

The Reality of Data Usage on the iPhone

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Preface

According to Rogers, a 400MB data plan with 150 minutes and 9PM evenings is one of several "*high value plan[s] that allow [their] customers to use this device to its fullest.*" The intent of this article is to outline why the data portion of Rogers iPhone plans is not practical in today's data intensive world. I'll break down Rogers' usage examples, contrasting them to real world scenarios, and address topics Rogers omitted, such as the data hungry application, Google Maps.

What Does 400MB Mean?

What will 400MB of data allow a customer to do? The first thing one might note is that Rogers' entire [data usage statement](#) is little more than a conditional statement. While many people I know were ecstatic at the prospect of getting an iPhone, none struck me as interested in only e-mail "OR" only browsing the net. Forget for a moment the exaggerated usage numbers Rogers cites, the entire basis of their usage statement is not based on realistic usage patterns of the iPhone. Let's dig a little deeper into the realities of data consumption in an iPhone world.

E-mail

I did a quick tally of my Gmail account, which is currently sitting at 274MB used. Contained within is a mix of 6,570 emails of which approximately 65% are text and 35% are HTML. The average size of a single text e-mail is 40 kilobytes. An HTML e-mail can exceed a megabyte in size by the time images and CSS are loaded. Let's assume in this example the average HTML e-mail is only 500 kilobytes in size.

On average I receive 400 e-mails per month on my primary personal account. I won't pretend to say I've spoken to a large audience to see how similar my results are, but I did speak to a few friends and they all reported relatively similar numbers. Even my wife who rarely uses a computer outside of work receives an average of 200 e-mails per month and she's not someone who would be interested in an iPhone, nor would she be in the target demographic. So here's the math:

$$(140 \text{ HTML e-mail} * 500\text{KB}) + (260 \text{ TEXT e-mail} * 40\text{KB}) \\ = (70\text{MB} + 10.4\text{MB}) = 80\text{MB per month in e-mail}$$

So 400 mixed type or 2000 text only e-mail messages totals slightly over 80MB per month. Rogers states you can send 200,000 e-mails in a month, but based on these calculations you'd reach your 400MB limit on the 1,991st message. Keep in mind this calculation only includes received e-mail and does not take into account any e-mail you send.

RUNNING TOTAL: 80MB per month

Web Pages

According to a report cited by Rogers spokesperson Elizabeth Hamilton, the size of an average webpage is 130KB. The link she provided actually leads to a more comprehensive and recent [report](#) which states the average web page size is now 310.4KB, and expected to exceed 385KB by the end of 2008. Given a median page size of 350KB, this equates to 1,143 pages per month, far short of the 3,100 Rogers claims.

The problem with both these reports is they are an average of many websites, including many that are not popular. The sites people visit most often can be found on the [Alexa Top 500 websites](#) list. To demonstrate, I pulled up my Facebook profile, which is pretty minimalist as far as Facebook pages go. After adding up the size of all 120 items on the page, the total was 994.7KB. This does not include the traffic required for DNS lookups, or communication back and forth to the web server requesting each of the 120 items. Next I pulled up my niece's page, who is big into Facebook. Her page included a whopping 757 items. I wasn't about to count the total size of all those items, but to make my point, the profile.php file alone was 1.8MB.

http://www.facebook.com/...2...5	0.4 KB
http://www.facebook.com/favicon.ico	1.1 KB
http://www.facebook.com/profile.php?id=...	1.8 MB

The most popular websites people frequently visit are not those of low bandwidth, but rather high bandwidth sites like Facebook which far exceed a 120KB in size. For this example, lets use the relatively moderate page size of 350KB. On average I visit 10 to 15 websites daily, 4 of which I visit multiple times throughout the day. I don't have an exact number, but if I had to guess, I'd say between all sites, I view an average of 200 pages each day. I'd estimate 15% of my daily surfing occurs on my iPod Touch, and that it's reasonable to assume one would use their iPhone more as there is no Wi-Fi limiting factor. Given a slight bump in usage let's say I surf an average of 40 pages per day over the course of the average month:

350KB average page size * 40 pages * 30 days = 420MB per month

Based on just 20% usage I've exceeded my 400MB cap just surfing the web. If I surf just 5 more pages per day that number jumps to 473MB.

