

Original Article

Choosing Right Computing Resources for SAP Environments: Hyperscaler Connectivity, Networking For Your Server Management Strategies

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Abstract: As an SAP certified professional technical enthusiast, offerings in public/private cloud environments like AWS/Azure/GCP, there are respective other Private cloud environments (SAP ECS/Dell EMC a.k.a Virtustream/IBM/several other private vendors), this article is to help decision making on computing resources which cloud provider to choose based on various features and confronts. embracing multi-cloud, Generative AI public Cloud Services adaptation offerings, this paper helps situational considerations between available options to narrow decision making

Keywords: SAP Cloud Hosting's, Computing Resources, Hyperscalars, Network Connectivity Setup, DNS/VPN/Server Management, Public/Private Cloud Considerations, Green Cloud Sustainability.

I. INTRODUCTION

This is to familiarize & highlight about options available for decision making for existing company's SAP environments, decision making which Cloud Provider to choose based on individual businesses, their inhouse or cloud existing infrastructures, explore considerations to help, evaluating Cloud providers offerings, Current leaders/dominance in cloud vendors. Saving Money, Cost Optimizations, Quality infrastructure, easy to migrate & maintain, Support process, their Strengths, Computing resources Infrastructure bandwidth, Business global presence, Carbon Footprints, Methodology, Reuse (data/international licenses, Data Centers, global footprints), Hybrid vs multi-Cloud strategies, elasticity, architectural enhancements,

II. RESOURCES & PROVISIONS

A. What is SAP?

SAP stands for "Systems, Applications & Products in data processing" – this is German Software Company that provides enterprise application software (ERP) help businesses manager their operations, Supply Chain, Manufacturing, several horizontal alliances of a company including Finance, Human Resources, and Customer Relationships using SAP ERP software. 85% of fortune 500 companies rely on SAP for their core business processes, Customers using SAP have reported 20% increase in operational efficiency

B. What is Hyperscaler?

Hyperscaler is a type of large-scale data center that offers massive computing resources, typically in the form of an elastic cloud platform, Organizations use them to deploy and manage large scale applications and services. In SAP it is basically offered as Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) over these hyperscale cloud platforms for SAP applications considering their scalability, Network connectivity for their mass/critical distributed environments across multiple data-centers across global/regions

C. What is Computing resources in SAP

SAP can be implemented in customers own hardware or Cloud environments – considering proven best practices hardware recommendations, Fast time to value, Continuous Innovation, Open & extensible, Security, Compliance and scalability, Automatic and continual updates – these are possible based on cost/money on the table to choose between below snip to show SAP trend on top Cloud Vendors market share between Q1 2021 to Q2 2024

III. ADVICES & EVALUATION

A. Adapting/considering Resources

There are several tools in the market to consider which cloud strategy is best for SAP Hosting, constructed on other dependencies cost optimizations based on CPU/RAM consumptions for DEVELOPMENT, QUALITY & PRODUCTION



landscapes, other dependencies like Backup strategies, HIGH AVAILABILITY Solutions, Disaster Recovery choices, Cross Regional opportunities provided by corresponding Cloud provider solutions.

Customers individual 3rd party vendor integration solutions with SAP environment, accessibility with-in security compliances which port to allow based on public/outbound & inbound approaches Corresponding system communicate with Customers inhouse FINANCE team, vendors tax'g updates across different country acclimatization's

Computing Resources plays important factor in SAP operations to run as expected without any performance hiccups, if in CLOUD its easy to enhance resources as required to SCALE-UP or SCALE-OUT as needed or reduce once activity is completed like systems should be 24x7 during holidays season for retailers, closing activity for banking commercials, High Availability is mandatory for Healthcare/Pharma based companies so on.

