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Data Center Growth Fuels AI-Related Patent Disputes

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I. BACKGROUND

The rise of generative artificial intelligence (AI) has triggered a massive expansion of data center infrastructure across the United States.[1] This growth has fueled an increase in patent infringement lawsuits targeting the technology that supports these data centers.[2] The United States is home to the largest number of data center facilities in the world. The American Edge Project estimates that the U.S. has over 4,000 operating data centers and nearly 2,800 additional sites planned or under construction.[3] By 2027, industry projections estimate that AI data centers will account for 28% of the broader data center market.[4] According to McKinsey projections, the total investment required in data center infrastructure globally is estimated to reach $6.7 trillion by 2030, of which approximately $5.2 trillion would be related to AI workload demands.[5]

Unlike traditional computing workloads powered by standard central processing units (CPUs), AI facilities require a different infrastructure. They rely on graphics processing units (GPUs), which can perform thousands of computations simultaneously.[6] According to the Goldman Sachs Global Institute, while cutting-edge AI systems in 2022 typically integrated eight GPUs per server, by 2027 leading systems are projected to scale to 576 GPUs per rack, requiring approximately 600 kilowatts (kW) of power.[7]

To support these power requirements, AI facilities require high-speed, low-latency interconnects and liquid cooling systems. Because traditional air cooling is insufficient to handle the heat generated by the GPUs, these systems circulate coolant directly to server components to provide advanced thermal management. These data center facilities must also remain scalable and adaptable to changing AI infrastructure demands.[8]

II. LAWSUITS

As data center operators expand their AI infrastructure to meet increased demand, these specialized technical requirements have increasingly become the subject of patent infringement lawsuits. Recent lawsuits have targeted technologies ranging from the advanced cooling systems and networking infrastructure to specialized processors.

Texas, which hosts the second largest concentration of data centers in the United States behind Virginia, has seen an increase in patent disputes.[9] Valtrus

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Innovations Ltd., which owns and licenses patents previously held by Hewlett Packard Enterprise Co., has become a frequent plaintiff in this area of litigation.[10] In January 2024, Valtrus sued Equinix Inc. in the U.S. District Court for the Eastern District of Texas, alleging infringement of its patents related to data center cooling technology.[11] Later, in the same Texas court, Valtrus and Key Patent Innovations Ltd. filed suit against Digital Realty Trust, Inc., asserting seven patents covering cooling systems, atmospheric control, power management, and facility evaluation technologies. The case was voluntarily dismissed with prejudice in January 2025, with the settlement including a carve-out for claims related to Digital Realty's use of technology supplied by Vertiv Corp.[12] These cases reflect a broader trend of increased patent enforcement activity targeting AI data center infrastructure operators.

Many of the patents asserted by Valtrus concern cooling systems and power-supply technologies commonly used in AI data center operations. In April 2026, Valtrus filed additional suits in the Northern District of Illinois against five defendants: CoreSite, Netrality Properties, Lumen Technologies Inc., NTT Global Data Centers Americas Inc., and Prime Data Centers. In these actions, Valtrus asserted two patents and alleged that each defendant used infringing cooling equipment or software supplied by Vertiv Corp.[13]

Valtrus's litigation activity prompted a response from Vertiv Corp., a major supplier of cooling infrastructure to the data center industry. Vertiv filed a declaratory judgment action against Valtrus in the Eastern District of Texas, seeking to invalidate several of the asserted patents.

Separately, disputes have emerged around data processing unit (DPU) technology. DPUs are specialized co-processors designed to offload data management and networking tasks from the main CPU and GPU and are increasingly used in large-scale AI server deployments. Xockets Inc., a Texas-based startup, is an active litigant in this space and has filed multiple suits involving DPU technology.[14] In September 2024, Xockets sued NVIDIA and Microsoft *in the U.S. District Court for the Western District of Texas*, alleging that both companies unlawfully utilized its patented DPU technology.[15] Xockets alleges that NVIDIA began using the patented technology after acquiring Mellanox Technologies in 2020.[16] It further alleges that its patented DPU technology is used within NVIDIA's GPU-enabled AI server platforms and, by extension, within Microsoft's generative AI platforms that leverage those systems. The complaint also asserts antitrust claims, alleging that NVIDIA and Microsoft participated in a concerted effort to suppress Xockets' sales opportunities and reduce the value of its intellectual property.[17] Xockets seeks damages and injunctive relief to halt sales of the allegedly infringing products.[18]

In June 2025, Xockets filed two patent infringement complaints against Amazon.com, Inc. and Amazon Web Services, Inc. in the Western District of Texas. The first complaint asserts three patents directed to Xockets' "new cloud processor" and DPU computing architecture, while the second asserts four patents directed to its "new cloud fabric" and switching-plane architecture.

