

Tech tensions: What began as a tariff spat between the U.S. and China appears to be turning into a technology war, one that some fear could split the world along a lasting digital divide. (Illustration by Eric Chow)

COVER STORY

Fears of 'digital iron curtain' spread as US and China dig in

Pressure from Trump unites Chinese tech industry in self-sufficiency push

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GUIYANG/TOKYO/HONG KONG/PALO ALTO, U.S. -- The mountainous region of Guizhou has long been the poorest of China's 31 provinces, known mostly for producing a few herbs used in traditional Chinese medicine, and *maotai*, a popular distilled Chinese liquor. Its gross domestic product per capita was \$6,233 in 2018, less than one third of Beijing's.

But Guiyang, the provincial capital city of 4.6 million people, has grand ambitions to transform itself into China's newest digital hub. Its goal is neatly summed up by a three-letter Chinese word, *dashuju*, or "big data," and residents are unlikely to forget it. Dashuju is plastered all over the city: There is the "Plaza of Dashuju," the "Human Resource Center for Dashuju," "Dashuju Park" and even "Dashuju Apartments."

Guiyang's leaders are hoping that this focus on big data -- the backbone of next-generation 5G mobile and cloud computing services -- will make the city a stronghold for Beijing's Digital Silk Road strategy. And while its remote geography has been one of the reasons it has remained so poor for so long, it offers some distinct advantages in the data business. The ample water resources nearby will provide plenty of cheap hydropower to run giant computer servers, while the mountainous region's steady climate will help keep them cool.

"The biggest data centers in China are being built in the area by giants in the digital industry," says Li Haibo, director of the International Cooperation Promotion Center of Guiyang High-Tech Industrial Zone. Two of the world's leading tech companies, **Tencent Holdings** and Apple, are among them.



Apple broke ground on a \$1 billion data center in Guiyang in May 2018, with the project expected to be completed next year. The U.S. tech company plans to combine its iCloud computing service with the one operated by the provincial government, allowing it to provide storage services to China's enormous market of 1.4 billion people. Apple plans to eventually expand its offering to nations participating in China's Belt and Road Initiative, according to Li, who is overseeing Guiyang's data center push.

Asked about the city's digital ambitions, Li demurred. "We, government officials, cannot talk about the dream; we can only talk about [how to] plan and execute it."

But Guiyang's dream -- and Apple's business opportunity -- represent the sort of U.S.-China technological partnership that has thrived for years, and which now faces an almost existential threat. What began as a tariff spat between the U.S. and China now appears to be morphing into a nationalistic battle for technological supremacy, one that some say could draw a "digital iron curtain" between Apple and its Guiyang operations.

As chairman of Taiwan's **Hon Hai Precision Industry** -- better known as Foxconn Technology Group -- Terry Gou has played a major role in the intertwining of the U.S. tech industry and manufacturing in mainland China. His company has been the biggest production partner for Apple's iPhone, but now he sees the trade war unwinding these close ties.



Visitors at China's International Big Data Expo, held in Guiyang in the rural province of Guizhou since 2015. Ambitions are high for the region to become a digital hub, with tech giants like Apple and Tencent setting up data centers there in recent years. © Getty Images

"In the future, there will be no G-20, but only G-2 -- the U.S. and China," said Gou.

"The world will have to live with the two [technology] standards, created by the U.S. and China separately after the two big powers' fierce competition. ... It's likely that it will become 'One World, Two Systems.'"



Foxconn Chairman Terry Gou, center, has played a major role in the intertwining of the U.S. tech industry and manufacturing in mainland China. "In the future, there will be no G-20, but only G-2 -- U.S. and China," he predicts. © Getty Images

Such dire predictions have stemmed from the U.S. decision under President Donald Trump to ban American companies from doing business with Huawei Technologies, citing a threat to U.S. national security. If the ban holds, it effectively starves one of China's technological success stories from components that are essential to its business. On June 17, Huawei said it has slashed its sales expectations for the next two years by \$30 billion due to the Trump ban.

Chinese President Xi Jinping has compared the tech conflict with the U.S. to the Red Army's "Long March" under Mao in the 1930s -- which many observers say indicates that the country is girding for a prolonged battle.

"Even if the Chinese tech industry is not ready, we will have no choice but to take the 'new Long March,'" said Wang Huiyao, president of the Center for China and Globalization, an independent think tank in Beijing. "The Chinese tech industry is at a critical moment and we can't just sit and watch it die. We used to rely on global suppliers, letting other countries do what they can do the best. Now, we will have to build our own supply chain."

