

## DEPARTMENT: MICRO LAW

# A Review of *Wisconsin Alumni Research Foundation v. Apple*—Part V

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Part I of this series introduced the *Wisconsin Alumni Research Foundation v. Apple* cases and described the asserted patent (U.S. Patent Number 5,781,752). That article also summarized some recent large verdicts for patents asserted by academic institutions and provided several reasons why this series may be of interest to the readership of *IEEE Micro*, most notably because the inventors are well known and several well-known computer architects worked as experts on this case. Part II described the complaints, namely, it described the plaintiff, Wisconsin Alumni Research Foundation (“WARF”), the inventors, and WARF’s allegations as to how Apple’s products infringed WARF’s patent. Part III described Apple’s answer to the allegations in WARF’s complaint, Apple’s counterclaims, and WARF’s response to those counterclaims. Part IV examined Apple’s allegation of inequitable conduct by the inventors, a technical analysis of that allegation, and Judge Conley’s legal analysis of the sufficiency of Apple’s allegations.

### BACKGROUND ON FACT DISCOVERY

Fact discovery is the phase in a lawsuit where the parties, in this case, WARF and Apple, exchange information so that the parties can gather information to support their respective cases. Fact discovery includes requesting and producing documents, including source code, and depositions of the other side’s employees or third parties. Fact discovery also includes interrogatories, which are written questions that the other side must answer under oath.

The judge decides when fact discovery begins. One option is to open fact discovery after the initial pretrial conference, which occurs within a few weeks or months of when the case was filed. Another option

is to open fact discovery after a claim construction hearing, which is a patent-specific hearing that occurs roughly a year or more after the filing of the lawsuit. One reason why a judge may opt for the latter option is because a claim construction hearing can be a case and/or patent-dispositive hearing such that waiting to open fact discovery until after this hearing may save the parties time and money if the claim construction hearing, for example, invalidates the patent, thus ending the case or causing the plaintiff to drop the patent. On the other hand, if a claim construction hearing is unlikely to invalidate the patent and/or the judge wants a fast time to trial, the judge may choose to open fact discovery earlier, which allows the parties to parallelize fact discovery with the claim construction process, which shortens the time to trial by several months.

Fact discovery usually takes several months, if not years, to complete and ends a few months before the trial. The close of fact discovery is a major milestone in a case because, absent a good reason, a party cannot continue to gather facts, e.g., take a deposition or ask for documents, after the close of fact discovery. Therefore, if a party is missing a fact that it needs to prove its case, e.g., to prove infringement of a claim, after the close of fact discovery, that party will lose that part of its case.

Fact discovery is generally very time consuming because it takes time for the parties to gather and review evidence, send and respond to interrogatories and other forms of written discovery, depose witnesses, and so on. For a large patent case, the parties may exchange millions of pages of documents and take depositions for dozens, if not hundreds of fact witnesses.

Finally, source code<sup>a</sup> is treated different than documents due to its sensitive nature. Rather than

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<sup>a</sup>Defendants usually characterize their source code as their “crown jewels.” While that may be an accurate description in many cases, defendants tend to overuse that label to even include source code that simply implements publicly available standards, e.g., Wi-Fi.

producing documents in electronic form, a defendant's source code is typically loaded on to laptop computer that does not have Internet access. The source code laptop is typically only available for access at an office of the defendant's law firm during business hours. The plaintiff typically retains an expert for source code review and the defendant can object to that expert. One reason that a defendant may object to a plaintiff's expert is because the plaintiff's expert works for a competitor or is in the business of acquiring and asserting patents. In both cases, a review of the defendant's source code could be used against the defendant in the future for purposes that are unrelated to the case.

The parties in a case may also argue over whether the expert is allowed to have his or her phone in the source code review room; which source code editors and tools, if any, may be installed on the laptop; how many total pages of source code may be printed; how many consecutive lines of source code may be printed; how (e.g., in safe) and where (e.g., in an expert's home) the source code may be stored; how the source code may be transported (e.g., cannot be put inside checked luggage); and so on.

To protect the parties' confidential information and ensure that confidential information is not given to unauthorized people, a court will enter a protective order that describes how documents, deposition transcripts, and source code are to be handled and if they can be disseminated. Documents are generally marked "confidential" or "confidential, attorneys eyes only." The former designation is the lowest level of confidentiality and generally means that the documents should be protected and not made public. The latter designation is for more sensitive material and excludes technical people on the receiving side reviewing that information, but in-house attorneys for each party may receive that information. The highest designation is "confidential, outside attorneys eyes only," which does not allow even in-house attorneys for a party to receive that information. Source code usually receives its own designation.

