The GAB'er

The Newsletter of the Greater Albany Apple Byters

Volume 30, Number 2 - October 2013

First Weekend iPhone Sales Top Nine Million, Sets New Record

Apple announced it has sold a record-breaking nine million new iPhone 5s and iPhone 5c models, just three days after the launch of the new iPhones on September 20. In addition, more than 200 million iOS devices are now running the completely redesigned iOS 7, making it the fastest software upgrade in history. Both iPhone 5s and iPhone 5c are available in the US, Australia, Canada, China, France, Germany, Hong Kong, Japan, Puerto Rico, Singapore and the UK. Demand for iPhone 5s has exceeded the initial supply, and many online orders are scheduled to be shipped in the coming weeks.

"This is our best iPhone launch yet—more than nine million new iPhones sold—a new record for first weekend sales," said Tim Cook, Apple's CEO. "The demand for the new iPhones has been incredible, and while we've sold out of our initial supply of iPhone 5s, stores continue to receive new iPhone shipments regularly. We appreciate everyone's patience and are working hard to build enough new iPhones for everyone."

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October 2013 GAAB Meeting

The October GAAB meeting will be Tuesday, October 7th at 7:00pm at the Guilderland Public Library at 2228 Western Avenue, Guilderland, NY.

Meeting: October 7, 2013
7:00 PM
Guilderland Public Library
2228 Western Avenue, Guilderland, NY

A map can be found at the GAAB website at http://applebyters.com/index.php/meeting-information/meeting_map/

GAAB Meeting Agenda
October 7, 2013
7:00 pm
Greetings
Discussion: Topics to be presented by members
Open Forum
News from Apple

Next GAAB Meeting
October 7, 2013

The New GAAB Continues
7:00 p.m.

Guilderland Public Library
Guilderland, NY

Featured in this Issue

The Greater Albany Apple Byters is an Apple Computer User Group. Meetings are held the second Wednesday of each month (except July and August) in Room 212 of Troy High School, located on Burdett Avenue, Troy, NY.

Annual membership fee is $10.00. Membership privileges include this newsletter, access to a large public domain software and video/audio tape library, local vendor discounts, special interest groups, and other special offers.

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Apple Ambassador

by John Buckley

What Is 802.11ac WiFi, and How Much Faster than 802.11n Is it?

by Sebastian Anthony, Extremetech.com

Over the last few weeks, the first round of 802.11ac WiFi devices have started to emerge including the new iMac. In essence, 802.11ac is a supercharged version of 802.11n (the current WiFi standard that your smartphone and laptop probably use), offering link speeds ranging from 433 megabits-per-second (Mbps), all the way through to multiple gigabits per second. To achieve speeds that are dozens of times faster than 802.11n, 802.11ac works exclusively in the 5GHz band, uses a huge wad of bandwidth (80 or 160MHz), operates in up to eight spatial streams (MIMO), and a utilizes very fancy technology called beamforming. For more details on what 802.11ac is, and how it will eventually replace wired gigabit ethernet networking at home and in the office, read on.

How 802.11ac works

At its core, 802.11ac is essentially an updated version of 802.11n, which itself introduced some very exciting technologies that brought massive speed boosts over 802.11a and g. Whereas 802.11n had support for four spatial streams (4×4 MIMO) and a channel width of 40MHz, 802.11ac can use eight spatial streams and has channels up to 80MHz wide, which can be combined to make 160MHz channels. Even if everything else remained the same (it doesn't), this means that 802.11n has 8x160MHz of spectral bandwidth to play with, vs. 4x40MHz — a huge difference that allows 802.11n to squeeze vast amounts of data across the airwaves.

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Internet SIG

How Prepared Are You for a Cyberattack?

by Kim Komando

Former Homeland Security Secretary Janet Napolitano gave her farewell speech last week. She had quite a bit to say, but there was one thing that caught my attention: She warned that a major cyberattack is on the way.

I believe it. Most major U.S. companies have been under siege from hackers over the last 18 months.

In fact, two days after Napolitano's speech, a hacker group called the Syrian Electronic Army hacked the New York Times' website and Twitter feed - for the second time this year.