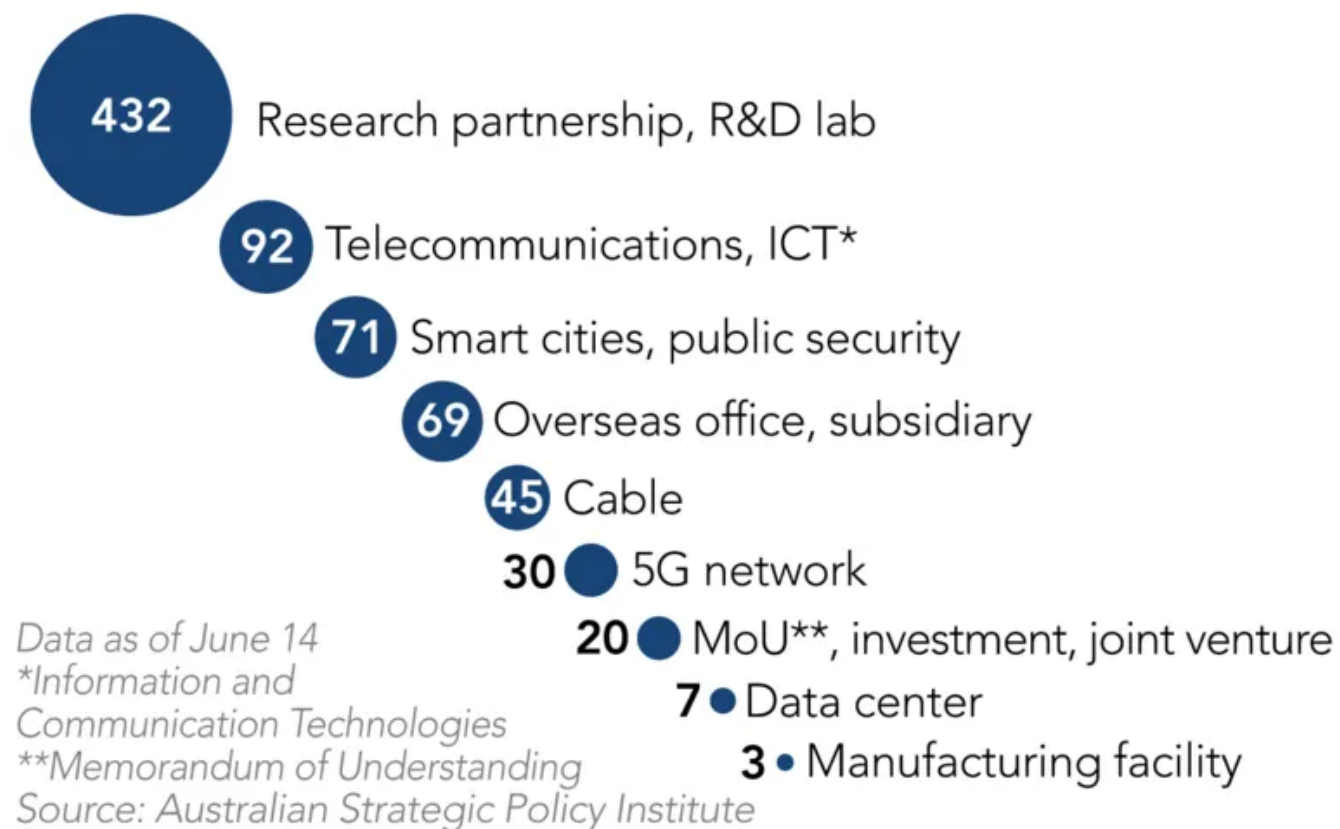
Bipolar world

Huawei has roots in Guizhou. The company's founder, Ren Zhengfei, migrated from Guizhou to Shenzhen, Guangdong Province, and set up Huawei there in 1987. For him, the tech war has become a personal matter: Meng Wanzhou, Ren's daughter and Huawei's chief financial officer, was arrested in Canada last December as part of a probe related to alleged attempts by Huawei to sell U.S.-made equipment to Iran in violation of sanctions.

The U.S. claims -- without providing much evidence publicly -- that the use of Huawei smartphones and telecommunications equipment results in the leakage of information to the Chinese government. Chances of such espionage risk will increase if Huawei, which is leading American and European companies in the rollout of 5G mobile communications technology, monopolizes the global telecom infrastructure, the U.S. argues.

