5G Security

Huawei: Facts, Not Myths

The U.S. government has been spreading misinformation about Huawei for more than a year. Now, the U.S. State Department has published a recycled list of misrepresentations, while implying that State Department staff somehow understand networking technology better than the telecom operators who use our equipment every day.

To rebut the charges made against us, we're using the format the State Department employed in its latest attack. [1]

[1] https://policystatic.state.gov/uploads/2019/12/5G-Myth_Fact4.pdf

False Allegation #1: Huawei offers the cheapest equipment because it gets Chinese government funding.

The Facts

We never said our equipment was the cheapest. We just said it was affordable. Actually, in many cases our prices are higher than those quoted by other vendors. Our equipment provides value to our customers, who are demanding, knowledgeable veterans of the telecommunications industry.

As any MBA student knows, being cheap isn't necessarily a competitive advantage. Telecom operators don't automatically buy the least expensive gear they can find irrespective of quality, security, and other important criteria. They spend a lot of money to build and maintain their networks, and like all businesses, they consider many factors before making a capital-intensive investment.

But they do want value for money, and we give it to them. One reason is that we invest heavily in research and development. In 2018, for example, we spent US$14.3 billion on R&D. That's more than Apple, Intel, or Cisco spent that year – and 30% more than the combined R&D spending of Ericsson and Nokia, Huawei's two biggest competitors in the network gear business.

As a result of our years-long investment in R&D, our network equipment is typically smaller, and therefore easier to transport and install. It's also more energy-efficient and has lower maintenance costs. And yes, it's affordable.

As for our funding, it comes mainly from re-invested corporate revenue. We also get loans from international banks. Like many other companies in the telecom industry, we take advantage of government funding when it's available, but the sums involved are comparatively small. In 2018, the amount of government subsidies is equivalent to just two-tenths of one percent of our total revenue. We don't get special support from the Chinese government. Nor does the government protect us by barring our competitors from the Chinese market: In 2018, both Ericsson and Nokia won contracts worth billions of dollars in China.

False Allegation #2: Huawei's 5G equipment isn't really advanced, and its 5G patents lack "relevance and value."

The Facts

According to CPA Global[2], an intellectual property consultancy, we have the highest volume of 5G patents and the largest number of granted patent families that are core to 5G. In an illogical attempt to prove that Huawei's 5G gear isn't the most advanced, the U.S. State Department compares Huawei's patents with those of Sharp, Intel, and LG – companies that are not 5G equipment suppliers.

President Trump announced America's 5G plan in April 2019, but Huawei's research began a decade ago, giving us a considerable head start. Today, we're the only company in the world that makes 5G handsets, 5G base stations, 5G optical fiber, and 5G core network hardware and software.

We hold 20% of all 5G patents – more than any other network equipment vendor in the world. Our technology is acknowledged to be 12 to 18 months ahead of the competition. In November 2018, BT's Chief Network Architect, Neil McRae, called Huawei "the only true 5G supplier."

[2] http://www.iprdaily.com/article/index/15259.html?from=singlemessage&isappinstalled=0

False Allegation #3: Huawei does not share Western values.

The Facts

In the digital domain, the relevant values are the right to security and privacy. Huawei values these things just as much as American citizens do – and perhaps more than the U.S. federal government does. As Huawei has stated publicly[3], we comply with all applicable privacy laws globally, including the EU's General Data Protection Regulation, or GDPR. This European law will quickly become a global norm, as customers begin demanding that companies protect their personal data everywhere in the world. Huawei is adjusting our data-handling processes to comply with GDPR requirements around the world. We believe other multinationals will soon do likewise.

As for security, no Huawei customer has ever experienced a major cybersecurity breach, and no evidence exists that Huawei has ever been compromised by the Chinese government or any other actors. The United States, on the other hand, has a long track record of modifying digital products to collect intelligence.

A report published by the European Parliament document in 1999[4] reveals that from the 1940s until the early 1990s, the U.S. National Security Agency (NSA) rigged encryption systems sold by Crypto AG, a Swiss company, enabling the agency to read the coded diplomatic and military traffic of more than 120 countries. Later that decade, the NSA reduced the level of security in non-U.S. versions of Internet browsers and email programs made by Lotus Notes[5], Netscape[6], and Microsoft[7] to make files encrypted with those programs easy to decrypt.

More recently, as revealed in the book *No Place to Hide: Edward Snowden, the NSA, and the U.S. Surveillance State* by American investigative journalist Glenn Greenwald, the NSA intercepted Cisco routers and covertly installed spyware on them before they were shipped to customers. The Guardian[8] also reported that the agency's ongoing "Bullrun program" places backdoors into commercially available cryptographic software and hardware or weakens their encryption so that the NSA can break their code.