Of course, Napolitano wasn't just talking about American business. She was talking about America's infrastructure: power grid, communications, banking and so forth.

Every one of these services relies on computers. A well-placed virus could do a lot of damage, especially if an insider planted it.

The Northeast blackout of 2003 started at a single power center. A computer bug disabled an important alarm. The operators couldn't react in time to a downed power line and it blacked out 55 million people for several days.

Imagine waking up one morning with no power. Cellphones can't connect, banks are closed, the Internet is down and credit cards don't work.

In localized emergencies, workers from other areas help to restore services quickly. A cyberattack could affect wide regions of the country, overwhelming the available manpower.

It could take days, weeks or months for basic services to be fully restored. Not a pretty picture.

Now, a cyberattack might not take down everything, but it could make basic services unreliable. You won't be able to trust technology to always work.

That's why you need a backup plan for your family. I would plan for at least 30 days of limited to nonexistent services.

Keep a supply of water and canned food on hand, along with a first aid kit. Knowing exactly what other survival tools to include can be difficult. Fortunately, the government has a site to help you plan your disaster kit.

Your emergency kit should contain cash. After all, debit and credit cards may not work.

Keep important documents within easy reach, too. You may not be able to get to documents stored on your computer. So, keep physical copies in a small safe near your disaster kit.

Being separated from your family is worrying, particularly in emergencies. So, your family needs to determine a gathering point. You might not have Facebook, Twitter or texting available to help you coordinate.

In a disaster, remember it's better to text than to voice call. Texts use less information so they don't overwhelm local cellular towers. Plus, texts can wait to send, so they'll still get through without your constant attention.

In localized disasters, it is often easier to contact people outside the area. So, designate an out-of-town relative as a contact person.

However, as we saw in Hurricane Sandy, cellular towers aren't as robust as traditional landlines. So, don't count on your cellphone working reliably.

I would have one or more sets of two-way radios. They'll work in any situation. Be sure to choose a channel to use

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Education SIG

Calculator Use on Exams to Shift with Common Core

by Erik W. Robelen, Education Week

Although calculators have not figured prominently in discussions of the common-core math standards, it's likely the complementary tests will result in far greater uniformity in their use on state exams across the nation.

Policies emerging from the two state consortia developing common-core assessments would prohibit most students from using calculators on the grades 3-5 tests, for example. At grades 6 and above, they call for calculator "on" and "off" sections and set restrictions on what functionality is allowed. (Both consortia will provide online calculators for the computer-based tests.)

Those rules, especially in today's high-stakes-testing environment, are sure to influence regular classroom use of calculators, from the elementary ban to the ways increasingly sophisticated calculator use is assumed at the secondary level, many experts say.

State policies are all over the map for using calculators on large-scale assessments. At least a few states—including Arizona, California, and Nevada—prohibit most students from using calculators at all, even on high school exams. But that approach appears to be the exception. Meanwhile, some states, such as New York and Ohio, prohibit calculators only for elementary students.

There are other variations across states, too, including whether the exams have calculator-free sections (many do, including tests in Kentucky, Maryland, and Rhode Island), and the limits imposed on the type of device students may use at different grade levels, such as a basic four-function, scientific, or graphing calculator.

Last summer, the 20-state Partnership for Assessment of College and Career Readiness, or PARCC, issued a policy for its forthcoming assessments. The 25-state Smarter Balanced Assessment Consortium has drafted a tentative policy that's similar in many respects to the PARCC approach. Final adoption of the Smarter Balanced policy, which has not been made widely available, is expected later this year.

Reaction from math experts and educators to the PARCC policy since it was issued in July 2012 has been mixed. Although making the exams at grades 3-5 calculator-free has been welcomed in some quarters, others criticize the move.

"The old saw is, teach to the test, and that's the reality," said W. Gary Martin, a professor of math education at Auburn University in Auburn, Ala. "If [students] can't use a calculator on the test, it's effectively banished from the classroom."

On the other hand, Mr. Martin and others praised the PARCC guidelines for high school, which call for the use of an online graphing calculator with comparable functionality to a Texas Instruments TI-84, a popular calculator in high schools.

