Technology Brief...

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Research, Analysis, Strategy, Insight

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Can Apple bully Qualcomm into submission?

Apple, with some help from the FTC, has accused Qualcomm of abusing its status as a key intellectual property owner of many of the core components of modern day wireless connectivity. Indeed, aside from also being a major chip supplier, Qualcomm generates a significant portion of its revenues (approximately 35%) from license royalties. Its IP is a core component of 3G/4G and soon 5G networks. But Apple claims it is overcharging and/or manipulating terms beyond the industry standard fair, reasonable and non-discriminatory (FRAND).

Apple likes to throw its weight around. There are many examples of using its size and purchasing power to get concessions from vendors. Indeed, in some cases even forcing smaller vendors out of business. As an example, GT Advanced a small manufacturer of sapphire furnaces that were to be used to make state of the art screens for a new iPhone, said in a filing in U.S. Bankruptcy Court that Apple gave it a very large order and then later dramatically modified the terms of the agreement which forced it into bankruptcy. Or iFlow Reader, a small software company supplying a popular e-book reader through the app store, that once Apple decided to get into the book reader business itself, was forced to close down after Apple changed the rules and demanded 30% commission of all in-app purchases, which is more than iFlow made in commissions selling books. These are two examples of how Apple uses its weight (as other large companies sometimes do) to get the best terms and maximize its margins often at the expense of its suppliers/partners.

"…Qualcomm is being attacked for trying to maximize its revenues – a position all profit making companies take. Unless there are some secret terms that are not currently public, it will be hard for Apple to prove its being treated differently than the rest of the companies in licensing terms....."

Apple also buys many smaller companies, some of whom would probably be on the edge of their capabilities if they had to directly supply products to Apple. From 2014-2016, Apple acquired approximately 27 companies. Many of these were small with interesting technology that Apple acquired for a relatively small amount of money. Some, like Beats which it acquired for $3B, were quite large. There is of course nothing wrong with making acquisitions, as most large companies acquire other, often smaller companies with complementary products or technology. But one wonders whether Apple's considerable weight gives it more leverage in the negotiated terms.

Many companies that Apple has supplier dealings with are smaller with more limited resources, and this gives Apple tremendous clout. Often these companies tread carefully as Apple's legal team is large and unafraid to pursue legal actions. But Qualcomm is not a small supplier with limited resources. It derives significant revenues from its intellectual property portfolio. And it's the largest supplier of modems and processors to the mobile industry, including to Apple and all its primary competitors. This gives it a large amount of weight with which to push back

and the resources to take on Apple if necessary.

Apple is looking for a special deal. It seems it is not willing to accept the terms that other players that also license Qualcomm IP currently have in place. In fact Qualcomm IP is critical to the wireless networks in use today and all smartphone makers pay Qualcomm a royalty on their device sales. Qualcomm licenses its IP through FRAND terms, which is fundamental to the sharing of IP within 3GPP standards that regulate 3G, 4G and soon 5G. The standards body assumes IP royalties will be fairly negotiated by the individual companies. And Qualcomm's terms are within the acceptable limits of this standard. Does this mean that everyone is happy that Qualcomm is generating revenues from its IP? Probably not. But all companies understand this and Qualcomm is certainly not the only company deriving significant royalties from its IP (other major companies include Nokia and Ericsson). Virtually all companies in the mobile business license Qualcomm IP, and unless Apple can prove it is being unfairly burdened by terms that the others also have to abide by, it may have a difficult time proving Qualcomm is treating it unfairly.

This case may also be about Apple posturing for its impending moves, if the rumors are correct, to design its own chips for its devices and thereby eliminate its need to buy chips from Qualcomm and other suppliers. Its margins would be much better if it didn't have to pay Qualcomm as much for licensing its IP. So this may be a preemptive strike – a gamble that may pay off longer term for Apple if it wins.

Bottom line: Qualcomm is being attacked by Apple for doing what Apple does - trying to achieve a reasonable return on it investments in R&D. Unless there are some secret terms not currently public, it will be hard for Apple to prove its being treated differently than the rest of Qualcomm's licensees. In any case, it's likely this case will remain in the courts for the next several years and that Qualcomm will push back aggressively against Apple's claims. In the mean time, it's unlikely that there will be any major change to the licensing terms, or Apple's margins.

Cisco wants to run your building

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With the emergence of EoT-enabled solutions, many existing vendors are scrambling to take advantage of the sales opportunities in these new market segments. One of the key markets that has floated to the top in the potential long list of EoT solutions is smart buildings, where sensors and remote controlled services (e.g., lighting, HVAC, security) are being computerized, and where the potential payback for deployment is large. Highly automated networked buildings can reduce energy costs by as much as 50%-65% compared to "dumb" buildings. This is no small amount when large building energy costs can easily be in the hundreds of thousands to millions of dollars per year.

For new buildings under construction, making them smart is not much of a problem, as including needed infrastructure, and particularly networking, is relatively straight forward and easy to implement. But in many cases within an existing structure, this is not a practical solution, Older buildings are not easy to upgrade, as they require extensive capital improvement costs and downtime. As a result, many of the early entrants into smart buildings are focused on new construction or rehabilitation of older buildings rather than retrofitting in place.

The US Energy Information Administration estimates that as of 2012, there were approximately 5.6M buildings in the US and that this number grew 14% since 2003. Electricity use increased by 19% over the same time period, and electricity accounted for 61% of all energy used. While reliable numbers for the number of "smart buildings" are not readably available, we estimate it is likely substantially less than 5% of the total. Clearly, making a building "smart" can offer major paybacks and many building managers are now evaluating doing so.

