



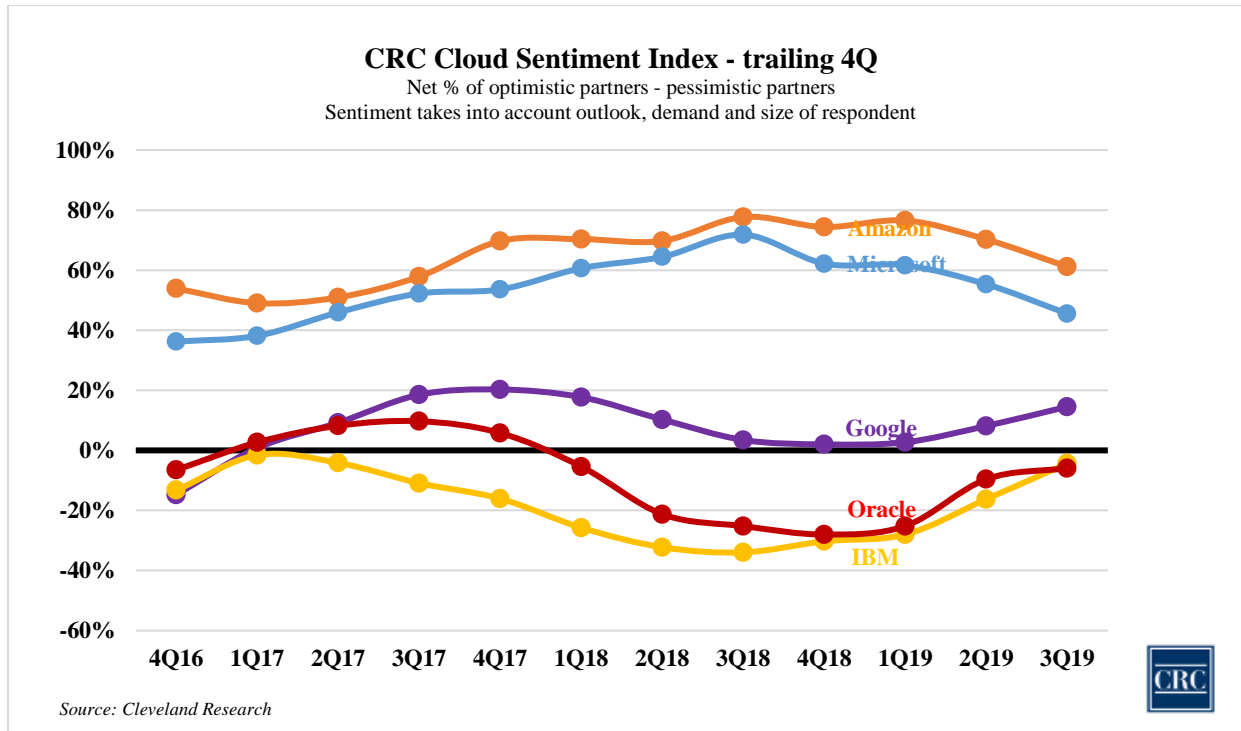
Oct-19 Cloud Insights

Important disclosures can be found in Appendix

End Market Remains Healthy, Competition Intensifying (Cleveland Research)

Key Points:

1. Cloud industry appeared to finish ahead of partner expectations in 3Q, driven by large deal activity and int'l strength
2. AWS seen benefiting from large deals and VMC – growing multi-cloud interest could impact share in 2020
3. Azure share gains accelerating – SAP workloads continue to be source of growth, Server migrations less of a catalyst
4. Feedback on GCP continues to improve, with partners increasing investments into 2020; company still seen needing to subsidize heavily to win business, more room to go in improving go-to-market
5. OCI outlook improving on greater traction for Oracle workloads – net new activity limited; optimism growing for IBM on Red Hat deal, however near-term is still disappointing



Highlights

1. **Partners appeared to finish ahead of plan in 3Q on large deal momentum – outlooks maintained.** A net 60% of partners finished ahead of plan, which is similar to net 66% in 2Q. We have seen an uptick in both number and size of large deals, with several 8-9 figure deals likely being signed in the Q, or being prepped to close before year-end. We also heard of another mega-deal being signed, similar in scope to Microsoft's contract with AT&T.

There did not appear to be much variance in this round of work across geographies or verticals. Int'l continues to outpace US growth by ~2x, while vertical adoption is pretty broad-based, with laggard industries such as healthcare, financial services, and public sector picking up.