China's internet security and national security laws make it mandatory for businesses to submit information to the government when deemed necessary. Ren said in an interview with the Nikkei Asian Review in January that he would refuse to submit information even if requested by the government. In reality, however, he simply cannot.

Huawei's overseas reach *(international projects, by type)*



Trump's attacks on Huawei fit with his "America First" campaign theme, and his broader accusations that China has been "ripping off" the U.S. for decades. But U.S. suspicion of Huawei predates the Trump administration: In 2008, the U.S. blocked Huawei's attempt to buy a stake in U.S. rival 3Com on security grounds.

The U.S. administration's bashing of China has also proved popular with American lawmakers and citizens, whether they are Republicans or Democrats. And, though there is support for the Trump administration's attempts to enforce intellectual property rights in China, U.S. businesses --especially in the tech industry -- worry about the administration's barefisted approach.

To counter the U.S. moves on Huawei, Xi has suggested imposing restrictions on exports of rare-earth elements, which are indispensable for American high-technology companies, and announced a plan to ban the overseas transfer of advanced technologies from China.



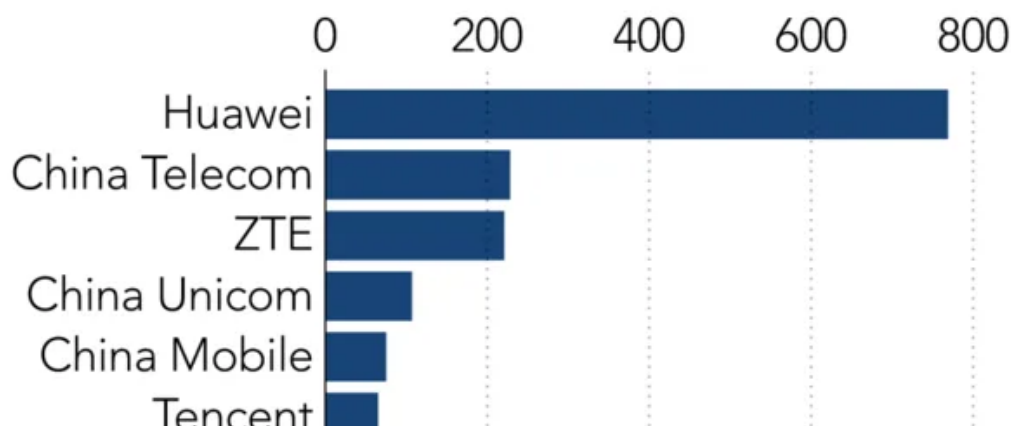
The uncertainty is already having an effect on high-tech companies on both sides of the Pacific. "Many of my clients -- especially the ones in Huawei's supply chain, or companies in the business of high-tech -- are postponing their plans to expand to the U.S., or cutting budgets," said one business consultant based on the U.S. West Coast.

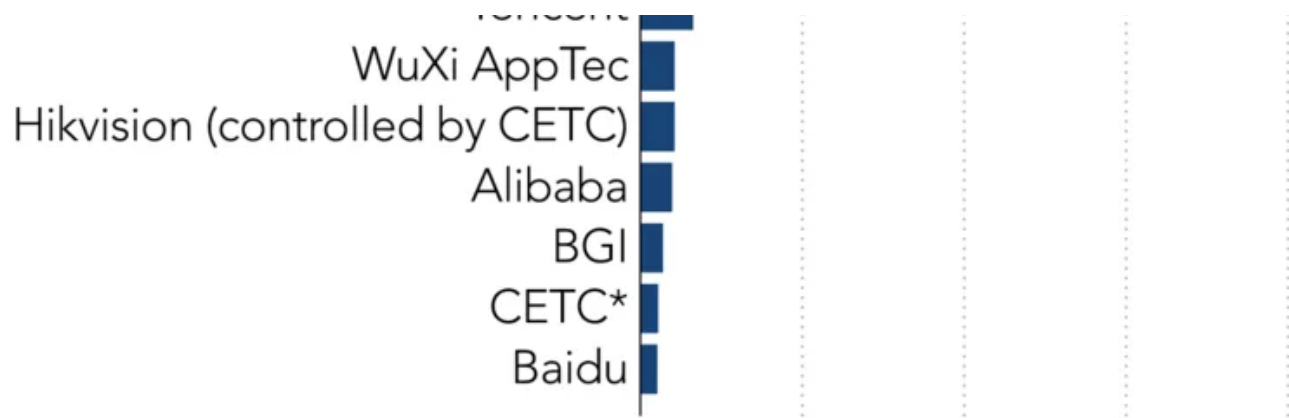
Trump's executive order has disabled Huawei from gaining access to updates of Google's Android mobile operating system, and from procuring parts made by Qualcomm, the market leader for telecom modem chips. Mobile carriers in Japan have complied with the Trump administration's requests by halting the procurement of telecom equipment from Huawei and postponing sales of its new P30 series smartphones. Australia and New Zealand have also halted the government procurement of equipment from Huawei.