To the extent that one party believes that the other party is improperly withholding relevant information, the former party may file a motion to compel asking the court to order the latter party to produce that information.

## WARF'S MOTION TO COMPEL

On 3 October 2014, nine months after it filed its lawsuit against Apple, WARF filed a motion to compel Apple

to produce the executable version of its simulator<sup>b</sup> for the accused products (A6, A7, and A8 processors), all the documents for that simulator, and all the files that are necessary to run the simulator, e.g., configuration files and trace files (see page 17 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>).

WARF argued that in lieu of producing the simulator, Apple produced only the source code of the simulator and some presentations and e-mails that summarize some simulator results (see page 1 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). WARF argued that this production did not allow it to run any simulations and/or estimate the performance benefit of the asserted patent as implemented in the accused products.

WARF makes four main arguments. First, WARF argued that the Federal Rules of Civil Procedure, which describes the rules for civil cases, entitles it to the "production of things for the purpose of inspection, testing, and measuring" (see page 7 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). WARF also argues that Apple, in an earlier case, had been ordered to produce proprietary testing tools (see page 7 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>).

Second, WARF further argues that Apple's simulator is highly relevant to WARF's damages case. WARF argued that patent cases are "are not exceptions to the rule that discovery is liberal and relevancy is broadly construed" (see page 9 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). Rather, information related to damages, e.g., 1) the utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results or 2) the benefits to those who have used the invention is discoverable (see page 9 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). WARF argued that the simulator that would help it to quantify this damages related information.

WARF argued that although Apple asserts that the simulator is an "internal design tool" and is not relevant to this litigation, Apple sent WARF an interrogatory that requested the following:

"Describe any performance benefit that you allege the invention claimed in the '752 patent provided to the Accused Products, including, without limitation: (i) the specific amount of performance benefit that you allege the invention claimed in the '752 patent contributed to each of the Accused Products; and (ii) all facts supporting your

<sup>b</sup>The name of the simulator was redacted out in the public version of the motion and in Apple's response.

allegation” (see pages 10 and 11 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>).

Based on that, WARF argued that the simulator is relevant because it is capable of generating the exact information requested in Apple’s interrogatory (see page 11 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>).

Third, WARF also argued that Apple implicitly conceded that the output of the simulator is relevant because Apple said that it produced “all performance outputs from [the simulator] created during the development of [the A7 processor] that presently exist” (see page 11 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). But WARF argued that Apple’s production of “all performance outputs” from the simulator that Apple had on hand is not an adequate substitute for the actual production of the simulator itself. Furthermore, WARF argued that the Federal Rules of Civil Procedure expressly permits testing even if related documents are produced.

WARF argues that Apple’s assertion that an executable version of the simulator is beyond the scope of discovery because WARF’s simulations would be creating evidence is incorrect for at least two reasons. WARF first argued that the Federal Rules of Civil Procedure expressly permits testing. Second, WARF argued that “simulation is merely a means to quantifiably measure aspects of the simulated chip” and does not create new information any more than does using a yardstick to measure the dimensions of an object (see page 12 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>).

Fourth, WARF argued that Apple has not shown that production of the simulator executable would constitute an “undue burden.”<sup>c</sup> WARF argued that Apple’s argument that it would take two days to load the simulator on to a laptop for review at the law firm representing Apple is not an “undue burden” (see pages 14 and 15 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). WARF further argues that Apple previously asserted that it may take up to seven days to load source code on to a laptop (see page 14 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>).

WARF argued that Apple could eliminate that alleged undue burden by allowing WARF’s experts to inspect the simulator on Apple’s campus (see page 15 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). Although Apple asserts that there may be “security risks” with this type of inspection, WARF argues that the protective order that was entered in this case is “robust” and provides “more than adequate

protection” for an on-site inspection (see page 15 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>).

## APPLE’S RESPONSE TO WARF’S MOTION TO COMPEL

A week after WARF filed its motion to compel, Apple filed its responsive brief (see *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>).

Apple first noted that it had never ported its tool from its native server environment to a laptop and to do so would require “highly specialized Apple engineers—who are fully occupied with their current work developing Apple products—to attempt to create and install a working version on a stand-alone computer with no guarantees that the tool will work” (see page 1 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>). As such, Apple argued that “production of an executable version of it is not likely to lead to evidence with probative value and would only spur satellite litigation regarding the validity of any simulation results generated by WARF’s experts” (see page 1 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>).

