



# Lessons Learned from Making Apps Resilient with Azure Mobile App Services

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## Slides & Code!

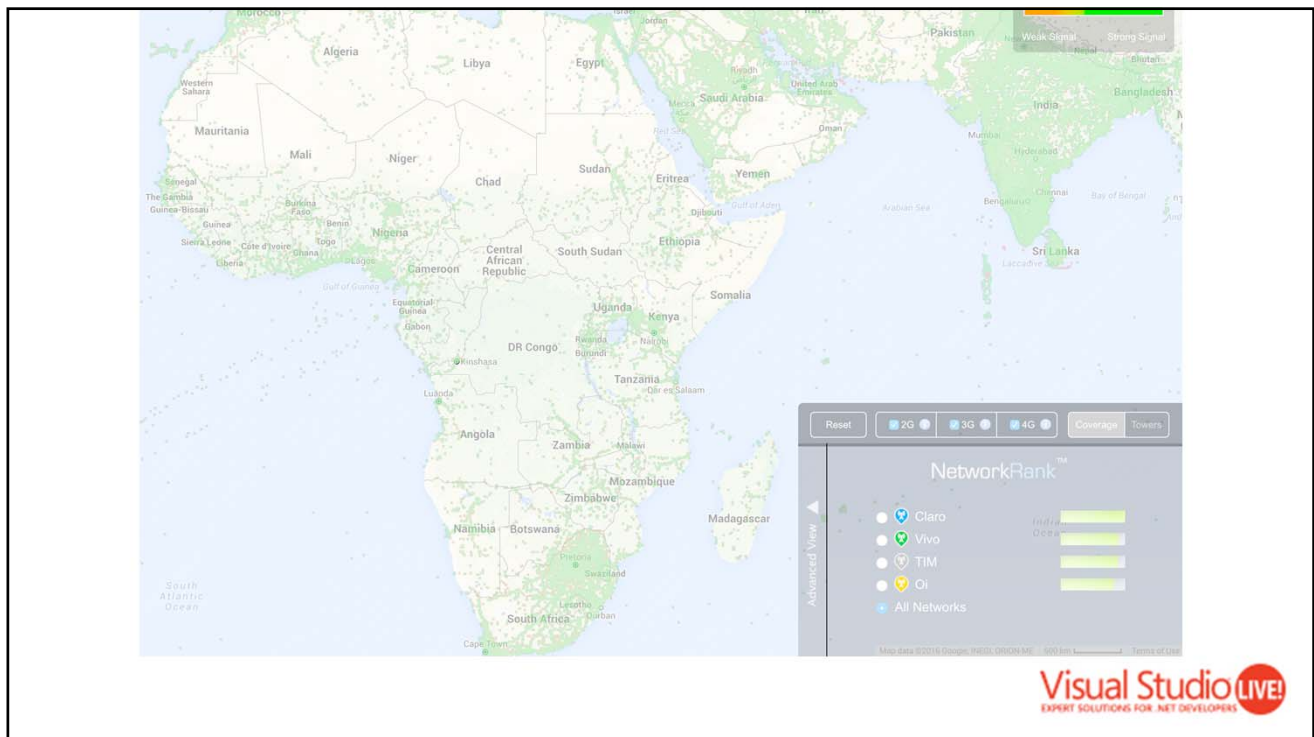
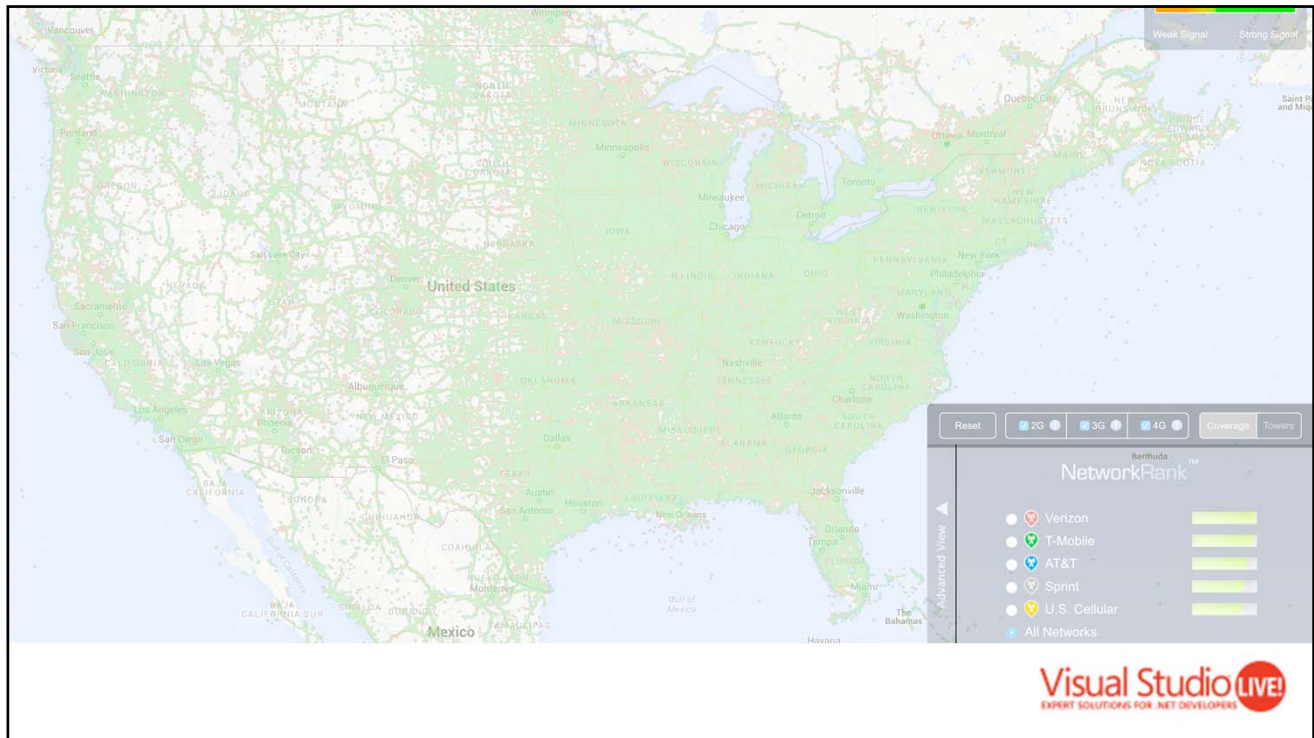
Slides: [slideshare.net/MatthewSoucoup](https://slideshare.net/MatthewSoucoup)

