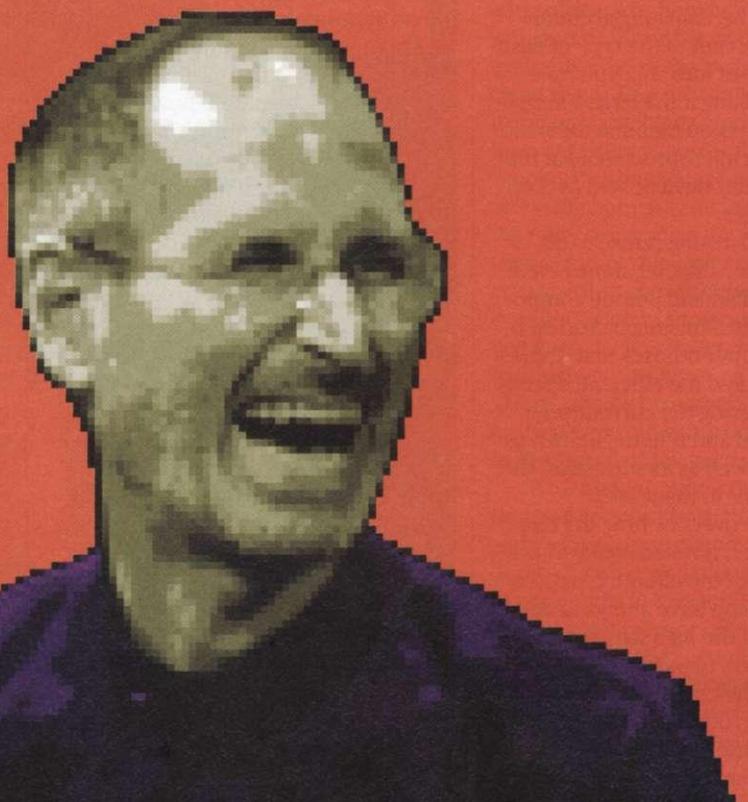


Technology



JOB'S: ALL YOUR CHIPS ARE BELONG TO US

► Samsung makes the speedy chips in Apple's mobile devices but can't create a hit of its own

► "It does seem like Apple is getting the good stuff first"

Steve Jobs likes to poke bears. The Apple chief executive officer has ribbed the likes of IBM, Google, Adobe, and Microsoft. In many cases, he rips into these companies even while Apple depends on them as partners. Adobe and Microsoft, in particular, have long provided valuable software for Apple's operating system. No matter. They're still subject to abuse from the man in the black turtleneck.

His latest whipping boy: Samsung, a rival to Apple in the consumer electronics business. During the iPad 2 unveiling on Mar. 2, Jobs roasted Samsung, making fun of one of its executives who tried to defend sales of the Galaxy Tab, the company's answer to Apple's first tablet computer. He also gave Samsung

top billing in a chart proclaiming 2011 the "Year of the Copycats."

Chest-thumping and rhetoric are standard fare in the tech industry. Still, the digs stand out because Samsung is not Apple's typical frenemy. The South Korean giant makes some of the most important components Apple buys, including memory chips and displays. Crucially, Samsung makes the brains inside Apple's smartphones and tablets: To date, it has been the lone supplier of

"It's definitely a tough situation for Samsung to be in," says an analyst at researcher iSuppli

Apple's A4 chip, and semiconductor experts say it is most likely the supplier of the as-yet-unreleased A5 as well.

The product gurus responsible for coming up with Samsung's hit gadgets have so far been unable to make better use of their own high-end parts than the conglomerate's famous customer in Cupertino. That leaves Samsung executives little choice but to envy Apple's profits, accept its cash, and endure Jobs's withering abuse. "It's definitely a tough situation for Samsung to be in," says Wayne Lam, a senior analyst at iSuppli, a technology research firm.

Shoppers know Samsung for consumer products ranging from cell phones and TVs to dishwashers and microwaves. The company is





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also one of the world's largest makers of technology components. Its chip group rivals **Intel** in size. Samsung accounts for about 40 percent of the type of flash memory that goes into smartphones and tablets, making it the largest supplier. The same division manufactures the highly complex microprocessors at the heart of computer devices sold by Samsung and others.

Apple and Samsung refuse to discuss their relationship, let alone reveal exactly which iPad and iPhone components come from Samsung factories. In his speeches, Jobs enthuses that Apple's engineers invented the efficient, speedy processor powering the current versions of the iPad and iPhone, known as the A4 chip, as well as its successor, the A5 chip that runs in the iPad 2.

While Apple oversaw how the chip was put together, it relied on Samsung to design most of the circuitry, according to experts who have analyzed detailed photos of the A4's structure. Samsung appears to have crafted the main brain of the chip—its core—and many of the surrounding parts that shuttle information around and handle low-level software tasks. The end product is one that resembles Samsung's own chips. "The bottom line is that there weren't many marked differences we could see," says Don Scansen, a partner at IP Research Group and one of the chip experts who analyzed the A4. The new iPad containing the A5 is

scheduled for release on Mar. 11, and analysts expect Apple to continue relying on Samsung's smarts for it.

