

How AI is affecting the U.S., European data center markets

Chase McWhorter, Institutional Real Estate, Inc.'s managing director, Americas, spoke with Principal Asset Management's **Casey Miller**, managing director of U.S. data centers, and **Paul Lewis**, managing director of European data centers, about how AI is affecting the data center investment landscape. Following is an excerpt of that conversation.

How are data centers adapting to accommodate the AI computing boom?

Paul Lewis: Scale is changing very quickly in the data center landscape. When we did our first deals, a 10-megawatt facility was considered huge, and now that's considered an edge facility. Tenants are looking for 100- to 200-megawatt campuses, and they are all looking for the golden bullet, which is the 500-megawatt or the gigawatt campus. Within the data center itself, rack densities have increased substantially to accommodate AI. Traditional workloads might be 10 kilowatts to 15 kilowatts, whereas with AI, the workload is 120 kilowatts. There are chips being launched that are going to take us into an era of 600 kilowatts. These mind-blowing increases all affect the design within the data center. The other trend with AI is a widening of the tenant base, with the advent of neoclouds or GPUs [graphics processing units] as services-type customers.

On the overall AI journey, we're still very much in the foothills. The United States is running a bit ahead of Europe. The focus is still on the model-training phase, which is driving tenants to locations where they can access the quantum of power that's needed at an affordable cost. Where we're heading is more of the inference phase, which will be more latency sensitive and start to shift some of those locations. Inference will likely be 75 percent of demand from AI in the coming years.

Casey Miller: In the United States, where land is more abundant, it's all about scale. Commissioned power grew in the U.S. market by more than 20 percent, which brought the total inventory of commissioned power across the United States to just over 20,000 megawatts, or 20 gigawatts. AI research firm Anthropic released a study that predicted the AI models in the United States alone will need 50 gigawatts by 2028 – more than double what all commissioned power is today – just to support the AI workloads. To extend Paul's metaphor, we might not even be in the foothills. We might just be getting our backpack on and getting ready to head out the door. It's coming like a tidal wave.

How are new markets being identified, and how do they tie back to established markets?

Miller: The focus is still on tier 1 markets. But what is tier 2 today will likely be a primary market tomorrow. To satisfy that growth in demand, tenants have to go where there is power. Data centers don't necessarily follow conventional real estate models, where you need to be on a certain side of the street. Rather, the essential question is whether there is power. Eventually, we do think data centers will revert to the tier 1 markets that are close to population, because once AI is in the inference stage, it will need

to be closer to the population density. There will be demand on both sides for the foreseeable future.

Lewis: In Europe, the difference between tier 1 and tier 2 markets has been slightly more stable than in the United States. Currently, more than half of all Europe's live compute takes place in our five tier 1 markets, including Frankfurt, London, Amsterdam and Paris. Last year, 60 percent of co-location take-up took place in those tier 1 markets. Five years ago, that number was more like 70 percent, so tier 2 markets, such as Madrid and Milan, are becoming more important. But the strongest European demand is still in the tier 1 markets, where vacancy is running at about 4 percent. Across the whole of Europe, including the tier 1 markets, vacancy is about 9 percent. Without tier 1 markets, the rest of Europe's vacancy rate is 15 percent to 17 percent.

How does the retail co-location market fit into this demand story dominated by AI and the cloud?

Lewis: All the news flow focuses on cloud and AI. But those retail co-location markets have shown steady growth of 10 percent per year. For example, in Europe's tier 1 markets, the growth in retail co-location has been lower than that 10 percent running average for the past couple of years. That is due to supply constraints. And there are now stories of end users who are struggling to find capacity where they need it in those tier 1 markets. Utilization in our retail co-location centers has grown from 85 percent in 2021 to more than 90 percent last year. Looking forward, you can see a growth in use cases for those retail co-location centers from increasing AI assistants, content delivery, HPC and hybrid cloud deployments, all driving demand for those lower-latency retail co-location centers. It remains an interesting part of the market.

Miller: The retail co-location tenants are participating in this data creation boom. They are still growing, and there is strong demand for them, but they are being squeezed or forced into different parts of the market by the AI tenants that are using up all the power. They're having to find more creative ways and pay more to get the same amount of space than they used to, but they're still very active.

How are data centers addressing community concerns about local impact? What regulatory pressures are data centers facing, and how are they responding?