"It will be a step in the right direction," said Brad Findell, the associate director of math-teacher-education programs at Ohio State University. "It will encourage graphing-calculator use in high school, particularly among lower-achieving students for whom this may have been withheld."

Exactly how many states will ultimately use the PARCC and Smarter Balanced assessments is unknown. Recently, Georgia and Oklahoma have bowed out of the PARCC exams, for instance, though most states are planning to use one or the other testing system.

'Appropriate' Use

The use of calculators in schools has long been a divisive issue, with some critics seeing little place for them at the K-12 level, especially for younger students. But analysts suggest the debate has quieted down in recent years.

Today, with calculators widely used in schools, particularly at the secondary level, the real dilemma is when and how to use them, argues Kathryn B. Chval, an associate professor of math education at the University of Missouri in Columbia who has studied calculator policies.

"The debate should be: When do we use calculators? When do we not use calculators? What is the calculator going to help you teach?" she said.

"I personally see them as useful tools, but like all tools, they need to be used appropriately," said Patrick Honner, who teaches math at Brooklyn Technical High School in New York City. That, he said, includes explicit training for students.

The word "appropriate" is key to how calculators are discussed in the common core. The document explicitly references using technology, including calculators and other tools such as spreadsheets and even geometry software. The main guidepost, analysts say, comes in the Standards for Mathematical Practice. The fifth practice standard, Use Appropriate Tools Strategically, says that mathematically proficient students "are able to use technological tools to explore and deepen their understanding of concepts."

What's On, What's Off

The PARCC and Smarter Balanced testing consortia have written policies for the online calculators to be used on their common-core exams. The Smarter Balanced policy is in draft form, subject to approval by member states.

Mr. Findell from Ohio State appreciates that emphasis.

"Under current practice, the words 'appropriate' and 'strategically' are too often absent from discussions of the use of calculators and other tools," he said, arguing that students often rely too heavily on them.

To that end, Mr. Findell praised plans for the common-core assessments to have calculator "on" and "off" sections at grades 6 and above, which would be a change for Illinois and some other states.

"The common core represents a reasonable middle ground that potentially, if we take it seriously enough, and assessment helps us enough, can bring us to a better place where students end up being thoughtful," he added.

In developing calculator-use policies, officials from both PARCC and Smarter Balanced said they considered several factors, including what the common standards say, current state policies, and how the issue is handled on other prominent assessments, such as national and international exams.

"We really spent time researching the standards and researching what the standards call for as technology," said Carrie Piper, a senior adviser for mathematics at Achieve, a Washington-based organization working on the PARCC assessments. "PARCC feels as though the calculator should be used as a tool for the student."

Ms. Piper also said PARCC consulted with Jason Zimba, one of the lead writers of the math standards.

The rules for national and international assessments vary. The Trends in International Mathematics and Science Study bans calculators for the grade 4 exam, but allows them at grade 8. But the National Assessment of Educational Progress permits calculators for some questions at grades 4, 8, and 12. On the SAT, scientific and graphing calculators are permitted.

Shelbi Cole, the math director for Smarter Balanced, said that for pilot testing conducted earlier this year, the consortium's policy was similar in many respects to PARCC's planned approach. But for the draft policy now awaiting action by the Smarter Balanced governing states, one notable change is to permit a scientific calculator at grade 7. PARCC restricts students in both grades 6 and 7 to a four-function calculator with square root.

Ms. Cole said the change came in response to feedback from educators in the field and a closer examination of the content to be tested in grade 7.

Standards Practice

One of the eight Standards for Mathematical Practice in the common core, Use Appropriate Tools Strategically, explicitly discusses the use of calculators and other technology.

"Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a **calculator**, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful. … For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a **graphing calculator**."

Smarter Balanced also plans some adjustments to the high school calculator functions based on feedback from educators, she said.

At high school, the draft policy says the online calculator will have scientific, regression, and graphing capabilities. In fact, it's already available online for anyone to use, though Ms. Cole said updates are being made prior to field testing—planned for early next year—to further refine it.