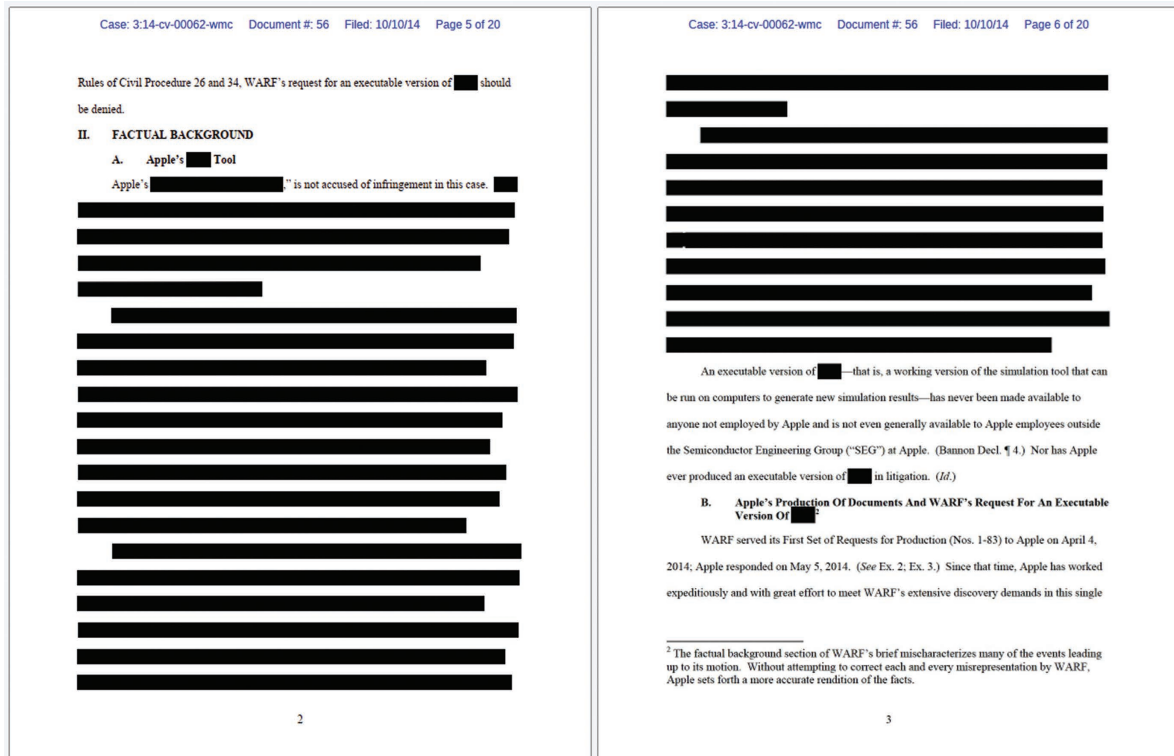
The “Factual Background” section of Apple’s response is almost two-pages long, but almost the entire section is redacted out (see pages 2 and 3 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>) (see Figure 1).

Because there is a public interest for access to court cases, parties file redacted versions of their sealed motions or documents. The purpose of redactions is to protect a party’s confidential information, e.g., contents of source code. But redactions should be narrowly tailored to serve the public’s interest.

In this case, given that almost four full paragraphs are fully redacted, it is reasonable to ask whether the redactions were actually narrowly tailored. For comparison, the longest redaction that WARF had in its motion to compel was one half of one line of text. Without knowing the words that are redacted in Apple’s brief, it is difficult to say whether the redactions were actually narrowly tailored. But given that this is the “Factual Background” section, it is more likely that each sentence may contain confidential information. That said, it may be a little excessive that both sides redacted out the name of the simulator as a future request for production for the simulator does not need to include the name of the simulator, so it is unclear why both sides felt that it was necessary to do so.

Apple makes three arguments why WARF’s motion to compel should be denied. First, Apple argues that the Federal Rules of Civil Procedure does not entitle WARF to an executable version of the simulator (see page 9 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>). More specifically, Apple argued that WARF is not seeking to

<sup>c</sup>The Federal Rule of Civil Procedure Rule 26(b)(2)(B) states that “[o]n motion to compel discovery or for a protective order, the party from whom discovery is sought must show that the information is not reasonably accessible because of undue burden or cost.”



**FIGURE 1.** Factual background section of apple's response, with a significant amount of redactions.

inspect or test the accused products, but rather, it wants to run simulations and generate new data (see page 9 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>).