In terms of workloads, PaaS continues to grow as a % of the mix, likely exiting 2019 at 40% vs. start of year at 30%. AWS appears to be seeing accelerating adoption of Lambda among its mature customers, while all the vendors are seeing strong growth for AI, IoT, and analytics workloads.



For the remainder of 2019, partners continue to expect 45-50% growth in the IaaS / PaaS market, which would be similar to 2018 growth of 50%.

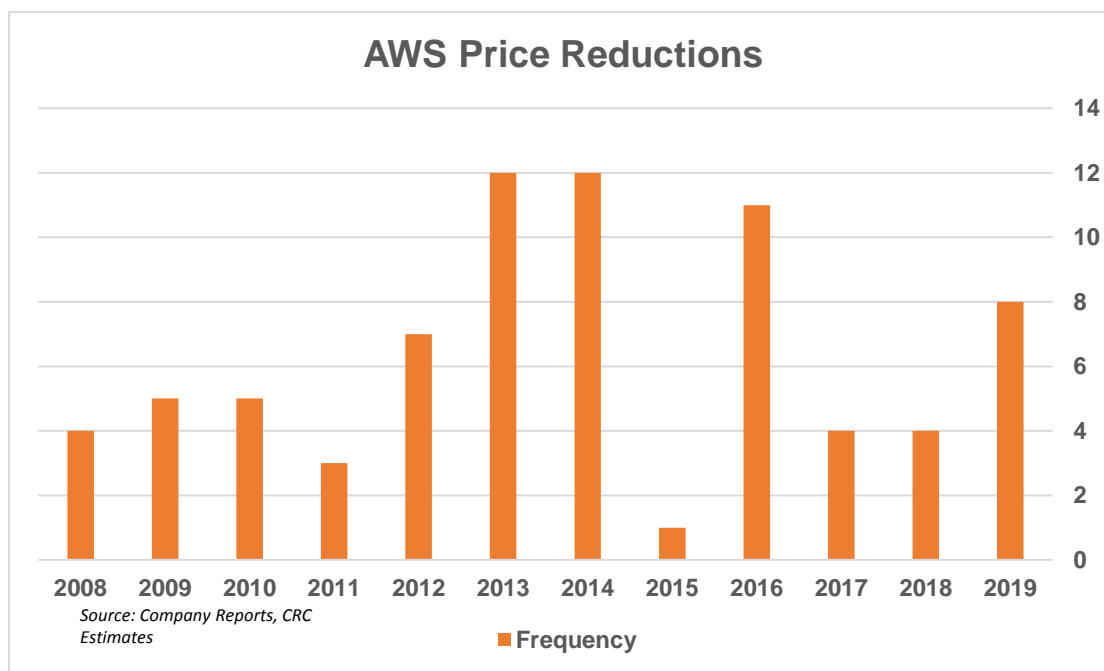
Looking into 2020, we would expect some moderation in growth rates (~40%) tied to more challenging comparisons and a potentially softer IT spend environment.

- 2. **AWS business appears healthy near-term, with good momentum for large deals and VMC projects – competition intensifying into 2020, price cuts continuing.** Near-term, most partners we spoke with appeared to see healthy trends in their AWS business, similar to feedback in 2Q. We noted an uptick in large deal activity for AWS in the Q, with these deals likely to translate into benefit in 4Q and 2020. We hear pipeline for AWS / VMC has improved following VMware introducing partnerships with Azure, Oracle, and Google in the last 12 months.

AWS does appear to be facing increased competition into 2020, with work suggesting a higher percentage of growth coming from preexisting customers (60-70%) vs. industry average of 40-50%. We believe Microsoft primarily, and Google to a certain extent, are now winning the majority of net new opportunities in aggregate. Improved functionality of competitor offerings, along with growing desire to diversify and adopt multi-cloud / anti-Amazon.com strategies appears to be furthering this trend.

AWS appears to be taking actions to respond. The company announced two more price cuts in 3Q, bringing 2019's total price cuts to 8, double that seen in 2018.

In addition, we hear the company is reaccelerating its data center investments in 2H19, and expected to reaccelerate hiring and go-to-market funding in 2020, with specific emphasis on SAP. We also hear the company is upping funding for competitive workloads, primarily Windows and Oracle databases.



- 3. **Azure poised for upside driven by share gains and large SAP workloads; server business seen benefitting from pull forward refresh activity.** Discussions suggest that Azure continues to see the most degree of upside in the Microsoft portfolio. Feedback suggests Azure exceeded expectations in Sep-19Q driven by share gains, strong cloud end market, and large SAP workloads.

