Highlights

eBay Edge Data Centers

eBay has over 1.5B active listings. 159M users are active on eBay. Over 19M sellers have accounts on eBay. eBay has over 109M visitors to its website each month. To store data for those users, eBay relies on multiple data centers located around the United States. They opted to work with Bloom Energy and Vapor IO for their edge computing needs for a more sustainable approach to store, process, and move data. Edge technology's data centers help collate data by connecting distributed facilities to hyperscale data centers. They can also work as separate units, independent of the main servers which is a benefit in securing against cyberattacks and localizes information during downtimes.

Benefits include a renewables-based power engine to reduce impacts of climate change, lower power requirements than traditional data centers, and generous compute efficacy with minimal space requirements "Technology-led innovation is changing retail and revolutionizing how people shop and pay," stated former eBay President and CEO John Donahue. "We also want to revolutionize how shopping is powered. Running our data centers primarily on reliable, renewable energy, we intend to shape a future for commerce that is more environmentally sustainable at its core."

Sold for a staggering $168M, Gigayacht is the most expensive item auctioned off on eBay.

The first transaction on eBay was for $14.83 for a broken laser point.

A third of buyers on eBay are 35- to 49-year-olds.

60% of eBay listings have a mobile touchpoint.

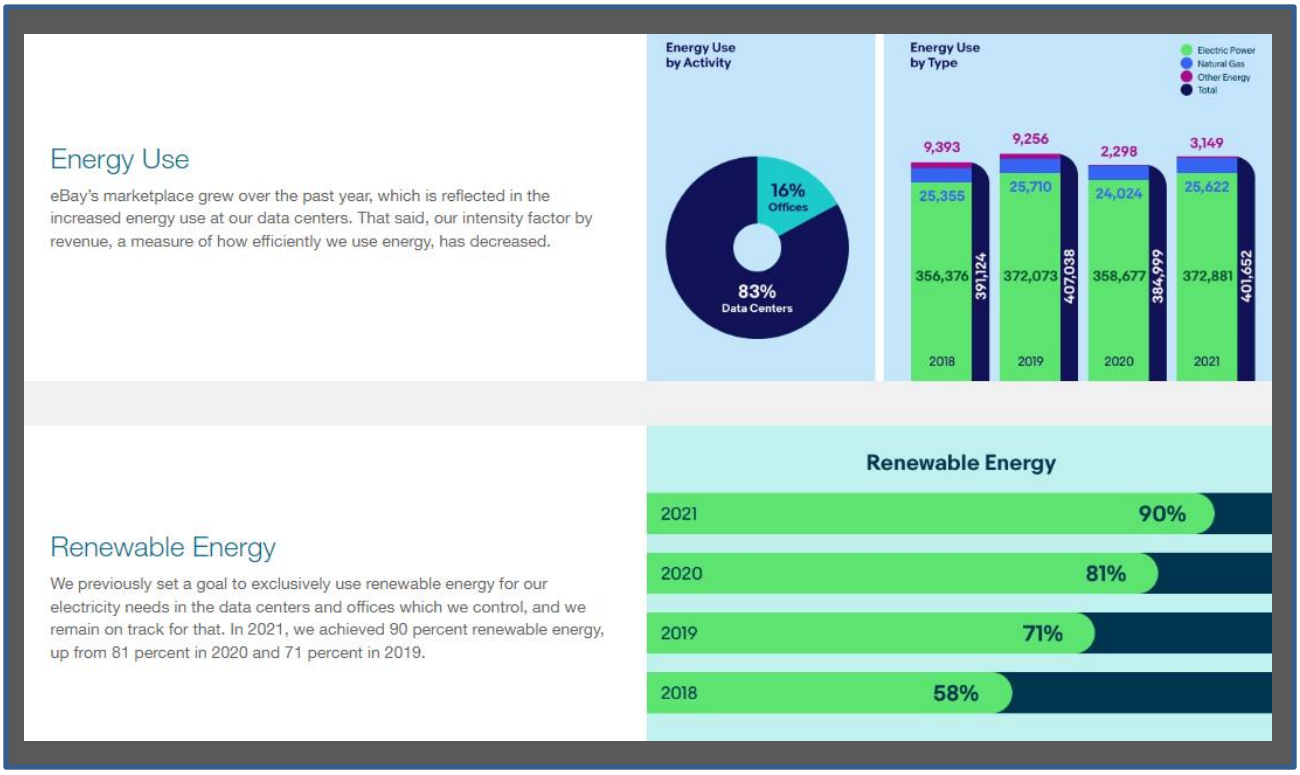
An alleged identity thief defrauded countless eBay users out of $2M.