Apple has done far more with these chip smarts than Samsung's own product teams. In January 2010, Apple unveiled its A4-equipped iPad; Samsung waited two months before debuting a smartphone—the Galaxy S—based on the same underlying chip technology. With the new iPad 2, which features a faster dual-core processor,

Apple is expected to once again rely heavily on Samsung's chip technology. But the South Korean company isn't using those designs in its own tablets yet. In fact, Samsung's answer to the iPad 2—the Galaxy Tab 10.1—will use a chip from **Nvidia**. "It does seem like Apple is getting the good stuff first," says Linley Gwennap, a chip analyst and founder of the Linley Group. "But it's probably as much to do with Apple executing better in developing and delivering their products to market."

Willy Shih, a professor at Harvard Business School and an expert in chip design and manufacturing, points out that Samsung is a massive conglomerate that has to balance the needs of various parts of its businesses. The division

that produces chips for Apple and other customers must keep these companies' product plans secret from the parts of Samsung that build consumer products. "If you want to supply memory or chips, there is a sort of separation that happens in the industry," Shih says. "Those games are played in a particular way, and Samsung will treat those manufacturing operations as distinct from its own operations." In other words, Samsung's Galaxy Tab 10.1 engineers might have had no better an idea of what was in the iPad 2 than the oohing, aahing crowds at Jobs' keynote on Mar. 2.

Jobs has touted the benefits of tightly integrating chips and software, which helps Apple build devices that use power and memory more efficiently. Close watchers of the semiconduc-

tor industry expect that Apple's designs will diverge more from Samsung's in years to come. Apple recently has purchased two chip companies, including last year's acquisition of **Intrinsity**, effectively creating a large, in-house group of chip whizzes. "With each generation, Apple is putting more and more of their own resources into" chip design, says Gwennap.

Samsung has come to depend on Apple's orders to keep its factories full, says Lam of iSuppli. Company executives could be concerned that Apple might find a second supplier, perhaps **Taiwan Semiconductor Manufacturing**, to make its chips. "There are a lot of rumors around that," says Harvard's Shih. Yet Apple has come to rely on Samsung for on-time arrival of the most crucial components in its phones and tablets.

Unless Apple decides to diversify its chip supply soon, Samsung's best option may be to keep on grinning, bearing the abuse, and cashing the checks from Cupertino. "It's just going to be one of those complex relationships," Gwennap says. "It's a very 21st century kind of thing." —Ashlee Vance

The bottom line Jobs keeps beating up on Samsung, which makes crucial iPad innards. Yet experts say the relationship is likely to survive.



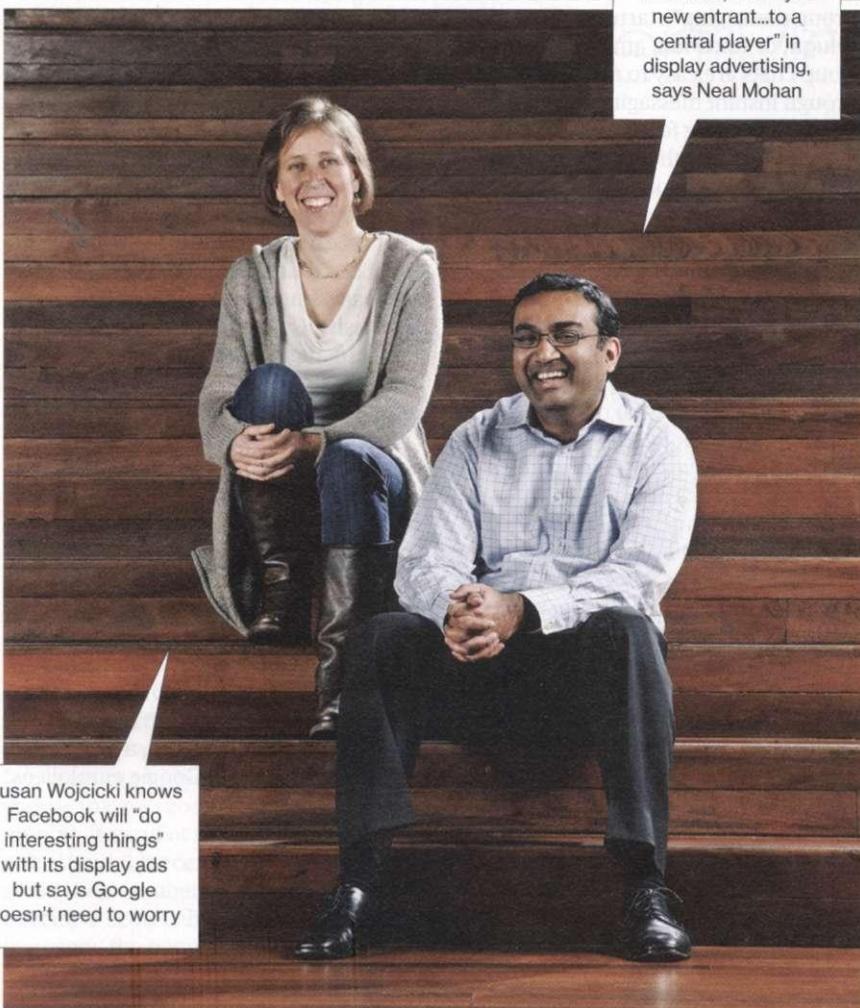
Advertising Is DoubleClick Clicking for Google?