With respect to the prior case where Apple was ordered to produce proprietary testing tools, Apple argued that that case is inapposite because the proprietary testing tools were the accused products, whereas in this case, the proprietary testing tools are simulators of the accused products (see pages 9 and 10 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>).

Second, Apple argued that producing an executable version of the simulator would be unduly burdensome. With respect to the first option (porting it to a laptop), Apple argued that WARF “is not merely asking Apple to collect and produce documents that already exist at Apple[,]” but rather “seeks to compel Apple to set up and install an executable version of a complex software design tool especially for use by WARF’s experts” (see page 11 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>).

Apple argued that it has never created a working version of the simulator outside Apple, for any reason (see page 11 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>). Apple also argued that it would be very time consuming to port the simulator to a stand-alone laptop (see page 11 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>). More specifically, the director of Apple’s Semiconductor Engineering Group at

the time, Peter Bannon, estimated that it would take at least a week to do so, and perhaps more than two weeks (see page 11 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>). Apple argued that “Mr. Bannon and the other engineers who have sufficient expertise with [the simulator] to perform the installation are all currently very busy, working long hours on ongoing development projects for Apple” (see page 12 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>). Apple argued that “[n]umerous Apple employees—including thirteen of its engineers—have already taken significant time away from their work for Apple to satisfy WARF’s extensive discovery requests” (see page 13 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>).

With respect to the second option (running the simulator in its native server environment), Apple provides a one paragraph argument why this option is an undue burden, but unfortunately, all but the last sentence, which only recites that “[t]his would impose an undue burden on Apple[,]” is redacted (see page 14 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>). The potential reasons why Apple considered this to be an undue burden were that 1) Apple may have security concerns that experts from an adversarial party on their premises may gain some information that they would not have been able to otherwise; 2) it may have been inconvenient to set up a special account for WARF’s experts to run their simulations

from that had access to the relevant executable, configuration files, and traces, but that did not have access to Apple's simulation results; and 3) depending on the number of configurations and traces, WARF may need to run a significant number of simulations that may consume significant amounts of Apple's computing resources, which could have affected Apple's own simulations.

Third, Apple argues that the usefulness of the simulator to "generate new data relevant to damages is, at best, speculative" (see page 14 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>). Unfortunately, the remainder of the paragraph, except for the last sentence, which only recites that "[c]onsequently, it would likely be difficult for WARF's experts to use [the simulator] effectively" (see page 14 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>). It is unclear whether Apple was arguing that it would be difficult to use option 1 (stand-alone laptop) or option 2 (server) or both. Based on the following paragraphs, it appears that Apple was making the argument that the simulator is difficult to use, which is a curious argument given that WARF's experts are well-known computer architecture professors who surely would be able to use the simulator.

Apple next argues that "even if installation on the stand-alone computer were successful and WARF's experts were able to learn how to use it properly, there is no guarantee that WARF would obtain any meaningful results" (see page 15 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>). The next sentence is redacted. But final last sentence of that paragraph recites the following:

"Given the uncertainties surrounding the creation and use of an executable version of [the simulator] for litigation in an environment different from that typically used by Apple's engineers during their product development work, requiring Apple to produce an executable version of [the simulator] would only spur satellite litigation regarding the validity and relevance of any new data generated by WARF's experts" (see page 15 of *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>2</sup>).

It is very interesting that Apple limited this particular argument to option 1, the stand-alone laptop version of the executable, and not also to option 2, the version that runs natively on the simulator.

## MAGISTRATE JUDGE CROCKER'S DECISION

On 31 October 2014, Magistrate Judge Crocker (hereinafter Judge Crocker) held a hearing to decide this motion. A magistrate judge is a federal judge, but one that has limited powers as compared to a district judge. The key difference between the two is that a district

judge requires nomination by the president and confirmation by the Senate, but a magistrate judge is selected by the judges in a district. Magistrate judges are selected for eight-year terms, which can be renewed. Motions to compel are types of motions that a magistrate judge typically handles.

Judge Crocker denied WARF's motion to compel production of the simulator. Although he did not provide a written order explaining his reasoning, he did provide reasons at the hearing (see *Wis. Alumni Rsch. Found. v. Apple, Inc.*<sup>3</sup>). Unfortunately, a public version of the transcript is not available.