According to the complaint, Amazon held what Xockets described as a "Deep Dive" meeting with the company in 2017, during which Amazon carried out substantial due diligence regarding Xockets' DPU technology while expressing interest in acquiring the company. Xockets alleges that Amazon ultimately did not proceed with the acquisition and launched its Nitro v3 DPU system less than a year later, incorporating architecture that Xockets claims is covered by its patents. The complaint further alleges that Amazon has deployed Nitro DPUs in more than 20 million servers throughout its infrastructure and that each server generates substantial cost savings and revenue benefits attributable to the accused DPU technology. Xockets seeks both damages and injunctive relief.

The DPU disputes illustrate the effect these lawsuits may have on competition in AI infrastructure.[19] If Xockets were to prevail against NVIDIA, the company could face licensing costs, redesign requirements, or potential limitations on the sale of the accused systems. Similarly, a judgment against Amazon could affect the Nitro DPU platform underlying Amazon's cloud infrastructure. Such outcomes would affect not only the companies involved, but also the enterprises and AI developers that rely on these systems.

III. WHY DATA CENTERS ARE ATTRACTIVE TARGETS

The concentration of capital and technology in AI data centers makes them attractive targets for

patent holders.[20] A single facility may incorporate multiple patented technologies across cooling systems, power management, networking infrastructure, specialized processors, data storage, and distributed computing systems. Each of these technology categories has been the subject of patent litigation in recent years, and integrating them within a single facility presents patent owners with multiple potential infringement theories against a single operator.

The concentration of capital and technology in AI data centers makes them attractive targets for patent holders.

Strategic considerations also incentivize plaintiffs to target data center operators rather than the vendors that supply component technologies. An operator assembling a facility may purchase cooling systems from one company, servers from another, networking equipment from a third, and software from yet another company. The resulting integrated system may allegedly infringe a patent even if no individual component would infringe on its own. By suing the operator, a plaintiff may attempt to capture the full scope of the allegedly infringing activity without separately litigating against each vendor. The Valtrus enforcement campaign illustrates this dynamic. Rather than suing Vertiv directly for its cooling products, Valtrus sued data center operators that used those products, prompting Vertiv to file a declaratory judgment action.[21]

This strategy may also provide advantages in calculating damages. A component supplier's revenue from a particular product line may be limited compared to the value the data center operator derives from an integrated AI facility. Patent owners may therefore seek recovery from multiple operators rather than negotiating solely with a single vendor. Xockets' claims against Amazon illustrate the scale of potential exposure: the complaint alleges financial benefits to Amazon of $15,000 to $30,000 per server across more than 20 million servers. Data center operators may also be easier to identify and investigate than individual vendors operating within complex supply chains.[22]

IV. LOOKING AHEAD

As investment in AI data centers continues to increase, patent litigation involving this sector is also expected to increase. Cooling systems, networking hardware, and specialized processors have already emerged as recurring subjects of infringement suits, and data center operators should expect continued litigation activity across these categories.

These lawsuits may also have broader consequences for AI infrastructure deployment. Injunctive relief, if granted in cases such as Xockets' suits against NVIDIA or Amazon, may delay or disrupt deployment of AI hardware and cloud infrastructure.[23] The court has already held a hearing on Xockets' motion for a preliminary injunction in the NVIDIA matter, and Xockets has indicated that it intends to seek a permanent injunction following trial[24]. Settlement patterns, including the resolution of the Valtrus cooling-patent dispute against Digital Realty, suggest that some operators may opt to pay licensing fees rather than risk expensive and time-consuming litigation.

For operators, the litigation environment highlights the importance of understanding what technologies are deployed within their facilities and the potential patent exposure associated with those technologies. For suppliers, the trend toward suing end users rather than manufacturers may not eliminate risk; it may simply defer it, as operators may choose to seek contribution from their vendors following settlement or adverse judgments. The Valtrus-Vertiv dispute demonstrates how these lawsuits may extend beyond operators to affect suppliers whose technologies are incorporated into AI infrastructure. With significant investment continuing to flow into AI data centers, rapid technological development, and increasingly complex supply chains, AI data centers are likely to remain significant targets for patent disputes for the foreseeable future.

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