Huawei does not participate in the implementation of the U.S. CLOUD Act, a law that provides the U.S. government access to any data stored on servers, wherever located, managed by U.S. technology companies.

False Allegation #4: Huawei steals intellectual property.

The Facts

Huawei is the largest maker of telecommunications equipment in the world. Five hundred telecom operators buy our equipment and have done so for well over a decade. We also work with more than 200 companies in the Fortune Global 500. It is impossible to attain this level of commercial success by theft. Had we tried to do so, customers would have shunned us years ago.

Huawei does not need to steal anyone else's intellectual property because we have plenty of our own. Last year, we filed more than 5,000 patents with the World Intellectual Property Organization. We are the #1 patent-holder for 5G technology, holding roughly 20 percent of all 5G patents.

[3] https://www.huawei.com/it/privacy-and-gdpr

[4] http://www.europarl.europa.eu/RegData/etudes/etudes/join/1999/168184/DG-4-JOIN_ET%281999%29168184_EN.pdf

[5] http://www.cypherspace.org/adam/hacks/lotus-nsa-key.html

[6] https://edition.cnn.com/TECH/computing/9807/27/security.idg/

[7] https://www.tweaktown.com/news/31729/edward-snowden-reveals-that-microsoft-have-built-a-backdoor-in-outlook-com-for-the-nsa/index.html

[8] https://www.theguardian.com/world/2013/sep/05/nsa-gchq-encryption-codes-security

We pay royalties for the intellectual property we license from others. Since 2001, Huawei has paid more than US$6 billion to license IP from third parties, 80% of which was paid to U.S. companies.

In an attempt to vilify Huawei, our detractors point out that we have been sued by some of our competitors over alleged violations of IP rights. They may not realize that the tech sector is marked by frequent IP litigation, or that Huawei is involved in fewer IPR battles than its peers. For example, in 2018, we were involved in 29 patent defense cases in the U.S., according to Lex Machina. That compares with 58 for Apple, 40 for Samsung, and 48 for Google. And over Huawei's 30-year history, no court has ever concluded that Huawei engaged in malicious theft of intellectual property, nor has any court required the company to pay damages for this.

False Allegation #5: Removing Huawei gear from networks will be easy and quick.

The Facts

The State Department says the cost of replacing Huawei equipment in Europe is estimated to be "only US$3.5 billion." Although replacing network equipment is relatively common, removing Huawei gear will certainly cost more than the U.S. government estimates. According to a report from *The Daily Mail*[9], a ban stopping Huawei from supplying kit for Britain's 5G mobile networks would cost firms more than 1 billion pounds (US$1.3 billion). That's in the U.K. alone. A forthcoming study by Oxford Economics estimates that the economic impact of banning the company from 5G networks could be as high as US$11.8 billion in the U.K., US$13.8 billion in Germany, and US$15.6 billion in France. These estimates do not take into account the costs incurred by other European countries.

In the United States, ripping Huawei gear out of the network would force about 40 small wireless operators in underserved, remote, and rural communities to scrap millions of dollars' worth of equipment. Some of these small operators have said that the cost of ripping out Huawei gear could push them into bankruptcy. That, in turn, could leave American homes, schools, hospitals, farms, and small businesses without affordable cell phone or Internet service.

Jeff Johnston, an economist at CoBank, which provides credit to U.S. farmers, estimated that replacing existing Huawei equipment in the United States would cost rural carriers approximately US$1 billion and take between three and seven years.

False Allegation #6: The U.S. campaign against Huawei is not linked to the trade war with China.

The Facts

While the main impetus behind Washington's campaign against Huawei is geopolitical, the campaign is also linked to the trade war. President Trump has admitted this. Commenting on the possibility of a trade deal with China, President Trump said in May 2019: "If we made a deal, I could imagine Huawei being possibly included in some form or some part of it."

[9] https://www.dailymail.co.uk/money/markets/article-7765081/After-Boris-Johnson-raises-security-fears-experts-warn-banning-Huawei-drive-mobile-bills.html

False Allegation #7: Huawei can easily hide harmful backdoors in its products.

The Facts

No Chinese law requires private Chinese companies to engage in cyber-espionage, and the Chinese government does not control private companies headquartered within its borders.[10/11] Attorneys from Clifford Chance, a global law firm headquartered in London, have concluded that Chinese law does not give Beijing the authority to compel telecommunication equipment firms to install backdoors or listening devices – or to engage in any behavior that might compromise network security.

Huawei is the world's most closely scrutinized seller of telecom equipment. Independent organizations in the U.K., Germany, and Belgium continually test our products in a way that neither they, nor anyone else, tests the products of any other network equipment vendor. Despite considerable pressure from the U.S. government, security agencies in Germany and the U.K. have said that any risk posed by Huawei products is manageable. Since our founding in 1987, not one of Huawei's customers has ever experienced a major cybersecurity breach. For that reason, among others, our customers trust us, and they trust our products.

