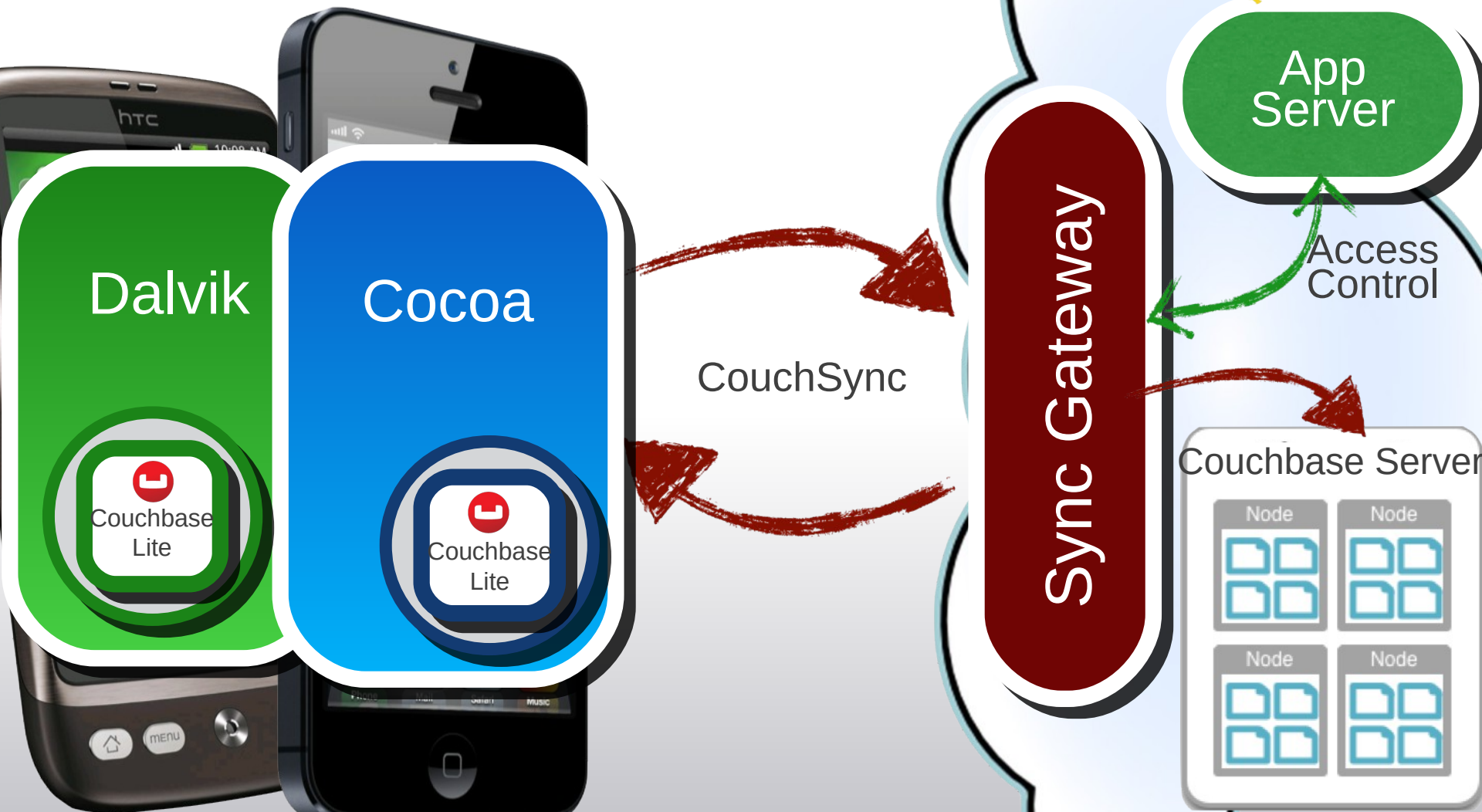
- NoSQL
 - JSON documents
 - binary attachments
 - views and queries
- Lightweight
 - native Objective-C / Java
 - less than 500kb library size
- Robust
 - SQLite storage engine is part of the operating system standard library

Sync Gateway

- Sync Engine
 - HTTP sync protocol
 - Compatible with lots of clients
- Access Control
 - User management
 - Channels
 - Application override!
- Easy to deploy
 - Go runtime works on all supported Couchbase Server platforms
 - Builtin lightweight storage for development mode



Architecture



CouchSync

“It works.”