The explosion in use of devices, the demand for low latency, computing and storage ability throughout the world, and the need to transmit large data packets over short distances to

prevent latency and reduce costs, has created the need for edge data centers, located closer to the end user. 40% of organizations expect to require edge computing capabilities.

Bloom Energy Servers are incredibly energy dense. The Bloom Power Tower, as demonstrated in an installation in Korea, is capable of producing 8 MW of 24/7 power in the footprint a little larger than a basketball court. Like other distributed generation resources, Bloom Energy Servers move power generation to the location where electricity is consumed increasing reliability and efficiency while giving data center operators control over their energy costs.

Vapor IO designs and builds modular data centers. Vapor Edge Modules (VEMs) are built for continuous, lights-out, autonomous operation in remote locations. Self-contained, energy-efficient, and secure, these edge data centers are designed for quick, consistent deployments and unattended operation. Vapor IO's Kinetic Edge architecture is the unique combination of high-speed software-defined networking, edge colocation and edge exchange — all pre-integrated into a single package from a single supplier—lowering the cost and complexity of edge computing. In any given market, the target latency between adjacent facilities is less than 1 ms, making geo-redundant failover a realistic option. In markets where our customers are building 5G systems, the target latency to remote radio heads and adjacent facilities is less than 100 µs.



Cloud Computing's Green Revolution

Google, AWS Boast 6x Energy Efficiency Over Average Data Centers

Many global companies have begun to tackle climate change by investing in on-site renewable energy. While Google, AWS and Microsoft Azure are large purchasers of renewable energy and renewable energy credit offsets, these cloud computing leaders are also tackling climate change by reducing their overhead energy consumption. To be sure, energy efficiency is an often neglected yet incredibly important piece of climate change action. While data centers as a whole have become more efficient over time, hyperscale data centers have outpaced smaller data centers in energy use reduction.

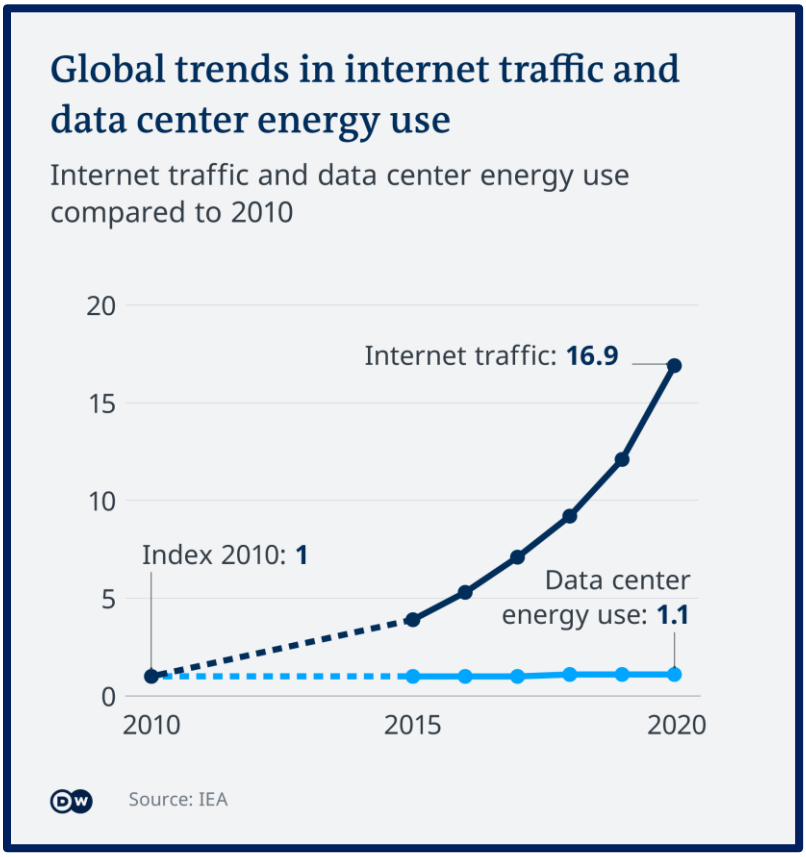
One of the ways to measure data center energy efficiency is by examining a data center's Power Use Effectiveness (PUE) value. The PUE, when multiplied by equipment power

