The time is now for the datacenter industry's sustainability and efficiency story

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Introduction

In May, Google announced a partnership with AES to supply 24/7, carbon-free energy to the search giant's datacenters in Virginia and in doing so gave us a glimpse into its strategy of being carbon-free on an hourly basis globally by 2030. This is clearly a learning opportunity for the wholesale segment of the datacenter industry that targets hyperscalers as customers, but we believe it also points to a much bigger opportunity for the industry as a whole. Last year, KPMG reported that 80% of the top 250 companies on the Fortune 500 list (2019) are now reporting on sustainability, while at the same time the United Nations reported that only 40% of the enterprises it surveyed felt confident their targets were ambitious enough to meet the UN's Sustainable Development goals by 2030. The net of this is that while corporate visibility into sustainability has increased, the hope of success has not, and therein lies the opportunity.

The 451 Take

Let's be clear up front: What is needed from the datacenter industry right now is not another round of 'green-washing,' as we saw several years ago. Google and the other hyperscalers continue to set a high bar for decarbonization, and with the level of visibility they're providing to the market, token marketing campaigns won't cut it. These providers want to see real change and have made it clear that they intend to expose the carbon footprint of workloads to their customers so that they can make informed decisions about placement. Beyond the hyperscalers, there is a day of reckoning coming – first among large enterprises and then inevitably among smaller ones – for workloads that are still sitting in corporate datacenters that are contributing in a substantial way to organizations' carbon footprint.

While it's true that multitenant facilities are generally way more efficient than the average enterprise facility, efficiency alone won't win against the push toward the cloud and decarbonization. What's needed now are meaningful and tangible steps toward decarbonization, as

well as the ability to illustrate to clients and prospects the change that moving to a colocation facility can make on any given company's carbon footprint. Just as we've seen that some companies need help getting to the cloud or to colocation, there exists an opportunity to also assist companies on their road to decarbonization – and the datacenter industry seems uniquely positioned to do just that.

Context

Google claims that since 2017, it has matched 100% of its global energy consumption with renewable energy purchases. The AES announcement, however, represents the next evolution in the vendor's sustainability efforts as it works toward its 2030 goal of being carbon-free 24/7. The main difference between the 2017 milestone and the 2030 goal is load-matching – essentially, it's a matter of timing. In the US (and elsewhere), Google has invested heavily in both solar and wind energy generation, but neither of those generates electricity every hour of any given day (notably, the company is also investing in geothermal).

To compensate, many organizations will pay for more energy generation during daylight hours (using solar as an example) than they actually consume, such that on an annualized basis, the amount of energy produced is equal to – or greater than – the amount of energy used. Google's ambitions, however, are hour by hour, so more energy produced in one hour has no bearing on the next. During times of low – or no – energy production as compared with the vendor's actual usage, Google inherits the grid's carbon density, which in Virginia is not good (the state's grid is still heavily coal-fired).

To chip away at this problem in Virginia, the company has tapped AES to assemble 500MW of renewable energy generation (we estimate Google has less than 200MW of IT load in Virginia today), which will be complemented by battery storage. During periods of non-generation, the idea is that the stored energy from the renewable sources can be pushed out on the grid, thereby continuing to offset Google's demand on an hourly basis. Despite the $600m expected investment, the deal is anticipated to only cover 90% Google's demand on an hourly basis, underscoring the challenge – and expense – of decarbonizing loads that reside in dirty grids.

The datacenter opportunity

By now, it's no secret that the hyperscale segment has been a major source of demand for the leased datacenter industry. It's also no secret that the hyperscalers have all set lofty goals for decarbonization and aim to do so in short order (many are following the UN's 2030 targets). The obvious statement here is that to the extent that datacenter providers can be leaders in finding and establishing paths to decarbonization, the better opportunity will be in landing hyperscalers, otherwise the hyperscalers will have to work all the more to offset what they lease. Beyond hyperscalers, however, there are a whole host of enterprises that are looking to better their carbon impact and for those tech-heavy firms, their datacenter portfolio is a major contributor to their carbon emissions.

What if the datacenter industry used its leverage with the power suppliers to drive greener power options? What if, like Google, the datacenter providers insisted on decarbonizing whether the local power suppliers are onboard or not? What if the datacenter industry began to roll out managed-type services to assist companies in identifying their carbon impact, and also offered a way forward to reduce that impact?

The Google-AES collaboration perhaps gives us a framework for what this could look like. It reflects an aspiration to report the company's real-time electricity consumption, exposing the carbon density with the goal of matching it with CO2-free generation in near real-time. This represents a new level of accountability in reducing CO2 footprint than the industry has seen previously. It's logical, then, to

assume that in the future datacenters may face pressure to account for their energy usage and CO2 footprint with this same level of transparency.

Datacenters will increasingly want to understand the aggregate load they manage within each interconnected grid, and the good news here is that much work has been done already to do this. Between building management systems and more advanced DCIM systems, providers generally know this already, oftentimes on a real-time basis. The next step will be to understand the generation profile of their current energy usage; investments in renewable generation, including wholesale PPAs; and on-site solar and wind, along with other CO2-free generation, for the purpose of understanding where mismatches between renewable and nonrenewable portfolios exist.

At first it's understandable that this will be for internal use only, but we believe it is possible that the datacenter industry will eventually feel pressure to disclose this to their customers. Where substantial mismatches exist, datacenter operators should look to market providers to offer real-time CO2-free services, including additional green energy investments, grid services, and reservation of storage. Google opted to contract with AES on a turnkey basis for its Virginia datacenters, but this market will likely develop beyond a single-supplier approach.

Finally, there is definitely something to be said for gains in efficiency. At the end of the day, less energy consumed is less carbon emitted. As an industry, it seems we've stalled out of late in continuing to push down PUE numbers for facilities and it is time for some new thought here. Increasingly, though – finally – we're seeing more interest in bringing new products to market that could usher in the next wave of efficiency gains.