- Masterless Document Model
 - Mobile-to-cloud and mobile-to-mobile
 - Conflict detection and management
- Web Standards
 - HTTP and JSON are well supported on mobile networks
- Robust
 - Recovers efficiently when reconnected
- Proven and Open Protocol
 - Syncs with a variety of databases and other systems



CouchDB
relax

Cloudbant

IrisCouch

PouchDB

TOUCHDB

Access Control

```
function(doc, oldDoc, userCtx, secObj) {
  if (doc.channel_id) {
    // doc belongs to a channel, sync on that channel
    channel("ch-"+doc.channel_id);
    if (doc.channel_id == doc._id) {
      // this document describes a channel's properties
      if (oldDoc && oldDoc.owners.indexOf(userCtx.name) == -1) {
        // magic document, only owners can update it
        throw({unauthorized:"you are not a channel owner"});
      }
      // grant access to the channel to all members and owners
      access(doc.owners, "ch-"+doc._id);
      access(doc.members, "ch-"+doc._id);
    }
  }
  if (doc.type == "profile") {
    channel("profiles");
    // docid looks like profile:jchris@couchbase.com
    var user = doc._id.substring(doc._id.indexOf(":")+1);
    access(user, "profiles");
  }
}
```





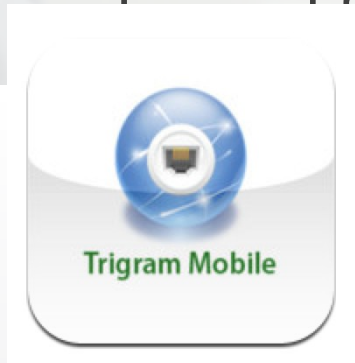
Demo - CouchChat iOS and HTML5



Use Cases

Medical Records

- NoSQL flexible schema integrates well with existing systems
- Staff can carry data with them to patients
- WiFi limited in hospitals
- All data is stored in a single database system

A screenshot of a mobile medical records application interface. The screen displays a patient's information for "Doe, Jane". At the top, there is a blue header with the patient's name and a "MAIN MENU" button. Below the header, there is a list of doctors: "Binion, Benny", "Vilinsky, Lanny", and "Bautista, Lance". The main content area is divided into several sections: "Patient Info" (Last name: Doe, M.I.: G, First name: Jane, Sex: F, Acct. #: JanD-dc3e05db42364714, Birth date: 10/14/1969, SSN: 111-11-1111, Patient type: General, Contact Info button), "Date of service: 7/18/2012", "Date of injury: 6/16/2009", "Date of surgery: 6/16/2011", "Date of death: ", "Ref Doctor 1: Smith, Granny", "Ref Doctor 2: ", "Ref Doctor 3: ", "Clinician: Mark Greene, MD", "Authorizations" (Start Date: 9/1/2012, End Date: 9/26/2012, # of visits: 1, # of times seen: 0), and "Problem List" (B12 deficiency w/o anemia, Skin, uncertain behavior). At the bottom, there are buttons for "Create New Patient", "Save Record", and "Create Document". A navigation bar at the very bottom shows "SHOW PATIENTS FOR: 9/9/2012" and tabs for "Patient Info", "Clinical Data", "Patient Chart", and "Wounds".

Retail / Loyalty / Point of Sale

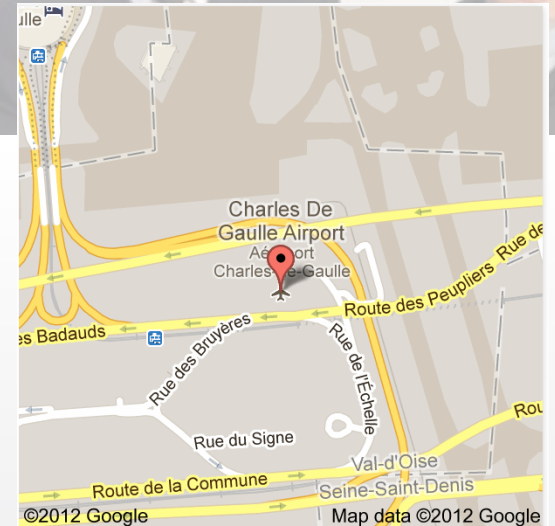
- Massively multiplayer interactive data
- Sync between customer facing and backend systems
- Integrate with existing checkout systems

shoppingpal



Airline

- Flight plans
- Passenger manifest and purchases
- Robust in the air
- Connected on the ground



Fleet Management

- Operational data for users
- Telemetry and equipment status
- Service reminders
- More efficient resale market

Games and Social Media Social Media

- Personal data (contacts, photos, etc)
- Fine grained sharing & messaging
- Easy development framework (shared features)
- Great for turn-based games, chat



Milestones

- Nov 2012
 - iOS client 1.0 release
- Feb 2013
 - Open source preview of Sync Gateway & Couchbase Lite
- April 2013
 - Preview 1 of Sync Gateway, HTML5 support
- July 2013
 - Preview 2 of Sync Gateway
 - Open source preview of Couchbase Lite for Android
- August 2013
 - Beta Release, Sync Gateway and Couchbase Lite for iOS

Get Started

- Open Source Mailing List
 - <http://groups.google.com/forum/#!forum/mobile-couchbase>
- iOS Example App
 - <https://github.com/couchbaselabs/CouchChat-iOS>
- iOS HTML5 Container
 - <https://github.com/couchbaselabs/LiteGap>
- Couchbase Lite
 - <https://github.com/couchbase/couchbase-lite-ios>
- Sync Gateway
 - https://github.com/couchbaselabs/sync_gateway