China's big tech exposure

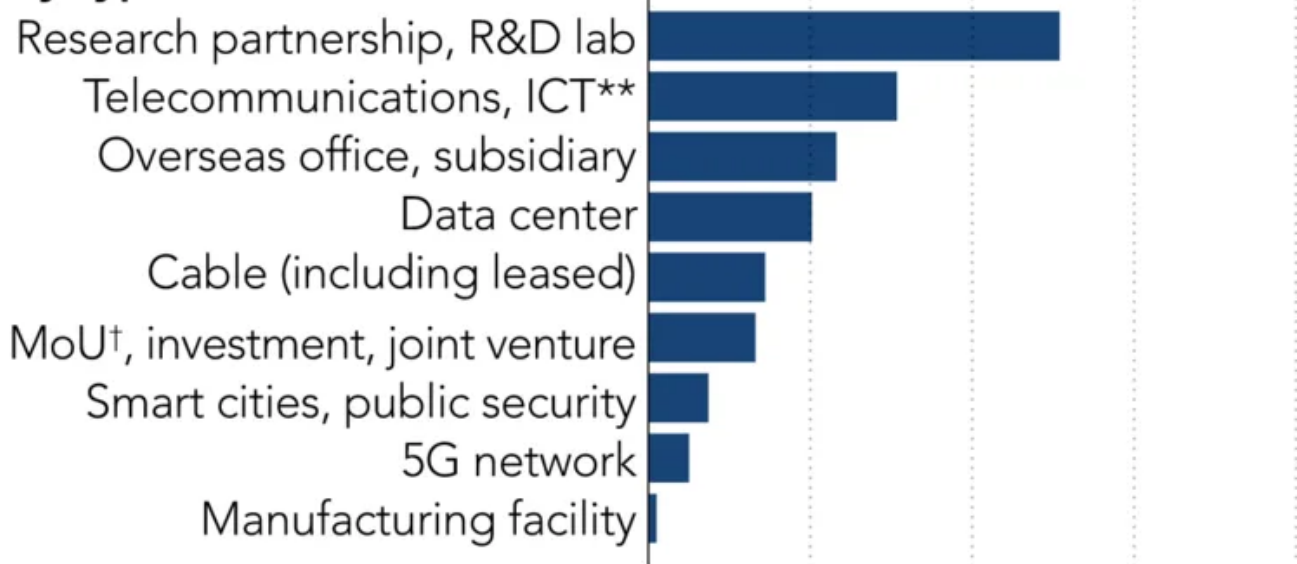
(number of international projects of 12 major companies)

By company





By type



Data as of June 14

*China Electronics Technology Group **Information and Communication Technologies †Memorandum of Understanding

Source: Australian Strategic Policy Institute

Against an increasingly tense backdrop, Trump and Chinese President Xi Jinping agreed in an emergency telephone conversation on June 18 to meet face-to-face on the sidelines of the Group of 20 summit, to be held in Osaka in late June. In the runup, discussion is rising as to whether a technology "cold war" will result in a bipolar world: one where separate digital policies and standards will divide the Chinese and U.S. spheres of influence.

Lu Fang-Ming, chairman of Asia Pacific Telecom, Foxconn's telecom unit, said previous generations of mobile technology were built along a variety of standards, but 5G is different. If the China-U.S. tensions reversed that, it would be a setback for the industry, he said.

"5G is the very first time that, so far, the world agreed to only one [mobile technology] standard, but we don't know whether that will change after all these tensions. ... I personally believe open sources and a common standard really help technology development and new adoptions [to occur] more quickly," said Lu.