With respect to relevance, simulation data generated by the simulator are likely to be very relevant. The readership of *IEEE Micro* is very aware of the fact that any IEEE journal article or conference paper typically contains simulation results that represent thousands of hours, if not more, of simulations that encompass several processor configurations and potentially dozens of workloads, and several configurations of the article's proposed idea. Those simulation results examine the performance benefit, e.g., speedup or power reduction, of the proposed idea. Apart from measuring performance on silicon, an article without any simulation results will likely be summarily rejected. Furthermore, Apple itself uses the data generated by the simulator to make multibillion dollar decisions. Therefore, given the importance (and perhaps overemphasis) of simulation in computer architecture research and design, and for Apple's microprocessor designs, any results generated by Apple's simulator are likely to be very helpful in assessing the estimated benefit of the asserted patent in the context of the accused products.<sup>d</sup>

That said, simulation data are not the only way to estimate performance for the purposes of providing an opinion on the monetary damages for infringing the asserted patent. For example, WARF's experts could construct an analytical model or use another simulator configured in a similar manner as the accused products. The downsides of this approach are that it 1) would likely require a potentially significant amount of time to implement, 2) would likely have questionable absolute accuracy, 3) may have poor relative accuracy, 4) may be excluded by the judge before the trial as being unreliable, and 5) may come across very poorly to a jury due to potential inaccuracies. WARF likely filed its motion to compel to avoid some, if not all, of these downsides, while Apple opposed WARF's motion to compel as it could benefit from those

<sup>d</sup>To the extent Apple is arguing that WARF's experts may misconfigure or otherwise misuse the simulator that would produce unreliable and/or misleading results, that argument appears to be more of a Daubert motion, i.e., a motion that asks the court to filter out unreliable expert opinions.

downsides to WARF. If WARF were forced to avail itself of these alternatives, those downsides would likely be a strong point that would resonate with the jury.<sup>6</sup>

With respect to Apple's argument that the simulator is irrelevant because it generates new data, the argument does not seem particularly strong because experts frequently generate new data for infringement or damages purposes in a case. All of that is "new" data in that it did not previously exist, and, apart from any potential methodological problems, the data are certainly relevant.

With respect to undue burden, creating a version of the simulator to run on a stand-alone is an undue burden. Porting a simulator to a different environment is a nontrivial task and one that has the potential to impact performance results. On the other hand, because Apple redacted out its reasons for option 2, it is difficult to assess whether there is an undue burden. Although there may be a burden and inconvenience for Apple to let WARF's experts come to Apple's campus to run the simulator in its native environment, it is not clear whether that burden is undue or even more of a burden than source code review or any inspection of an accused product at a defendant's place of business.

Therefore, for the aforementioned reasons, I disagree with Judge Crocker's decision to deny WARF's motion to compel as the simulator and any results that it may produce seem very relevant, and it is, at most, unclear whether the production of the simulator constitutes an undue burden.

That said, Apple's refusal to produce the simulator may be based on other factors apart from issues of relevance and undue burden. As a first example, Apple may be concerned that by running the simulator, WARF may have a better understanding of how the accused products operate than by reviewing the source code of the simulator or documents that Apple has produced, which could help WARF to improve aspects of its infringement case. Second, Apple may already know that the asserted patent is likely to have a very high performance benefit, which the simulation results will confirm, which could significantly increase damages. Apple may also be concerned that these simulation data may be very difficult to rebut or counter in front of a jury because they were generated using its own simulator. Third, Apple may be worried that WARF's experts may focus on certain

workloads that Moshovos et al. showed to have particularly high speedups, e.g., *147.vortex* from SPECint95 and *101.tomcatv* and *110.applu* from SPECfp95, and present them to the jury as either "typical" workloads and/or the workloads that the asserted patent is designed to help, which may, at least in Apple's view, cause the jury to believe that the asserted patent has a misleadingly high benefit. Fourth, allowing WARF's experts to run simulations with different configurations and workload could enable WARF's damages experts to provide damages theories that would not otherwise be available, e.g., using a Plackett and Burman<sup>5,6</sup> design to quantify the improvement in memory latency due to the asserted patent, as compared to other performance bottlenecks that could be used as an input to hedonic regression, which is a damages approach that WARF's lawyers used in a case for another plaintiff to win several billion dollars in two trials. An alternative damages theory based on simulation results may yield a damages number that is even greater than the damages theories that Apple thought that WARF would be able to use without the simulator.

The next article in this series will continue to examine what happened in this case.

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<sup>6</sup>The existence of the simulator, and the fact that Apple refused to produce the simulator and the court's decision to deny WARF's motion to compel would not be presented to the jury. Therefore, WARF would not be able to argue to the jury that these alternative approaches were the best they could do given that Apple refused to produce the simulator.

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