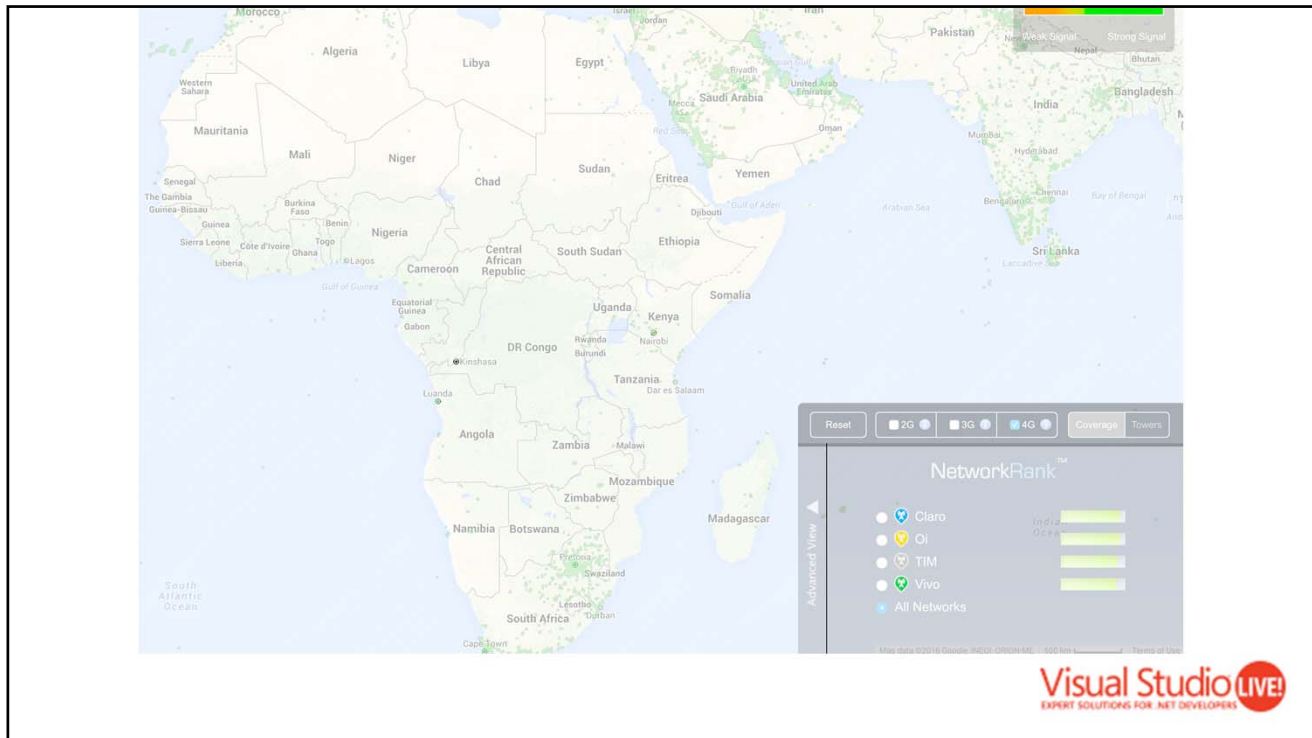
Code: [github.com/codemillmatt/zumo-resilient](https://github.com/codemillmatt/zumo-resilient)