Owing to the level of scrutiny to which Huawei and our equipment are subjected, and to the sophistication of network security technology, any attempt to install a backdoor into our hardware or software would be detected by the customer. Telecom operators scan their networks continuously for abnormalities, 24 hours a day. Any deviation from the normal pattern would sooner or later throw up a red flag. Once that happened, no company or government in the world would ever buy our equipment again. We would collapse, and 194,000 people would be out of a job.

False Allegation #8: Huawei has unusually close ties to the Chinese government, and the identity of its owners is a "closely guarded secret."

The Facts

Let's take the second false allegation first. Far from being "a closely guarded secret," the identity of our shareholders is available to anyone who wants that information. We regularly invite reporters and other visitors to our company headquarters, where they are free to peruse a shareholder registry that identifies all of our shareholders by name.

Huawei is a private company that is 100% owned by our employees. Our largest individual shareholder, CEO and company founder Ren Zhengfei, owns just over 1% of the firm. The other 99% of our shares are held by Huawei's union, which is wholly owned by our employees. The union's leaders are elected by union members. They are not appointed by the Chinese government or any government-affiliated organization. The union does not report on Huawei's business operations to other Chinese trade unions at any level.

Although we are privately held, we still publish an annual report containing detailed financial statements. The report is audited by KPMG.

As for government ties: We have no special relationship with any government, including the government of China. While any tech company of our size will have contacts with various governments – including, naturally, the government of the country in which we are based – none of

[10] Yang Jiechi: Hope the United States (US) Side Will Work with the Chinese Side to Well Implement the Consensus of the Two Heads of State and Promote Bilateral Relations Based on Coordination, Cooperation and Stability available At http://www.china-embassy.org/eng/zgyw/t1638953.htm

[11] "Foreign Ministry Spokesperson Geng Shuang's Regular Press Conference on February 18, 2019," Ministry of Foreign Affairs of the People's Republic of China (Feb. 18, 2019), available at http://www.fmprc.gov.cn/mfa_eng/xwfw_665399/s2510_665401/2511_665403/t1638791.shtml

those contacts are out of the ordinary. Plenty of U.S. companies have extremely close ties to Washington, especially those in the defense, engineering, energy, and security sectors, and no one seems terribly concerned about that.

Much is made of the fact that our founder served in the army back in the 1970s. This just makes Huawei one of many successful companies founded by veterans.[12] Many successful U.S. companies were started by people with military backgrounds.

False Allegation #9: Blocking Huawei won't slow the pace of 5G rollouts worldwide.

The Facts

Telecom operators are the ones who will roll out 5G networks. They, not the U.S. State Department, know whether blocking Huawei will delay the rollout of 5G.

In fact, operators in the U.K., Germany, and other countries have said conclusively that blocking Huawei will delay the rollout of 5G networks. For example, Vodafone's chief technology officer, Scott Petty, said in March 2019 that a Huawei ban in the U.K. would slow down 5G deployment (and cost hundreds of millions of pounds, an expense that would be passed on to British businesses and households)[13]. Vodafone group CEO Nick Read also argued at a 5G event in December 2019 that scrutiny of Huawei was holding back European technology development, which would ultimately result in jobs migrating away from the continent.[14] As a result, Read said Europe is "the only region that's severely held back" by scrutiny of the vendor.

While there are other 5G equipment suppliers, Huawei's technology is more advanced. In 2019, T-Mobile postponed the commercial use of its 5G network. AT&T announced that the speed of its so-called 5G network was less than 200Mbps, while Korea's LG U+, facilitated by the deployment of Huawei 5G technology, can provide download speeds exceeding 1.3Gbps.

According to Oxford Economics, preventing Huawei from building out 5G infrastructure could increase a country's 5G investment costs by anywhere from 8% to 29% over the next decade. This could delay 5G access to millions of people, resulting in slower technological innovation and reduced economic growth.

Basic economics tells you that excluding a significant competitor can be particularly problematic when there are only a handful of competitors to begin with. In the United States, more than 90% of wireless infrastructure sales are made by just two companies: Ericsson and Nokia. The result of such concentration tends to be inferior technology, sold at higher prices.

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If you've actually read this far, thank you – sincerely. We at Huawei sometimes feel that those who fear us have their minds made up, and are immune to any evidence that supports our case. If you'd like to know more, facts.huawei.com has additional information.

[12] https://www.businessinsider.com/companies-started-by-military-veterans-2016-11#usaa-was-founded-by-a-group-of-army-officers-9

[13] https://www.theregister.co.uk/2019/03/07/vodafone_huawei_ban/

[14] https://www.mobilenewscwp.co.uk/News/article/huawei-exclusions-harming-european-tech-progress-argues-vodafone-group-ceo