Value over politics

The fear is that a tech cold war, splitting the world into China- and U.S.-led spheres, could end the benefits that have come from having global standards for components. But it is far from clear how these divisions would be drawn. For a start, the attitudes of Asian nations located in the area covered by China's Belt and Road are not as predictable as Washington may have expected.

"Huawei's research is far bigger than Malaysia's capability. We try to make use of their technology as much as possible," Malaysian Prime Minister Mahathir Mohamad said in his address to the annual Future of Asia conference hosted by Nikkei in Tokyo in late May.

Pichet Durongkaveroj, Thailand's minister of digital economy and society, told the conference that the country would not join the camp to exclude Huawei, saying, "Bangkok is friendly to players of all countries."



Meng Wanzhou, Huawei chief financial officer and daughter of the company's founder, leaves the Supreme Court after a hearing in Vancouver in May. © Getty Images

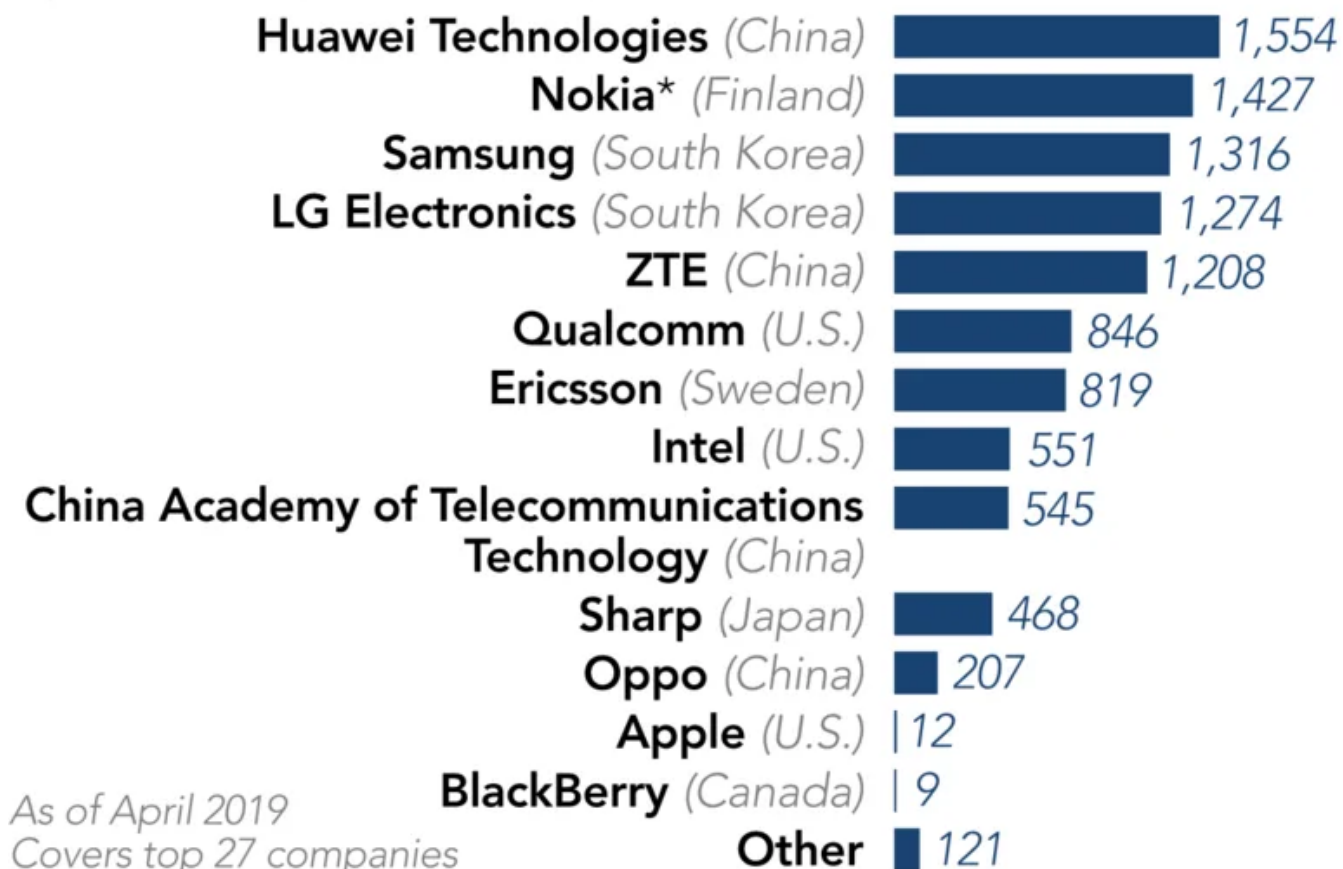
Other Southeast Asian countries are also unlikely to side with the U.S. in shutting out Huawei. Even South Korea, an ally of the U.S., has not clarified its stance, possibly because of pressure from China. Asia, therefore, is not as clear-cut as the U.S. may have thought.