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# Visual Studio Live! Chicago 2017





## Disconnected - Usable



## Disconnected -> Reconnected



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## Conflicts...



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## Conflicts...



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## Silent Push



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# Azure Mobile Apps



## Why Use Azure Mobile Apps?

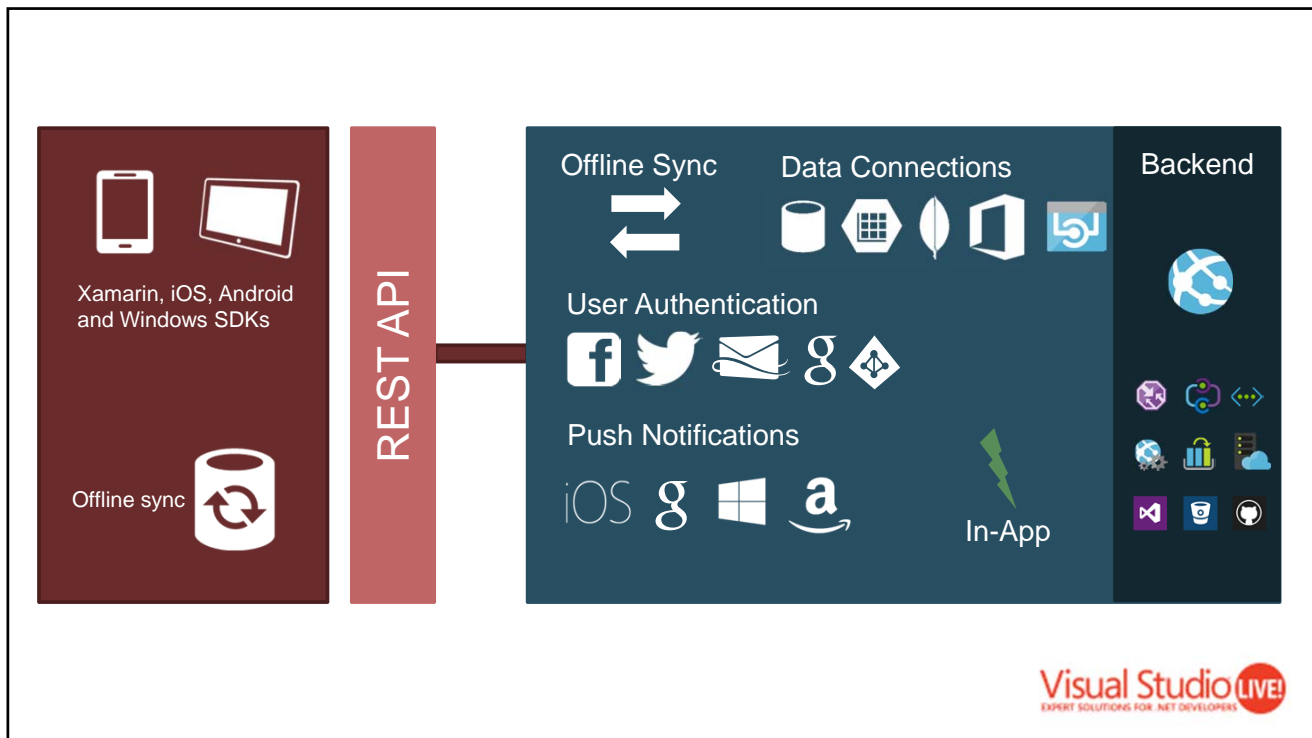
Extremely powerful

Flexible

Cross-platform client SDK

Open source C#





## Agenda

Client-side schemas

Pushing data

Conflict resolution

Purge & refresh

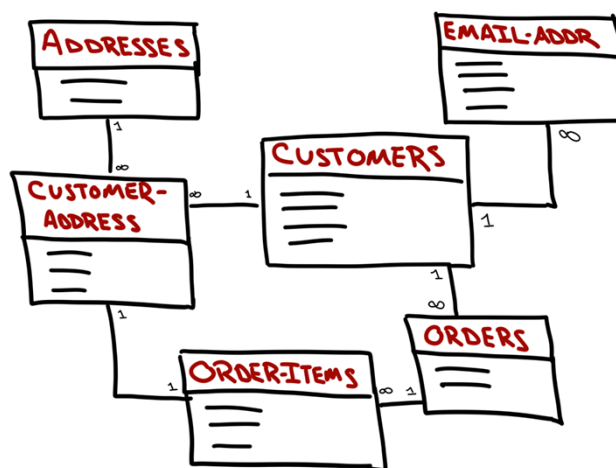
Silent data push

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# CLIENT-SIDE SCHEMAS

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## Server Schemas



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## Client-side Schemas



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## Keep Client Schema Flat - Benefits

Only data that's needed

Fast download

Works great with MVVM

Keeps data processing where it  
belongs (on the server)

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# Lessons Learned

Don't recreate the  
server schema

Flat data

Mobile specific APIs

Optimize local  
schema for screens

Selectively pick data  
to store

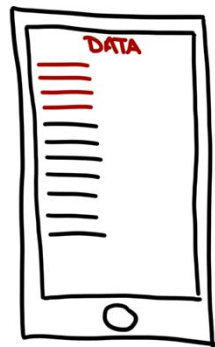