Smarter Balanced is still exploring how to handle calculator use for students with disabilities. PARCC's recently issued accommodations policy makes some allowances for students with disabilities on noncalculator sections.

In the draft policy, Smarter Balanced says it will not allow hand-held calculators for students who use the online test (unless explicitly allowed under the accommodations

policy). PARCC will allow hand-held calculators for the first year of testing, but no decision has been made beyond that.

Ms. Cole said a key advantage of using online calculators is it levels the playing field to ensure all students, regardless of background or income level, use the same calculator on the test.

"The biggest benefit to me is the equity issue," she said.

But several educators said that while they like the idea of an online calculator for the exams, they still see reasons for concern, especially in high school.

"While everybody will have access to the same technology, not everybody will have the same background with that technology," said Cliff Bara, who teaches math and science at Troy Junior and Senior High School in Troy, Mont.

Mr. Bara also expressed concerns about the middle school restrictions in both consortia's policies.

"If the common core ... is moving a lot of the algebra down to grade 7 and especially 8th grade, for them not to allow a graphing calculator, at least at the 8th grade, seems to be a serious oversight," he said. Seventh and 8th graders at his school use them "all the time."

Chilling Effect?

The "no calculator" plan for grades 3-5 has generated considerable criticism. Some educators and experts who believe calculators have a valuable role at that level fear the policies will have a chilling effect on their use, and say it has implications for test questions.

"It's absolutely true that kids need to be able to compute without calculators, ... but that's only part of what they need," said Cathy Seeley, a senior fellow emeritus at the Charles A. Dana Center at the University of Texas at Austin. "To prohibit them [on the exams] in grades 3-5 even when there are very useful ways students would use them to get to higher-level thinking" is a mistake. "It constrains the depth of the [test] problems you provide."

In 2011, the National Council of Teachers of Mathematics, long an advocate for using calculators across grade levels, issued a policy statement explicitly touting the benefits of "selective and strategic use" of calculators to support elementary math learning.

But a 2012 teacher survey suggests calculators are not regularly used at that level. Four-function calculators are available in 58 percent of elementary classrooms, it reported, but they are used at least once a week in only 13 percent.

Linda Gojak, the president of the NCTM, said she's "not too troubled" by the grades 3-5 prohibition on tests, though she said "it's really hard to make a judgment without seeing more test items."

But Jennifer Barrett, a math-curriculum consultant for the 14,500-student Kenton County district in Kentucky, welcomes the restriction. (In Kentucky, calculators are now allowed for some elementary test items.)

"This gives teachers permission to spend time on the grade-level fluencies explicitly stated in the [common core], which in recent years have been de-emphasized," she said. "If calculators are used, how is [computational] fluency and number sense being supported?"

Ms. Piper said there was little debate in PARCC on the grades 3-5 policy. "Deciding not to include a calculator was a pretty easy [call]," she said, "because of students being able to build their number-sense skills, number sense, and fluency."

Linda Kaniecki, a math specialist at the Maryland education department who worked with PARCC on its policy, said that while the rules will be a shift for her state, there's no intention to send a no-calculator message to teachers.

"We're hoping that it's still used in instruction," she said.

Bushra Makiya, an 8th grade math teacher at a New York City public school, is upbeat about the PARCC rules, which she says are quite similar to how New York, a PARCC governing member, now approaches testing, except for the planned use of online calculators.

"Calculators are a really important tool for students, and if they're going to be used effectively in the classroom, it's important that they are also used on state tests," said Ms. Makiya, who teaches at the Leadership and Community Service Academy. "I don't see how good problems that really delve into the eight mathematical practices [in the common core] can be developed if calculators aren't allowed for at least some portion of the test."

One of her chief concerns, however, echoed by other teachers, is getting students used to the online calculator that will be embedded with the computer-based tests.

"While this may seem like a small detail, I could see it really throwing some students off if there's not adequate practice time," she said.

Apple Ambassador

Continued from page 2.