To this end, Cisco has identified smart buildings as a prime opportunity for its move into IoT/EoT. While this is certainly not the only vertical market it intends to address, it is a visible one that is creating opportunities. Cisco wants to leverage its existing strengths in enterprise networking to pivot into a building network not geared towards IT requirements, but one geared towards facilities management. And while this is still an emerging market, it is an area with tremendous growth potential and one that Cisco wishes to exploit to supplement it's relatively slow growth traditional network switching business.

Cisco recently took a major step in this direction with the release of its Catalyst Digital Building series switch designed specifically for building management. Since it is a compatible Cisco DNA product, it will be familiar to many companies already using Cisco switches, and uses the same tools and techniques already in place in many companies. This makes it easier for Cisco to leverage its installed base and convince customers it is a better fit than competitive offerings that are not compatible with their existing infrastructure.

What is innovative about this new switch is that it's not designed to be placed into an IT networking closet or data center, which would be unsuitable for many smart building needs. Rather, with a small footprint and less than 4 watts of idle power requirement, and with a fanless design, it is meant to be distributed across the building and in close proximity to existing HVAC and lighting infrastructure (e.g., ceilings, plenums, etc.). Despite its low idle power, it can switch up to 60 watts per port to power a host of managed equipment options.

As an example of how this switch might be used, Cisco cites a project of a 1930s structure in TX that is being updated and converted into a new luxury hotel. By installing these switches, the building was able to reduce energy consumption by 50% through intelligent lighting and HVAC that monitors use and uses analytics to determine the best settings. In a building like a hotel, controlling such costs are a major factor in keeping the property profitable. And automated processes based on data and analytics will be a key component of operations going forward to keep guests comfortable and costs in check.

Clearly Cisco is not the only company to target the emerging market for smart building enablement. All the major networking vendors are doing so, as are the more traditional building lighting and infrastructure players (e.g., GE, Honeywell). But Cisco's move into this space with a targeted series of products will give it a way to leverage its existing networking customers while trying to keep the competition from stealing market share. We expect to see more specialized products coming from Cisco targeting other EoT market segments in the coming 1-2 years. As its core large networking systems business grows soft, this will be a beneficial place where it can re-establish itself and grow installations, and revenue.

Samsung's Note 7 mess may be good for us all

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Samsung took two major strikes when it introduced (and then recalled and reintroduced) its Note 7 device after both were found to have batteries that could overheat and cause fires. While there were relatively few incidents (perhaps a few hundred out of millions of devices shipped) it nevertheless was a serious safety issue, as even one incident could have caused a disaster. It got the Note 7 officially banned from all US airlines/flights. An overreaction perhaps, but it did elevate the perception in consumers' minds that rechargeable devices can be dangerous.

No doubt the Samsung battery disaster has been bad for the company, and has caused them significant monetary losses. It caused an otherwise potentially category-leading product to be taken off the market. But it also exposed a much bigger problem with modern battery technology and companies pushing the edge in battery chemistry and fast-charging systems. Indeed, many others have had battery problems, even if they have been less visible to the public.

Recently a story of an e-cig blowing up in a user's mouth was attributed almost certainly to a bad battery. And there have been numerous examples of hover boards catching fire and often causing peripheral damage, including burning down buildings. Other devices, from

laptops to iPhones have had battery overheating problems, causing injury or property damage. Lithium Ion batteries in airline cargo and checked bags have been banned for years due to a lost aircraft attributed to battery explosions. And there are many more examples of battery induced incidents. This really is an industry wide problem that exists due to the inherent dangers of chemical reactions in high tech batteries that sometimes are not operating safely due to design flaws, excessive charging, excessive battery drains, or simply manufacturing defects. Safer battery designs are being researched, but they are still years away.

Back to Samsung and its problem. As only a company of Samsung's size and scale could, it decided to fully investigate the battery failures (and of course to also prevent negative perceptions of its quality from ever happening again). Samsung did extensive research into the failure mechanisms in hardware and software within the Note 7 devices, and also examined the various weak points of battery design and manufacturing. Samsung in cooperation with internationally recognized testing organizations (i.e., UL, TUV Rhineland) tested 200K devices and 30K batteries from two different manufacturers to get at the root cause of the problem. In both battery models they found design flaws with the internal insulation that separated the positive and negative electrodes, and in some cases found manufacturing defects from welding the cases shut which caused internal shorts.

This level of rigorous testing led Samsung to create an 8 point battery test for all future products. While there may always be some potential faults in any product, this process once fully implemented should go a long way to alleviating future battery problems. Indeed, this is probably a far more exhaustive test than most Lithium Ion batteries used in many products undergo. Samsung plans to openly share the test findings and its new quality process with the rest of the industry.

Rechargeable Lithium Ion batteries and their charging systems have been problematic on many products. But the industry has done relatively little to address these issues. It took a product's consumer-level disaster to finally have someone take a long hard look at the core battery chemistry, manufacturing process, charging functions and environmental conditions to discover important failure mechanisms that often go ignored.

As a result, Samsung has put in place probably the most extensive battery/system test and QA process ever undertaken by a phone company and certainly more exhaustive than most other consumer devices using rechargeable batteries. And if the rest of the industry adopts the recommendations and learns from this, we'll all be safer when using our battery powered high-tech devices.

This article also appeared in Computerworld

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J.Gold Associates provides advisory services, syndicated research, strategic consulting and in-context analysis to help its clients make important technology choices and to enable improved product deployment decisions and go to market strategies. We work with our clients to produce successful new product strategies and deployments through workshops and reviews, business and strategic plan coaching and reviews, assistance in product selection and vendor evaluations, needs analysis, competitive analysis, and ongoing expertise transfer.

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