► Some question the acquisition that gave Google a display ad business

► There are more competitors now, "but the Web is a really big place"

Three years ago, **Google** closed its biggest acquisition ever: The \$3.1 billion purchase of online ad powerhouse Doubleclick. Google's goal was to grow beyond search advertising, where it was already dominant, and grab a chunk of the potentially much larger market for display ads—those graphical come-ons that appear along the tops and sides of Web pages. Within two months of the deal, Google's stock soared 35 percent, to \$595.

Since then its stock hasn't moved much, closing at \$592 on Mar. 9. Google's



In a short time "we have gone from an ambitious, wild-eyed new entrant...to a central player" in display advertising, says Neal Mohan

Susan Wojcicki knows Facebook will "do interesting things" with its display ads but says Google doesn't need to worry

ad practices have angered privacy advocates and attracted the attention of anti-trust regulators in the U.S. and Europe. The competition has changed a lot, too. Back then **Yahoo!** was the biggest player in the fragmented market for display ad dollars; now **Microsoft** is a serious contender. **Facebook** has become a Mad Ave-friendly colossus worth \$75 billion by some estimates, and **Twitter** is poised to grab a larger share of marketing budgets. Even **Apple** has gotten into the display advertising game with its iAd program for mobile devices.

Google nonetheless calls the acquisition one of its best ever. As of October, it says, display sales were on track to bring in \$25 billion annually. It also says its display network reaches about 80 percent of all Internet users, and that 99 percent of its 1,000 largest advertisers run display spots as well as text-based search ads. "We have gone from an ambitious, wild-eyed new entrant

in the display ad business to a central player in a short amount of time," says Neal Mohan, a former Doubleclick executive who is now vice-president for product management at Google.

Analysts say the success of the deal is hard to judge because a big chunk of that \$2.5 billion in annual revenue comes from ads that run on YouTube, which Google acquired in 2006. Citigroup analyst Mark Mahaney says YouTube would likely be doing big business even without Doubleclick, and that Google's display ad network probably generated between \$1 billion and \$1.5 billion in revenue last year once the video site is excluded. Google doesn't release data about the division's profitability. "It's clear that Google is better positioned as a platform for Internet advertising now that it has a display advertising network," Mahaney says. "I just don't know whether that justifies the price they paid."

Since the Doubleclick deal, Google's display team has developed services and software to help advertisers create, sell, and monitor the performance of their ads, and in the process reinvigorated the online privacy debate. Figuring out which ads work with which Internet users requires the use of "cookies"—small data files that track browsing habits. Cookies are nothing new; companies have been using them—and privacy groups have been complaining about them—for years. But Doubleclick had previously halted its behavioral advertising, as this part of the business is known. After the acquisition, Google brought behavioral techniques back and reintroduced cookies to the Doubleclick network.

"The merger pulled this model that had receded from the public eye and put it squarely dead center of the debate," says Jules Polonetsky, director of the Future of Privacy Forum and a former chief privacy officer at Doubleclick. He says the current wave of "Do Not Track" bills in Congress, which would limit the ability of Internet companies to install cookies, can be traced back to concerns about the Doubleclick acquisition. Google offers users an "ads preferences manager" where they can adjust their online profile or opt out of tracking altogether. (Microsoft and Yahoo have since introduced similar tools.) According to Mohan, for every seven users that adjust their preferences, only one user opts out. "What we find is that the more relevant the ad, the better the user experience is," he says.

The biggest threat to Google's display ambitions may be Facebook. The social network will bring in revenue of around \$4 billion in 2011, according to research firm eMarketer, almost entirely from the small, ignorable display ads it runs on its members' pages. Those ads are sold by Facebook itself, which doesn't allow Google into its rapidly growing universe of over 500 million members. Susan Wojcicki, the Google senior vice-president who spearheaded the original Doubleclick acquisition, doesn't appear worried. "Facebook will definitely do interesting things and has an interesting perspective," she says. "But the Web is a really big place." —Brad Stone

The bottom line Analysts say Google's DoubleClick acquisition is hard to value, especially as upstarts such as Facebook's own display ad business grow.