One thing is clear, however: In areas where Huawei is already used, telecom infrastructure costs are lower than in places where it is not. In the 5G market, Huawei leads its rivals Ericsson and Nokia in price and technological competitiveness, and is set apart by its aggressive management style.

Some countries are "fine with potential security issues, if the price is right," says Jeffrey Towson, a private equity investor and professor of investment at Peking University in Beijing. "They are more interested in getting a modern telco network at a great price. In these non-sensitive markets, Huawei should be very successful."

Huawei tops world 5G patent ownership

Key owners of standard essential patents
(by number of patent families)



As of April 2019

Covers top 27 companies

owning 5G standard essential patents

*Including Alcatel-Lucent

Source: IPlytics

Digging in in Shenzhen

The mood in Shenzhen, known as "China's Silicon Valley," has changed dramatically since May. "Shenzhenians have been strengthening a sense of unity and emotion of nationalism, feeling that Shenzhen is being attacked by the U.S.," said an information technology consultant, who frequently shuttles between the city and Tokyo, on condition of anonymity.

Some in the West have held the belief that the trade pressure can change China's political, economic and industrial structure. The reverse may, in fact, be true. Pressure from the U.S. "is the driving power uniting Chinese tech companies to re-invent the wheel and break free from ... [Google's] Android, Qualcomm or Intel," said a venture capitalist based in Shenzhen.

Unlike **ZTE**, which was driven to the brink of collapse due to a U.S.-imposed trade ban, Huawei has its own semiconductor subsidiary, HiSilicon. Huawei is likely to be able to develop its own operating system, one that would look like Android.



China's "Made in China 2025" initiative was launched to reduce its dependence on foreign suppliers of semiconductors and other key technologies. But Paul Triolo, head of geotechnology research at U.S.-based research firm Eurasia Group, is skeptical about China's ability to achieve technological independence. China, he says, "will remain heavily dependent on U.S., Japanese, and European suppliers, and on Taiwan for the fabrication of cutting-edge chips," he said.

The belief in Beijing that the U.S. is lowering a "digital iron curtain" between the two countries is prompting an even more intense focus on becoming self-sufficient, Triolo notes. But he says it is "simply not possible for China to completely disengage" from global supply chains.

"The reality is that no country can become self-sufficient in the technologies needed to maintain and develop a modern technology-based economy," he said.

America's big tech exposure

S&P 500 companies ranked by share of revenue from China
(in percent)



Figures based on latest fiscal year results;
where country-level data unavailable, revenue
calculated using a proprietary FactSet algorithm

Source: FactSet

Some of China's main tech partners in the region are standing with it, at least for now. **Taiwan Semiconductor Manufacturing Co.**, the world's largest foundry, announced in May that it will continue shipments to Huawei, saying that it has concluded it won't breach the export ban as long as U.S.-derived technology accounts for less than 25% of the product value. South Korea's **SK Hynix** and **Sony** of Japan apparently intend to keep supplying semiconductors. Containing China in the digital sector, where supply chains have diversified, appears far more difficult than banning Iranian oil imports.

Back in Guiyang, Apple has little choice for now but to continue work on its data center project according to rules set before Trump's tech war. This includes complying with China's law that foreign companies, like Apple, must partner with local Chinese companies to build the facilities they need to host data in the country.

But Apple can also feel confident that, should China halt the data center joint venture as retaliation for Trump's attacks, it would likely hurt the Chinese partners more than Apple. This dynamic may well be what heads off a tech cold war, notes the strategy consultant working with tech companies on both sides of the Pacific.

"Trump needs a trade deal more than Xi does. So, if there is going to be a tech cold war, it might be more likely to be initiated from the China side," he noted. "But, given China still has a long way to go in terms of competing with the U.S. in technology development, I don't think that would be a logical move."

Nikkei staff writers Cheng Ting-Fang and Lauly Li in Taipei, Coco Liu in Hong Kong and Yifan Yu in Palo Alto contributed to this report.

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