Making Mobile Seamless

By: Garrett Heath, Cloud Content Specialist
Table of Contents

Introduction 2

Creating the Effect of Always Being Connected
  1. Sync Offline Actions When Back Online 3
  2. Process Data Locally When It Makes Sense 3
  3. Predict and Preload 4

Maximizing a Mobile Connection
  4. Transfer the Smallest Amount of Data Possible 5
  5. Adopt a CDN for Storing Data 5

Handling High Growth and Securing the App
  6. Prepare for Horizontal Scaling 6
  7. Secure Your Mobile-Only APIs 6

Conclusion 7
Introduction

With advancements in technology infrastructure, WiFi availability and application performance, the mobile web is faster than ever. In spite of these improvements, mobile devices sometimes hit dead zones where data access is not available. This can be frustrating, not only for users, but also for businesses who have taken the time to build their mobile app on high performing cloud servers.

But even with an uninterrupted signal from the tower, there are still challenges with creating a solid user experience. Put simply, mobile experience differs greatly from its desktop counterpart. As you begin to craft a mobile application, consider these seven strategies to help provide the best end-user experience.
Creating the Effect of Always Being Connected

1. Sync Offline Actions When Back Online

One strategy is to create the effect of an instant response, even when the device has lost connection to the carrier. This allows the application to continue delighting users without an active network connection. Instagram® was one of the first major applications to understand this phenomenon.¹

Instagram users are still able to “Like” or comment on a photo when their mobile device isn’t connected to a network. Clicking the heart button changes it from white to red, creating the effect that the “Like” is immediately recorded. Users can comment on their friend’s photos, and the comments will be synced when the app connects back to the web. While many apps hang if they can’t connect, adopting a workflow where data can be synced once the smartphone connects back to the tower can improve the overall user experience.

Inside your team, consider what pieces of data aren’t critical. Allow users to control those aspects when the device is offline and then find a way to update the data when the device is reconnected.

2. Process Data Locally When It Makes Sense

With the iPhone® 3G, a user could simply say, “Call Joe,” and the phone would call their friend, even without a data connection present. Only a couple of bars of voice service are needed to make a phone call—all of the voice recognition and processing was done locally on the phone.

Fast forward to Siri® and the iPhone5. A user is now required to have a data connection when using the voice command to make a call. The request leaves the phone, it’s processed on a server and then Joe is called. The functionality doesn’t work if the user is in a data dead zone—even if there are enough bars for voice service to actually make a call.

Combat this frustration by designing a mobile experience that allows some tasks to be completed on the device itself. Processing actions locally may do more than speed up response times when a tower connection is present, it might mean getting the task completed altogether if there’s not a network connection.

¹ [http://getting-real.com/blog/the-secret-to-instagram-s-blazing-fast-mobile-design/]
3. Predict and Preload

Finding a way to predict and preload desired information can make a dropped connection a small bump in the road instead of a major issue. Google® does this well in their Chrome browser. As the user searches for information, Google loads the site in the background for the URL that is most likely to be clicked. When a user clicks that URL, the website appears instantly on the screen. The heavy lifting was completed in the background, in advance.

Look to this idea when developing mobile apps. Whether it’s preloading a map based on the user’s location, or even a group of products this customer is likely to view next, predicting user behavior and downloading data in advance can result in an uninterrupted experience.
Maximizing a Mobile Connection

4. Transfer the Smallest Amount of Data Possible

While technologies like LTE have improved the throughput of cellular networks, latency is still a factor. You rarely see the performance of a physical internet connection. For this reason, mobile applications should aim to transfer the smallest amount of data possible to the end device.

Deliver data faster to mobile devices by shrinking images, reducing video quality and compressing data within API calls. By understanding the device behind the incoming request, the app can serve up the particular content that makes the most sense for its particular screen size. This is the ethos behind the “mobile first” development movement.

5. Adopt a CDN for Storing Data

A content delivery network (CDN) is a grouping of geographically dispersed servers that stores multiple copies of data in specific locations. The CDN then delivers the data from a server physically closer to the person making the request. For example, a user in London would receive a file from a server in the U.K. rather than from one in the United States.

Much has been made about how this feature of the CDN can speed up the delivery of data to the end user. However, the real value of the CDN for mobile apps is that it creates many copies of the data, which can enable a highly requested item to remain available online. Whereas a popular file can overtax a server from a flood of requests, replicating files across the CDN ensures they are always accessible, without overburdening your web servers.

There are indeed some speed advantages to using a CDN, but the biggest beneficiaries are the low latency, high throughput network connections (such as physically plugging into the web with an Ethernet cord). “It’s true that a CDN might shave off 30ms of load time. However, it isn’t going to matter as much to the person on a smartphone who has to wait 600ms for the data to hop between the tower and their device,” Major Hayden, Rackspace Engineer, says.