consumption, gives an estimate of the total power needed to run the data center, including the data center infrastructure (i.e. cooling, lighting, controls).

Research has shown that hyperscale data centers are far more efficient than smaller, local servers. The opportunities to improve data center PUE increase with larger data centers that have the ability to develop better airflow management and employ more efficient cooling equipment. This makes cloud computing giants like Google, AWS, and Microsoft Azure environmentally-friendly data storage options.

Google has been leading the way in energy efficiency. Since 2014, Google has been using machine learning to automatically optimize cooling in their data centers. This AI-powered recommendation system has already delivered 30% energy savings on average. Additionally, Google's data centers raise the temperature to 80°F, use outside air for cooling, and build energy efficient custom servers to lower overhead energy usage.

AWS recently optimized the airflow medium used in their data center cooling systems. This medium allows air to pass through the HVAC system more efficiently, saving fan energy and reducing the energy use of cooling equipment by 20%. Additionally, they use computational fluid dynamics modeling tools to optimize their data center design for energy efficiency prior to construction.



In 2021, the average annual PUE2 for Google's global fleet of data centers was 1.10, compared with the industry average of 1.573. AWS data centers have a similar PUE of 1.07 to 1.15, while Microsoft Azure has an average PUE of 1.18.

As shareholders and board members begin to place more value on sustainability, cloud computing's energy efficiency is a compelling selling point.

KIOXIA at VMWare Explore: New Technologies, Products, and Form Factors in the Spotlight

KIOXIA

KIOXIA America, Inc. highlighted its new technologies at VMWare Explore and hosted technology session, “KIOXIA and Dell: Advancing Storage Technology for Multi-Cloud Platforms” which focused on efforts to bring higher performance to the converged and hyperconverged technology space. KIOXIA offers one of the broadest portfolios of SSDs available.

VMWare Explore focused on all of the ways that innovators are coming together to build a world in which the cloud works the way that people need it to, with more options and less complexity.

Demos included:

- VMware vSAN™ and Dell PowerEdgeTM Servers: Featuring KIOXIA CD7 Series Data Center NVMe® and RM6 Value SAS SSDs
- Accelerating Machine Learning with Dell PowerEdge GPU Servers: Featuring KIOXIA CM6 Series Enterprise NVMe SSDs
- VMware Greenplum® Database on PowerFlexTM software-defined-infrastructure: Featuring KIOXIA CM6 Series Enterprise NVMe SSDs

“VMWare Explore is a perfect opportunity to interact with our ecosystem members as we work together to redefine what’s possible in the multi-cloud era – and the timing couldn’t be better,” noted Neville Ichhaporia, vice president of SSD marketing and product management, KIOXIA America, Inc. “Recently, KIOXIA has introduced a variety of SSD solutions that enable partners to enhance their multi-workload and multi-workspace IT infrastructures of today while planning

for the future, many of which we will showcase at Explore. For example, we have 24G SAS SSDs bringing unprecedented speeds to SAS architectures, PCIe® 5.0 SSD solutions doubling SSD performance over PCIe 4.0, and new form factors enabling higher performance and density than ever before."