Microsoft appears to be gaining share vs. AWS as Azure appears to be growing as a % of pipeline for partners. Azure performance sounds strong across geos, but share gains may be most pronounced in Europe due to the market being less penetrated by AWS.



We continue to hear of Azure momentum around SAP workloads and the large opportunity here. These deals tend to be large in nature (\$10m+) and we hear Microsoft is winning the majority of new SAP workloads. We see a long runway for these projects over the next 5-10 years as our work suggests ~5% of SAP workloads in public cloud right now could go to ~25-30% over that span.

Partners continue to be optimistic on remainder of FY20 with Azure calling for consistent Y/Y growth rates. We see potential for margins to improve as well as we are hearing a growing portion of cloud adoption is around higher margin workloads like AI, IoT, PaaS, containers, and serverless.

Looking at Server, our work in 1Q20 suggests that Microsoft is seeing a benefit from pull forward ahead of end of support for Windows Server 2008 in January 2020. Partners also are still seeing SQL Server 2008 end of support (July 2019) being a catalyst for refresh. Our research suggests a lot of customers are upgrading to Server 2016 and remaining on-premise vs. moving to cloud (not as much benefit to Azure as expected). Partners still believe the runway for refresh activity will continue to into 2020 as we estimate more than 30% of customers are still on Windows / SQL 2008 or older.

- 4. GCP seeing further progress in cloud market, still needing to subsidize heavily to win deals.** Our work suggests GCP has continued to see growing adoption in partner practices, performing more in-line to ahead of expectations vs. prior trend of underperforming expectations. The company announced on their 2Q call they had achieved a \$8B annual run rate, though this figure includes G Suite.

Our work suggest GCP's win rates are improving for net new opportunities, likely closer to 10-15% vs. prior trend of 5-10%. GCP's current market share is estimated at 10%. This comes as Thomas Kurian has taken over earlier in 2019. Since taking over, we have seen several meaningful sales hires (lots of ex-SAP) as well as partnerships being formed with other tech vendors. There is still lots of work to be done from a partner and commercialization of product perspective, however the company is moving in the right direction.

While AWS and Azure are likely each in most of the F500 / large enterprise accounts, GCP penetration is closer to 20-30%. We are hearing growing pockets of large customer wins, including financial services, retail, tech / media, and pockets of public sector. Google appears to be doing better in geos / verticals that are earlier from a cloud adoption perspective. We also hear their win rates are more favorable for AI / analytics based workloads, with growing interest for their solutions around big data (Teradata / Netezza) migrations.

We hear the company is attempting to leverage its installed base of advertising partners and customers, offering incentives for customers leveraging their ad tools to use GCP, as well as building technical integrations as well. Google appears to be looking to use the combination of their ad and cloud data analytics tools to position for the coming CDP (customer data platform) opportunity.

- 5. Demand for Oracle Cloud improving, remains constrained to Oracle customers – IBM hopes improving around Red Hat, actual demand underwhelming.** Our work has noted a continued uptick in sales for Oracle Cloud, primarily OCI (Oracle Cloud Infrastructure). We hear Oracle customers are increasingly using OCI for migrating on-prem apps (PeopleSoft, JD Edwards) as well as Exadata-hosted workloads, vs prior keeping on-prem or moving to AWS / Azure.

Traction for Oracle in net new applications remains limited, given inferior functionality / data center availability as compared to the hyperscale providers. Oracle is accelerating their data center roll out global through 2020, however they are still expected to be behind Amazon, Microsoft, and Google. Poor history with customers around licensing practices as well as the first-generation of their cloud offerings is also hampering demand.

For IBM, discussions indicate the company is beginning to reenter RFPs / discussions around cloud, primarily due to their having closed the Red Hat acquisition. IBM appears to be making the right moves out the gate for Red Hat, leaving them largely independent, and phasing out ICP in favor of OpenShift. Despite these moves, underlying demand for IBM Cloud (Blue Mix, SoftLayer) remains disappointing.



APPENDIX

Disclosures: We, Ari Terjanian and Cooper Rea, certify that the views expressed in the research report(s) accurately reflect our personal views about the subject security(s). Further we certify that no part of our compensation was, is, or will be directly or indirectly related to the specific recommendations or views contained in the research report(s). The analysts responsible for the preparation of this report have no ownership stake in this company. Cleveland Research Company provides no investment banking services of any type on this or any company.

Proprietary research and Information contained herein which forms the basis for findings or opinions expressed by Cleveland Research Company may be used by Cleveland Research for other purposes in the course of compensated consulting and other services rendered to third parties.

The information transmitted is intended only for the person or entity to which it is addressed. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.

Member FINRA/SIPC