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Fighting over who has the greenest public cloud

5-6 minutes

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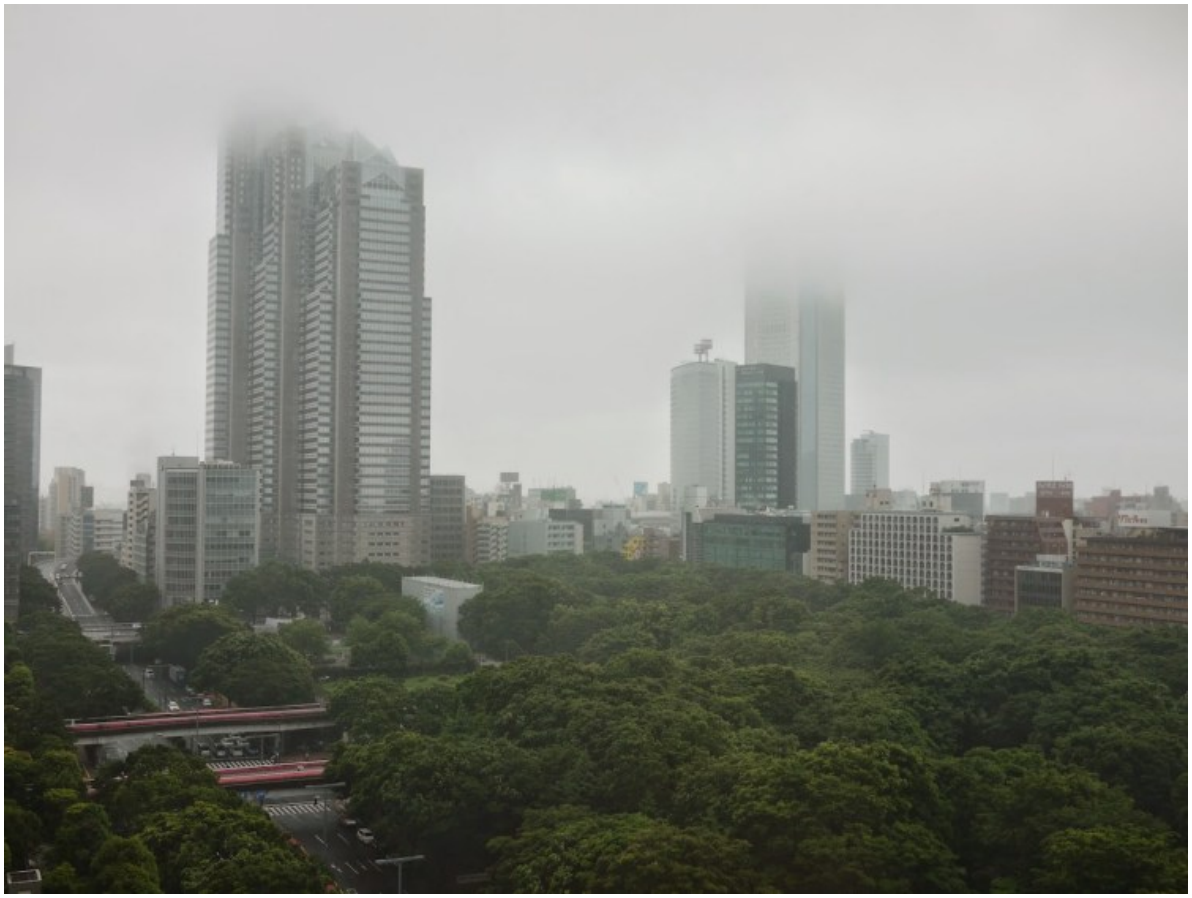

Earlier in the decade, public cloud was a pricing battleground. AWS, Google and Azure announced regular price decreases. Prices for compute and storage were the usual targets, but innovative pricing mechanisms such as Google's sustained use discounts were another attempt to compete.

Instead of focusing on pricing-led growth through price cuts, recent years has seen the product portfolio take priority. The AWS revenue run-rate is $43B, growing 29%; Azure $25B, growing 50%; and Google $8bn, growing 70% (source). And we know that AWS is very profitable. Anyone who has played with all three platforms knows that this revenue difference is reflected in the breadth and depth of the product portfolio.

Developers have no problem selecting the best tool for the job, and will happily stitch together multiple products if necessary. The core development stack has always focused on the programming language, database, and web server, with other dependencies coming in as necessary (or built from scratch) – queues, notifications, user authentication, monitoring. Now, it is increasingly likely that a developer can get all those from a single vendor.

AWS was first to market, but Azure can match them on the number of products, innovative features, and development velocity. You can't quite buy everything you need from AWS or Azure, but almost. Google comes a distant third.

Yet the capex investment we see from the big three also allows them to innovate on data centre design. What might look like marginal gains in efficiency improvements translate to major savings at the scale they operate. This has a positive impact on their environmental footprint. This is the new battleground.

In 2020, we have seen several major announcements from all three hyperscalers:

- Jan 2020: Microsoft announced it will be carbon negative by 2030.
- Apr 2020: Google announced its machine learning driven

approach to moving workloads based on renewables availability.

- Jun 2020: Amazon announced it is aiming to be net-zero by 2040 rather than 2050.
- Jul 2020: Microsoft announced a publicly available cloud emissions calculator.
- Aug 2020: Microsoft announced zero waste by 2030.
- Sep 2020: Google announced it had removed all its historic carbon emissions.
- Sep 2020: Google announced it aims to run 24/7 on renewable electricity (I wrote about how challenging this is back in Feb)
- Sep 2020: Microsoft announced it will replenish more water than it consumes by 2030.

  Google has been net zero the longest, since 2007. Microsoft achieved it in 2012. Microsoft announced it would pay back all its historical emissions by 2050, but Google achieved it in 2020. Google has been working towards zero waste for several years and Microsoft announced its 2030 goal this year. Microsoft is working towards data centre water footprint, but Google is much more secretive there. Transparency is still a major problem (Mytton, 2020), but both companies are taking responsibility rather than pushing it down on the consumer.

  Where is Amazon in all this? AWS has several net-zero emissions regions and used 50% renewables across its operations in 2018, but this is nowhere near the level of ambition we can see from Google and Microsoft. This is a problem because AWS is the largest cloud provider. Customers can't even calculate their own emissions and offset them because the data isn't published

(Mytton, 2020).

It is not fair to compare Amazon as a whole, because of their massive logistics operation vs Google that just runs data centres, or Microsoft which has data centres plus device manufacturing (mainly Xbox). Even so, AWS remains vague in its commitments (no date for 100% renewables, for example). Google publishes quarterly PUE values which show how efficiently it uses energy in its owned data centres. AWS used to have its 2015 PUE in a website footnote, but was recently removed.

If AWS is not moving fast enough, the responsibility shifts back to its customers. As one of the most high profile users of AWS, Netflix has started reporting its own "indirect energy use" i.e. AWS – 357,000MWh in 2019. They have an unusual level of influence as a customer and can demand this type of access, but unless other customers start adding pressure as the leader AWS will feel no pressure to do better.

Either way, this new battleground is great to see. No company needs to be the greenest today, but Microsoft and Google see the direction things are going. Environmental impact, and climate change in particular, are becoming more important issues for businesses responding to demand from their customers. Governments will make demands and corporates will use procurement to ask for environmental checklists in the same way they do for security and compliance because of the greater reporting requirements. This is a new cloud war, and so far Amazon isn't playing.