KIOXIA America, Inc.
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We're LIVE at booth #1306 for #VMWareExpress 2022! Check out our broad SSD product portfolio in-person and have a chat with our industry experts at our booth. bit.ly/3ecW52Q

Spotted in video: Steve Garceau, Director, Product Management of KIOXIA America, Inc.

Vietnam Modeling China's Approach to Censorship

Vietnam has pass new laws requiring technology firms to store their users' data locally and set up local offices. These new rules apply to social media companies like Google and Facebook and telecommunications operators. While Vietnam is a significant source of users and revenue for both Google and Meta, neither has an official office in the country. "Data of all internet users ranging from financial records and biometric data to information on peoples' ethnicity and political views, or any data created by users while surfing the internet must be stored domestically," the decree stated. According to the decree, local offices may be either branches or representative offices of foreign enterprises.

Vietnamese authorities will have the right to issue data collection requests for purpose of investigation and to ask service providers to remove content if it violates government's guidelines. Vietnam maintains tight media censorship and tolerates little dissent.

Although the law takes effect on October 1, foreign firms will have 12 months to set up local data storage and representative offices after receiving instructions from the Minister of Public Security, and will have to store the data onshore for at least 24 months. System logs will need to be stored for 12 months. After this grace period, authorities reserve the right to make sure affected companies are following the law through investigations and data collection requests, as well as content removal orders.

The data affected extends into social elements – including groups of which users are members, or the friends with whom they digitally interact. The decree applies to businesses that provide telecom services, store and share data in cyberspace, provide national or international domain names for users in Vietnam, e-commerce, online payments, payment intermediaries, transport connection services operating in cyberspace, social media, online video games, messaging services, and voice or video calls.

Vietnam's new cybersecurity laws are akin to China's model of internet control. In 2019 a cybersecurity law went into effect that grants the government authority to delete or block access to data infringing upon cybersecurity, defined as "national security, social order and safety, or

the lawful rights and interests or agencies, organizations and individuals" granting the government authority to inspect computer systems on the basis of working to improve cybersecurity; and criminalizing propaganda against the Socialist Republic of Vietnam.

Countries around the world have begun to exert tighter control over the internet within their borders for a variety of reasons, including a desire to better protect the country from foreign cybersecurity threats, a desire to force data to be stored locally in order to bolster domestic innovation, and a desire to spy on and censor the internet with greater ease.

Freedom House labeled China the "world's worst abuser of internet freedom" for the fourth year in a row. The Chinese government leads the world in tightly controlling its domestic cyberspace. It blacklists IP addresses. It mandates the deletion of politically threatening internet content. It requires certain kinds of data to be stored within Chinese borders. Beijing is active in international forums to promote this model of internet governance as a globally accepted norm. However, China's internet governance system unique in that its internet censorship regime is scaled and incredibly sophisticated. The government has the human power and the technological capability to implement manual content sorting, deep packet inspection, and machine learning applications. The Chinese government also evolves its internet control practices relatively quickly in light of technological changes and censorship workarounds. China invests resources into internet management and control in ways that are simply impossible for other nations. China's large population and global economic influence give it extra weight in promoting and enforcing its internet governance model.

Moscow desires censorship and control to the level achieved in China, but has faced technical challenges. And, the objectives of the current Russian government differ from those of the government in Beijing. China's internet governance is oriented toward balancing the economic benefits of internet openness with the political and security benefits of internet control; Beijing wants Chinese-incorporated companies to be globally competitive at the same time as it wants to closely manage information flows and their related risks to regime stability. Russian is more focused on internet control, period. There is much less desire among Russian leadership to maintain internet openness, perhaps in part because of their less prominent technology sector.