Miller: In the United States, in particular, it's an ever-changing landscape. Data center owners and tenants are having to adapt and learn on the fly. This chapter is very much still being written. But data center tenants are very engaged in community giveback, whether that's through scholarships or helping local municipalities, fire departments or libraries. That same Anthropic report indicated there was a proposal given to the Trump administration to allow data centers to be built on federally owned or controlled land not being used for anything else. The effort goes from the smallest municipalities at the very local level all the way to Washington, D.C.

Lewis: In Europe, data centers are undoubtedly facing greater regulatory scrutiny. At the top of that list is the E.U. Energy Efficiency Directive, which focuses on monitoring and reporting efficiency performance of data centers. That has spun into more national regulation, such as the German Energy Efficiency Act, with which operators are now coming to grips, along with the Corporate Sustainability Reporting Directive. Additionally, there is a wave of more local permitting and environmental restrictions. Community concerns have emerged about the amount of power being used by data centers in the Republic of Ireland, along with concerns about the amount of land that's being taken. We've previously seen a moratorium against data center development in Amsterdam, and that has translated into a fairly clear plan of where data centers can and cannot be constructed. From a regulatory point of view, a point of balance is that we're seeing much stricter GDPR regulations in Europe, which is driving a need for greater data sovereignty, which, in turn, is driving demand into various European geographies. The operators in Europe have gotten better at engaging with communities, and better design in data centers is one result. Today, the design includes many more sustainable or green elements, and the process includes a greater focus on community benefits, including training schemes that forward careers in digital infrastructure.

How do data centers balance performance needs with sustainability goals?

Lewis: In the current era of higher energy costs, performance and sustainability align. Producing more efficient and, therefore, sustainable data centers will increase performance and reduce costs for end users. We've long been on a drive to increase efficiency measured through PUE [power usage effectiveness] in data centers. In the German Energy Efficiency Act, all data centers need to hit 1.3 by 2030. There has also been an increased amount of heat reuse in European projects. We're working on a project with data centers in Amsterdam, which will have a very large heat reuse element for local glasshouses, for instance.

Miller: In the United States, data centers, as a concept, often get a bad rap, and the tenants sometimes take abuse. People don't necessarily understand that, yes, they're using a lot of energy, but a lot of their capex spend is going into building the renewable solutions – the solar field, the wind farms – to help the overall grid on a long-term basis. These tenants are the largest spenders of capital to help fix this problem. They're probably doing the biggest part of moving sustainability forward for the greater good.

How are rising data center costs affecting investment strategies?

Miller: Costs affect the overall returns. There are increased supply-chain costs, material costs, labor costs, land prices and power

costs. But it comes back to driving efficiency. Yes, we need more power, but power is becoming more efficient, and it is forcing some of that change in design. The new data center might be a bigger box, but it's a better, more efficient box.

Lewis: We see the same dynamic in Europe – increasing costs, balanced in terms of the overall strategy by rental growth across the sector. Projects that benefit from good speed-to-market, or have that ability to deliver, will be the most successful projects. Off the back of the well-known demand for data centers, there are a number of potential schemes coming forward. I don't think all of them will be successful. Success does come back to understanding the market; having the ability to select the right market, the right project and the right partner is ultimately what will lead to a successful project. The scale of those projects has increased greatly, so the capital has increased, which means that capital needs to be used as efficiently as possible.

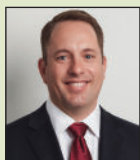
Miller: Here in the United States, too, as the buildings become more efficient, the capital stack is becoming more efficient, and the tenants are becoming more flexible in terms of what they'll agree to with the leases. The partnership among the tenants, the equity provider and the lender has to fit within the investment vehicle.

Do you see infrastructure gaps on national AI strategies?

Lewis: During the pandemic, the realization was dawning of just how important digital infrastructure is. That led to data centers being designated as critical national infrastructure in the United Kingdom and, increasingly, in other jurisdictions. But the advent of AI has also promoted digital infrastructure as an important topic within government circles. The European Union has come forward with its AI continent action plan, the United Kingdom has come forward with its AI opportunities action plan, and digital infrastructure has now become much more of a strategic issue for governments. That is good for the sector. The sector was overlooked a bit in the past. The plans are pushing the need for sovereign AI offers, whether that's within continental Europe – where they're looking to identify at least 13 AI factories and up to five AI gigafactories – or within the United Kingdom, which is setting up its AI growth zones. Strategies also have to consider the components that are going to be able to make that happen, including skills and the availability of power and permitting.

Miller: Every single person driving a car on an interstate highway, or taking a high-speed train, will be using the data center every single day. How do we make that transition? If we need to double the amount of capacity in two years, it's going to take help from all levels of government to fill in the gaps on that infrastructure need – and we need it at every single location.

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