But this doesn’t mean that you should abandon the CDN for storing files needed in your mobile application. While the mobile app may not gain much in terms of speed, you do gain plenty in terms of reliability.

http://www.rackspace.com/blog/embracing-mobile-first-design/
Handling High Growth and Securing the App

6. Prepare for Horizontal Scaling

You never know if your mobile application is a success or a bust. However, a deluge of users requires a massive amount of compute power. One way to handle the mounting traffic is to enable your application to scale out horizontally. For each piece of your environment—storage, web or database nodes—make sure that you can acquire more as needed. Scaling up vertically (using larger and larger nodes with more resources) is only a short-term fix and isn’t sustainable.

While manually scaling can be a pain, there are many different DevOps tools that can help you with this process. Infrastructure automation tools like Chef and Rackspace® Auto Scale are just a couple of options. Furthermore, by taking advantage of the Rackspace Hybrid Cloud you can employ both dedicated and cloud servers. The hybrid cloud gives you a combination of physical infrastructure to handle the day-to-day load with the ability to burst in the cloud as your mobile app takes off. But it is key to integrate these tools into the application from the start.

7. Secure Your Mobile-Only APIs

Mobile applications often have an API designed specifically for smartphone and tablet interaction. It’s tempting for developers to relax security measures, since devices without a command prompt typically hit this particular API. After all, there’s no way for a user to inspect those API calls on their iPhone, right?

Wrong.

By setting up a proxy between a smartphone and the web service, users are able to view API calls and identify potential weaknesses. When a soft spot is found, a malicious user can send malevolent API calls while pretending to be a valid mobile device, wreaking havoc within your application. Remember this motto: All traffic is a threat. By not trusting any type of user input—even if it should be from a mobile device—you can put adequate security measures in place to keep your app available users safe.
Conclusion

As our society becomes more mobile, the demand for mobile applications to work seamlessly increases. Yet even with the bedrock of high performance hardware, mobile apps are often at the mercy of the cellular provider. Additionally, there are unique challenges for mobile applications, even when there is a constant cellular data connection.

The infrastructure powering the cellular network is evolving and improving. And while cellular speeds and reliability will continue to increase, we can’t yet expect these advancements for a present day mobile application. Adopting some of these best practices and looking at mobile applications differently from desktop apps, you are able to create a more seamless experience for your users.
About Rackspace

Rackspace® Hosting (NYSE: RAX) is the open cloud company, delivering open technologies and powering hundreds of thousands of customers worldwide. Rackspace provides its renowned Fanatical Support® across a broad portfolio of IT products, including Public Cloud, Private Cloud, Hybrid Hosting and Dedicated Hosting. The company offers choice, flexibility and freedom from vendor lock in.

GLOBAL OFFICES

Headquarters Rackspace, Inc.
5000 Walzem Road  |  City of Windcrest, San Antonio, Texas 78218  |  1-800-961-2888  |  Intl: +1 210 312 4700
www.rackspace.com

UK Office
Rackspace Ltd.
5 Millington Road
Hyde Park Hayes
Middlesex, UB3 4AZ
Phone: 0800-988-0100
Intl: +44 (0)20 8734 2600
www.rackspace.co.uk

Benelux Office
Rackspace Benelux B.V.
Teleportboulevard 110
1043 EJ Amsterdam
Phone: 00800 8899 00 33
Intl: +31 (0)20 753 32 01
www.rackspace.nl

Hong Kong Office
9/F, Cambridge House, Taikoo Place
979 King’s Road,
Quarry Bay, Hong Kong
Sales: +852 3752 6465
Support +852 3752 6464
www.rackspace.com.hk

Australia Office
Level 4, 210 George Street,
Sydney, NSW 2000
Phone: 1-800-722577
www.rackspace.com.au

© 2014 Rackspace US, Inc. All rights reserved.

The information contained in this document is obtained from public sources and is as accurate as possible, but may not be 100% comprehensive.

ALL STATEMENTS AND INFORMATION ARE PROVIDED “AS IS,” FOR INFORMATIONAL PURPOSES ONLY, AND ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. OUR PRODUCT/SERVICES OFFERINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Rackspace is either a registered service marks or service marks of Rackspace US, Inc. in the United States and other countries.

Third-party trademarks and tradenames appearing in this document are the property of their respective owners. Such third-party trademarks have been printed in caps or initial caps and are used for referential purposes only. We do not intend our use or display of other companies’ tradenames, trademarks, or service marks to imply a relationship with, or endorsement or sponsorship of us by, these other companies.

Sources