To boost throughput further, 802.11ac also introduces 256-QAM modulation (up from 64-QAM in 802.11n), which basically squeezes 256 different signals over the same frequency by shifting/twisting each signal to a slightly different phase. In theory, this quadruples the spectral efficiency of 802.11ac over 802.11n. Spectral efficiency is a measure of how well a given wireless protocol/modulation/multiplexing technique uses the bandwidth available to it. In the 5GHz band, where channels are fairly wide (20MHz+), spectral efficiency isn't so important; in the cellular bands, though, channels are often only 5MHz wide, which makes spectral efficiency very important.

802.11ac also introduces standardized beamforming (802.11n was non-standardized, which made interoperability an issue). Beamforming is essentially transmitting radio signals in such a way that they're directed at a specific device. This can increase throughput (and make throughput more predictable), and also reduce power consumption. Beamforming can be done with smart antennae that physically move to track the device, or by modulating the amplitude and phase of the signals so that they destructively interfere with each other, leaving just a narrow, not-interfered beam. 802.11n uses this second method, which can be implemented by both routers and mobile devices.

Finally, 802.11ac is fully backwards compatible with 802.11n and 802.11g — so you can buy an 802.11ac router today, and it should work just fine with your older WiFi devices.

The range of 802.11ac

In theory, at the 5GHz band and using beamforming, 802.11ac should have the same or better range than 802.11n (without beamforming). The 5GHz band, due to less penetration power, doesn't have quite the same range as 2.4GHz (802.11b/g), but that's the trade-off we have to make: There simply isn't enough spectral bandwidth in the massively overused 2.4GHz band to allow for 802.11ac's gigabit-level speeds. As long as your router is well-positioned, or you have multiple routers, it shouldn't matter a huge amount. (Personally, two 802.11n routers, placed on strategic windowsills, are more than enough to cover my massive house and gardens with a high-quality WiFi signal.)

As always, the more important factor will likely be the transmission power of your devices, and the quality of their antennae.

How fast is 802.11ac?

And finally, the question that's on everyone's lips: Just how fast is WiFi 802.11ac? As always, there are two answers: the theoretical max speed that can be achieved in the laboratory, and the practical max speed that mere mortals will receive at home, surrounded by lots of signal-attenuating obstacles.

The theoretical max speed of 802.11ac is eight 160MHz 256-QAM channels, each of which are capable of 866.7Mbps — a grand total of 6,933Mbps, or just shy of 7Gbps. That's a transfer rate of 900 megabytes per second — more than you can squeeze down a SATA 3 link. In the real world, due to channel contention, you probably won't get more than two or three 160MHz channels, so the max speed comes down to somewhere between 1.7Gbps and 2.5Gbps. Compare this with 802.11n's max theoretical speed, which was 600Mbps.

In practice, the current max speed of 802.11ac devices is 1.7Gbps, because there doesn't appear to be any devices on the market that can bond two 80MHz channels into 160MHz. Hard data is hard to come by, but it seems we'll have to wait for the second wave of 802.11ac devices — due in 2014, after the standard is finalized — before 160MHz channels and multi-gigabit speeds become a reality. The max speed over an 80MHz channel is 433.3Mbps, and there aren't any 802.11ac chipsets that support more than four streams. Again, the next wave of devices should up this to eight streams.

An 802.11ac Apple Airport Extreme, disassembled by iFixit

In reality, the best you can currently do is the 2013 Apple Airport Extreme or the Western Digital My Net AC1300, both of which support three streams, for a total of 1.3Gbps of bandwidth. As there aren't currently any smartphones, tablets, or laptops on the market that support more than two streams, though, 1.3Gbps remains a pipe dream — for now.

In Anandtech's testing, they paired a WD MyNet AC1300 802.11ac router (up to three streams), paired with a range of 802.11ac devices that supported either one or two streams. The fastest data rate was achieved by a laptop with an Intel 7260 802.11ac wireless adapter, which used two streams to reach 364 megabits per second — over a distance of just five feet (1.5m) At 20 feet (6m) and through a wall, the same laptop was the fastest — but this time maxing out at 140Mbps. The listed max speed for the Intel 7260 is 867Mbps (2x433Mbps streams). In Geek.com's testing, an HTC One (which is capable of single-stream 802.11ac) manages 120Mbps to 2013 Apple AirPort Extreme — but it probably could've gone faster, if Geek hadn't bottlenecked itself by performing the download test over 150Mbps Verizon FiOS.