Analysts have compared Vietnam's new law to China's approach –internet control, censorship, and surveillance. Vietnam's law clearly describes spying on citizens and controlling information flows, not minimizing vulnerability to cybersecurity threats. Immediately after the law took effect,

the Vietnamese government said Facebook was violating the law by allowing “slanderous” content about the government to remain on the platform. Slanderous or disruptive information is now considered in Vietnam to be “an infringement of cybersecurity.” This law itself built on previous legislation that granted the government explicit powers to filter the internet and take down politically undesirable content. The Committee to Protect Journalists, in October 2019, ranked Vietnam as one of the 10 most censored countries on earth. Its “raft of repressive laws and decrees,” they wrote, “sharply [curtail] any media criticism of the one-party government, its policies, and its performance” via digital technologies

Vietnam’s internet control push mirrors China’s with respect to the data localization element of the law. Data localization requires specific types of data to be stored in particular geographic locations and/or handled in certain ways (like not transmitted outside those locations, for instance). China has strict data localization laws that use broad definitions of “critical information infrastructure” to define what kinds of data can be regulated under existing provisions. Vietnam’s action forces companies to “save/maintain system logs” should the government desire to access digital information, and it mandates that certain foreign enterprises collecting data within the country open offices within Vietnamese borders. The U.S. embassy in Hanoi has said this data localization law “might not be consistent with Vietnam’s international trade commitments”— imposing unfair restrictions on data needed to perform services. This is a claim also leveled against China’s data localization policies. In both cases, data localization is presumably a way, at least in part, to increase government access to others’ stored data.

In China, the MPS is involved in everything from internet regulation to personal information protection. In Vietnam, the Vietnamese Ministry of Public Security drafted and proposed the new cybersecurity law underscoring the intent of the law as aimed at online content control. Vietnam has been a recipient of Chinese government funding yet Vietnam is resisting Chinese influence in other areas such as deploying 5G technology without using Huawei’s equipment due to United States security concerns and recommendations.

Vietnam is an important hub for tech manufacturing for companies including Foxconn, Samsung, Microsoft, Intel, and LG. Apple suppliers Luxshare Precision Industry and Foxconn are considering moving production of Apple Watches and MacBooks out of China for the first time and into Vietnam. Prime minister Pham Minh has expressed a desire for an even greater presence from Big Tech.

Upcoming Conferences

September 12-14	Gartner Security & Risk Management Summit, London
September 12-15	Storage Developer Conference, Fremont, CA
September 13-14	CISO Forum, Virtual
September 14	Cybersecurity Expo, Phoenix
September 19-20	Industry of Things World, Berlin
September 19-22	NVDIA GTC 2022, Virtual
September 20-22	Dreamforce, San Francisco
September 22-23	Global Cyber Conference, Zurich
September 26-28	InfoSec World, Colorado Springs
September 27-28	International Cyber Expo, London
September 28-29	IoT World, Santa Clara
September 28-30	Spiceworld, Austin, Hybrid
October 3-4	451Nexus, Las Vegas
October 5-6	Evolve, Vegas
October 6-7	Big Data & AI Toronto
October 10-12	ISC Security Congress, Las Vegas
October 11-12	Edge Computing World, Santa Clara, CA
October 11-13	Google Cloud Next, Virtual

October 17-19	Authenticate 2022, Seattle
October 17-20	NAB Show New York, NYC
October 17-20	Gartner IT Symposium/Xpo, Orlando
October 18-20	OCP Summit, San Jose, CA
October 24-27	ICS Cybersecurity Conference, Hybrid/Virtual
November 1-3	NetApp INSIGHT 2022, Virtual
November 13-18	SC22, Dallas
November 16	San Diego Cybersecurity Conference, Hybrid
November 16	Threat Hunting Summit, Virtual
November 18-19	Data Strategy & Insights (Forrester Research), Virtual
November 21-22	Gartner IT Infrastructure, Operations, & Cloud, London
November 28-Dec 2	AWS re:Invent, Las Vegas
December 1-2	AI & Big Data Expo Global, London
December 6	Security Operations Summit, Virtual
December 6-8	Gartner IT Infrastructure, Operations & Cloud, Las Vegas
December 10-14	Edge 2022: International Conf on Edge Computing, Hawaii
December 10-14	Cloud 2022: International Conf Cloud Computing, Hawaii
January 5-8	CES, Las Vegas & Virtual
April 24-27	RSA Conference, San Francisco
May 22-25	Dell World, Las Vegas
June 20-22	HPE Discover, Las Vegas