RUNNING TOTAL: 500MB per month

Photo Attachments

1,360 photo attachments would indicate the average photo size was only 294KB. Most cameras are 5-10 megapixels these days, and have file sizes ranging from just over 1MB up to and in excess of 8MB. The iPhone's built in 2 megapixel camera will have a file size relatively close to the 294KB Rogers claims, but I think it rather dubious to assume all images will be coming directly from the iPhone camera. Why, might you ask? Well, my question to Rogers is where are these photo attachments going to or coming from? The iPhone does not currently support Multimedia Messaging Service, so what is Rogers trying to state here? Are they talking about sending pictures via e-mail that are taken on the iPhone? Are they copied to your phone from an iPhoto or Aperture library via iTunes? If so, even photos of 1MB in size, or 3 megapixels, would very quickly use up that 400MB per month. Making the assumption Rogers is talking about photo's taken with the iPhone, lets say we view or upload 40 photos per month to and from our Mobile Me website at 294KB per image.

40 photos * 294KB = 12MB per month

RUNNING TOTAL: 512MB per month

The YouTube factor

Rogers failed to mention the fact that YouTube is a part of the iPhone product. They also failed to mention how many videos a person could watch per month. A conservative estimate for the average size of a YouTube video is between 2MB and 5MB per minute. To demonstrate this example, let's say we watch 10 five-minute videos per month at an average bit rate of 3MB per minute.

(10 movies * 5 minutes each * 3 MB per minute) = 150MB per month

At this rate, is it really surprising that Rogers would leave this feature out of their data usage information?

RUNNING TOTAL: 662MB per month

iTunes Application Store

Here's where we start getting into the real unknowns. How much data would the average person use per month from the iTunes store? Lets take a wild guess and say 20MB per month. That brings our total data usage to:

RUNNING TOTAL: 682MB per month

Mobile Me

One of the huge benefits of the iPhone is the add-on services available like Mobile Me. The push technology employed will undoubtedly reduce the amount of data coming to and from the phone for e-mail, but will be offset by data from applications like Calendar, Contacts and third-party add-ons. While we don't know how much this will equate to, I can make an educated guess based on the current Gmail sync utility on my BlackBerry, which clocks in at about 8-12MB per month.

RUNNING TOTAL: 694MB per month

Third Party Applications

Without a doubt thousands of third party applications will be made available for the iPhone now that the iPhone SDK is out. The model for this program is superb and will be nothing less than a great success. Let's take a single application we know will be released for the iPhone, Spore, a solo and online game. More traditional online games back in the days of dial-up required at minimum, a 28.8Kbps modem, which equates to 3.6KB per second or 216KB per minute. Even if the game transmitted one half that amount of data, that's still a whopping 6.89MB per hour of game play. Let's consider 3 such activities at 4 hours usage each per month. That equates to another 84MB total.

RUNNING TOTAL: 778MB per month

Google Maps

While I don't believe Google Maps will see as much use as e-mail and web browsing, it is fully integrated into many iPhone applications, and offers some very powerful features. While I don't know what the actual data usage on an iPhone with Google Maps is, I do know that each time you load a map section on a BlackBerry it's 195KB to 205KB of data. If I change to satellite view it balloons to 500KB to 700KB per screen load. Where does one even begin to guess how much data Google Maps could chew up? Simply using this feature once or twice a month could easily devour as much as 50MB of data. Luckily the data package on my BlackBerry is unlimited so running this test didn't cost me a fortune. I don't think its unreasonable to think that with all its integration, Google Maps won't be used at least 4 or 5 times a month. This could easily set you back another 100MB, just through minimal use of one bandwidth intensive application.

RUNNING TOTAL: 878MB per month

Wi-Fi Hot Spots

Rogers claims that to help conserve data usage over 3G, iPhone customers have free access to ALL Rogers Wi-Fi hot spots. Well I hate to burst bubbles, but there is ONE Rogers Wi-Fi hot spot in the entire city in which I reside. Now I realize bigger centers may have better access than that, but had I wanted to use Wi-Fi hot spots, I'd just keep using my iPod Touch. If this was how the iPhone was designed to be used, there would be little point in having 3G data capabilities. Apple could have saved time and money, creating an iPhone that works like early model WinCE/Palm OS phones.

Conclusion

As you can see, using conservative numbers we are already at 878MB of data usage per month. Many people, myself included, believe data use will be significantly higher than that illustrated here. The fact is people do not want to worry about how many YouTube videos they watch or whether they dare use Google Maps.

So before you sign the dotted line on or after July 11th, consider what you've read here.

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