In general, then, you can certainly expect some impressive speeds from 802.11ac, but it won't replace your wired Gigabit Ethernet network just yet. In situations where you don't need the maximum performance and reliability of wired GigE, though, 802.11ac is very compelling indeed. Instead of cluttering up your living room by running an Ethernet cable to the home theater PC under your TV, 802.11ac now has enough bandwidth to wirelessly stream the highest-definition content to your HTPC. For all but the most demanding use cases, 802.11ac is a very viable alternative to Ethernet.

The future of 802.11ac

802.11ac will only get faster, too. As we mentioned earlier, the theoretical max speed of 802.11ac is just shy of 7Gbps — and while you'll never hit that in a real-world scenario, we wouldn't be surprised to see link speeds of 2Gbps or more in the next few years. At 2Gbps, you'll get a transfer rate of 256MB/sec, and suddenly Ethernet serves very little purpose indeed.

To reach such speeds, chipset and device makers will have to actually suss out how to implement four or more 802.11ac streams, both in terms of software and hardware. We're sure that Broadcom, Qualcomm, MediaTek, Marvell, and Intel are already well on their way to implementing four- and eight-stream 802.11ac solutions for integration in the latest routers, access points, and mobile devices — but until the 802.11ac spec is finalized in early 2014, second-wave chipsets and devices are unlikely to emerge. A lot of work will be have to done by the chipset and device makers to ensure that advanced features, such as beamforming, comply with the standard and are interoperable with other 802.11ac devices.

Internet SIG

Continued from page 3.

in advance. Choose a second one in case the first is in use. And be sure to stock up on batteries.

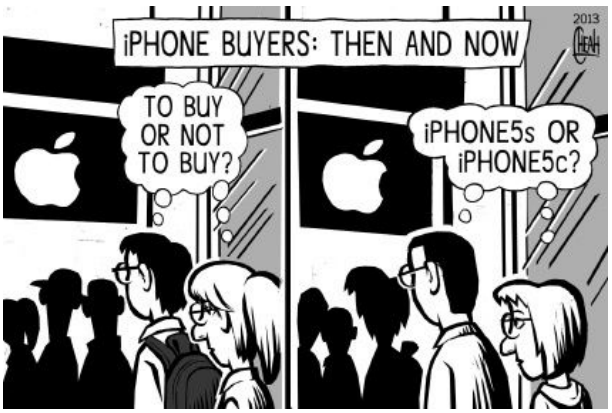
An AM/FM radio is another essential for any emergency kit. Radio stations have generators and can still keep broadcasting important information when other communication systems fail.

Choose a radio that can be powered by hand crank or solar power. Some can even charge other gadgets, like cellphones. Make sure the radio is capable of receiving NOAA weather alerts as well.

If you have young children, be sure to write instructions down for them. This can help if they're at school when disaster strikes.

For kids old enough to have a cellphone, make a note with the instructions and store it on their phone as a file or picture. Don't count on them remembering where to meet or what to do.

Whether or not a cyberattack ever happens, these are still good planning ideas. You never know when another kind of disaster might strike. A little preparation now might save your life - or a loved one's life - later.



iPhone Sales

Continued from page 1.

iPhone 5s redefines the best smartphone experience in the world with amazing new features all packed into a remarkable thin and light design, including the Apple-designed A7 64-bit chip, all-new 8 megapixel iSight® camera with True Tone flash and introducing Touch ID™, an innovative way to simply and securely unlock your phone with just the touch of a finger. iPhone 5c features an all-new design, packed with features users know and love like the beautiful 4-inch Retina® display, blazing fast performance of the A6 chip, and the 8 megapixel iSight camera—all while delivering great battery life.[1] iPhone 5s and iPhone 5c both offer more LTE bands[2] than any other smartphone in the world and include all-new FaceTime® HD cameras.