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## PUSHING & PULLING DATA

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# Pushing Data



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# Pushing Data



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# Pushing Data



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# Pulling Data



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## Pulling Data



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## Offline



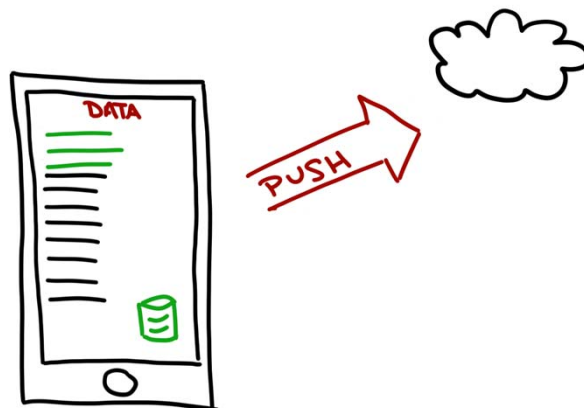
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# Offline



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# Offline



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# Offline



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## Benefits

Consistent data between users

Consistent data between devices

Only pull what's needed

Cloud security and benefits with  
device-level performance

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# Demo

## Resuming Upload of Pending Edits



## Lessons Learned

No need to push data  
right away

Only do large pushes  
over Wi-Fi

Push and pull when it  
makes the most sense

Make use of  
background services

Check SyncContext  
PendingOperations





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# CONFLICT RESOLUTION

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## Conflicts...