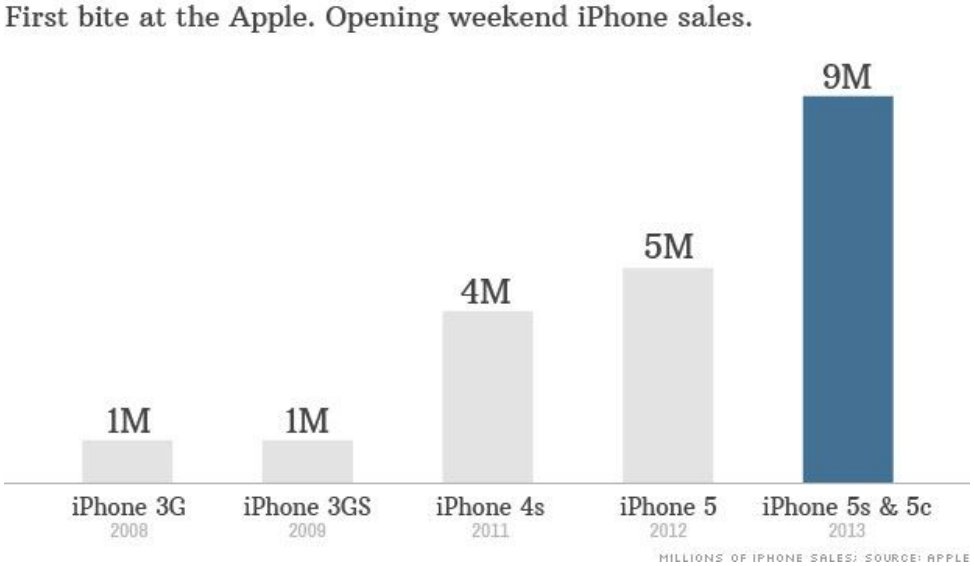
iPhone 5s and iPhone 5c feature iOS 7, the most significant iOS update since the original iPhone, featuring a stunning new user interface, completely redesigned with an elegant color palette, distinct, functional layers and subtle motion that make it feel more alive. iOS 7 has hundreds of great new features, including Control Center, Notification Center, improved Multitasking, AirDrop®, enhanced Photos, Safari®, Siri® and introduces iTunes Radio℠, a free Internet radio service based on the music you listen to on iTunes®.[3] Over 11 million unique listeners have already tuned in to iTunes Radio since launch with the most listened to song being "Hold On, We're Going Home" by Drake.

Every customer who buys an iPhone 5s or iPhone 5c at an Apple retail store will be offered free Personal Setup service, helping them customize their iPhone by setting up email, showing them new apps from the App Store℠ and more, so they'll be up and running with their new iPhone before they leave the store. Customers can learn more about iOS 7 and their new device through new free workshops at all Apple retail stores worldwide. In the US, the new iPhones are available through AT&T, Sprint, T-Mobile, Verizon Wireless, select Best Buy, RadioShack, Target and Walmart stores and Apple Authorized Resellers.

Pricing & Availability

iPhone 5s comes in gold, silver or space gray, and is available in the US for a suggested retail price of $199 (US) for the 16GB model and $299 (US) for the 32GB model and $399 (US) for the 64GB model.[4] iPhone 5c comes in blue, green, pink, yellow and white and is available in the US for a suggested retail price of $99 (US) for the 16GB model and $199 (US) for the 32GB model.[4] iPhone 5s cases are available in beige, black, blue, brown, yellow and (RED) for a suggested retail price of $39 (US) through the Apple Online Store (www.apple.com), Apple's retail stores and select Authorized Apple Resellers. iPhone 5c cases are available in blue, green, pink, yellow, black and white for a suggested retail price of $29 (US) through the Apple Online Store (www.apple.com), Apple's retail stores and select Authorized Apple Resellers. iPhone 4s is also available for free (US) with a two-year contract.[4]

[1] Battery life depends on device settings, usage and other factors. Actual results vary.
[2] LTE is available through select carriers. Network speeds are dependent on carrier networks, check with your carrier for details.
[3] iTunes Radio is available with iOS 7 in the US.
[4] For qualified customers.



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To start or renew your GAAB membership, see Cecilia MacDonald or send your fees payable to her at the following address:

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