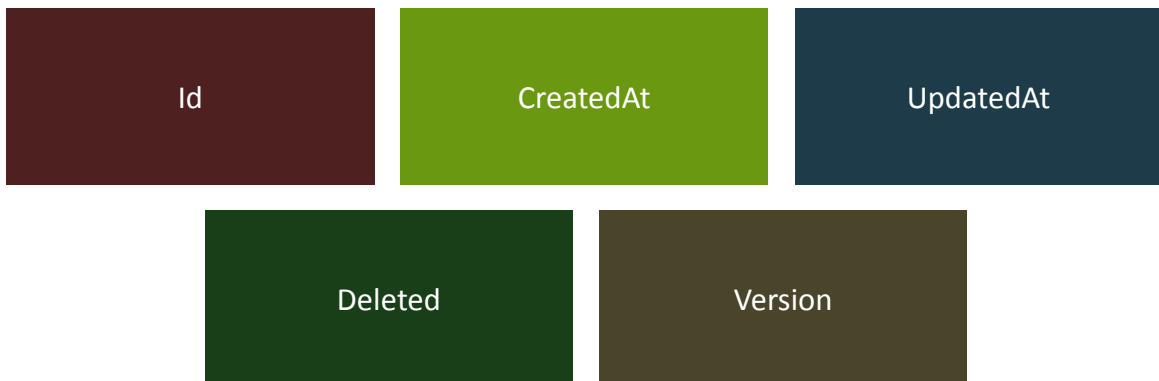
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## Conflicts...



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## How Can Zumo Tell?



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## Version Column

Byte array

Maintained on server

On push, Zumo takes  
care of updating

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## 3 Possible Conflict Outcomes

Server wins

Client wins

Hybrid – combo of  
server and client data

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## Benefits

People not fighting 😊

Consistent and  
reliable data

One source of truth

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# Demo

## Handling Conflict

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## Lessons Learned

Push shared data ASAP

Never mess with the Version field

Different exceptions for offline push  
vs. connected push

Don't ask the user if their data  
should win

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## PURGE & REFRESH

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## Purge and Refresh

Weird behavior / bad data in dev?

Want to get back to seed data?

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## Benefits

Great during development – erase  
test data & start over

Server schema changes → refresh  
client data

Provide users ability to clear cache

Reseed app with test data

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```
var query = syncTable.CreateQuery()  
    .Where(st => !st.SeedData);  
  
syncTable.PurgeAsync("seed_query", query, true, null);
```

- ◀ Create a query that defines data to purge
- ◀ Run "PurgeAsync" to delete data
- ◀ First parameter resets incremental sync query for all pulls
- ◀ 3<sup>rd</sup> parameter "forces" delete even with pending operations



## Lessons Learned

Do it early in the dev cycle

Seriously, do it super early



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# SILENT DATA PUSH



## Silent Push





## Benefits

Sent from Hub to all  
device types

Keeps app data up to  
date – no interaction

Can be targeted

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## Demo

### Silent Push

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## Lessons Learned

Spend time with APNS and Firebase

WNS not so easy

Azure Notification Hub templates

Don't be afraid of MessagingCenter

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## Summary

Client-side schemas

Pushing data

Conflict resolution

Purge & refresh

Silent data push

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A presentation slide with a dark grey brick wall background. At the top left is the 'Visual Studio LIVE!' logo with the tagline 'EXPERT SOLUTIONS FOR .NET DEVELOPERS'. At the top right are the 'ROCK YOUR CODE TOUR 2017' and 'CHICAGO' logos. In the center, the text 'Thank you!' is written in a large, white, sans-serif font. Below this, the name 'Matthew Soucoup' is written in orange, followed by 'Sr. Cloud Developer Advocate,' and 'Microsoft' on separate lines. At the bottom, three contact details are listed in orange: '@codemillmatt', 'codemilltech.com', and 'matt.soucoup@microsoft.com'.

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**ROCK YOUR CODE**  
TOUR 2017

**CHICAGO**

# Thank you!

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