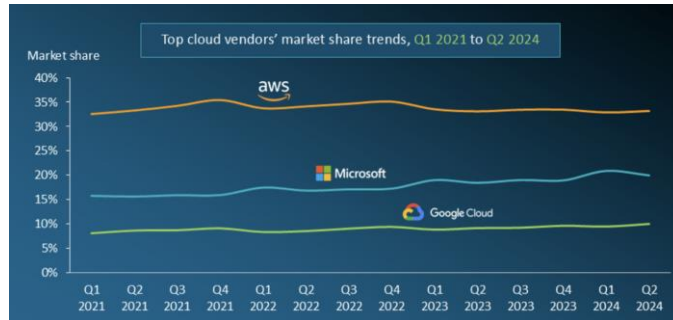


Figure 1: Top Cloud Vendors Market Share Trends Q1 2021 To Q2 2024

B. Traditional VS Hyperscaler

- a) Traditional – need to wait for new hardware to arrive, cost & labor associated, accompanied by cannot return after work is done, reduce carbon footprints, maintenance of such inhouse Infrastructure
 - b) Hyperscaler – if infrastructure is on CLOUD Hyperscaler’s helps focusing on applications, Ready to be flexible ensuring always availability current availability promise provided by Cloud Providers is above 95% or more, API’s - Taking advantage using of APIs which helps to automate most of common tasks, such as scaling systems UP/DOWN,
- a) Cloud Provider:
- i) **Storage** – Unlimited storage available based on system tier, no performance bottlenecks
 - ii) **CPU & RAM** – Number of CPUs & RAM to be chosen based on the SAP database & application to be chosen, preliminary recommendations are given by SAP architecture team based on Brownfield Migration or Greenfield New Builds
 - iii) **Comprehensive Suite:** Can be chosen based customer/business-based resources which one to adapt based on “Strengths” (Cloud provider market share/offerings/ideal for business/comprehensive suite of tools available), Resource Pooling involves aggregating compute, storage, and networking resources into a shared pool – this is to utilize efficiency allocation resources and distribution of resources across multiple workloads between server managements.
 - iv) **Cost Considerations:** Competitive prices based on tier 1/2/3., pay-as-you-go, CPU/RAM based consumption, Hybrid or completed Cloud, each cloud provider architects, solution branding based on customer necessities
 - v) **Security Compliance:** This is very critical checkpoint for almost every cloud provider, almost every cloud provider investing heavily in this area, for migration and maintain requires specific skills & expertise, keeping Server Management - Operating Systems up-to-date security patching to avoid vulnerability attacks, this has become more in these recent last few years, several tools Cloud providers provides, along with server management storage & file system encryption capabilities are must for critical production tiers.
 - vi) **Compliance/Sovereignty** Cloud Providers should provide industry specific best practice solutions, following stringent regulatory requirements. Very specific for Healthcare/Finance areas. Data remains within specific geographic regions which is critical for businesses subject to data residency laws, Cloud Provider should adhere to compliance with local regulations.
 - vii) **Sizing:** Deployment architecture where multiple virtual environments are consolidated maximizing resource utilization, enhance operational efficiency and streamline management by consolidating virtualize workloads onto a common platform.
 - viii) **Resilience:** Hypervisor hosts resilience for Consolidated setup – manufacturer have their aspects of maintaining

stability and availability for consolidated setup, this is avoid additional CPU/Memory/Storage in the workload domain, Capacity management reviews should always be done to avoid periodical observations and bottleneck threshold usages/consumptions

- ix) **Network/VPN Subnets:** Consider separate VLANs for Production & Non-Production environments to save some money and maintenance activities, High Availability, can have separate for Backup/storage subnets, other non-SAP Customer network subnets,
- x) **Network Load balancer:** this is another critical in SAP world,
 - (1) outbound communication over the internet using HTTPS protocol, customers should be using proxy server to connect HTTP/HTTPS destinations over internet, proxy server is intended for managed SAP systems based on corresponding Firewall/Gateway access points, all traffic HTTP/HTTPS will go thru the proxy server. SAP Firewall > Proxy Server > SAP Systems
 - (2) Inbound HTTPS Communication with Load Balancers, inbound HTTPS protocol communication should be used for business users on the customer corporate network
- xi) **DNS Integrations:** Choosing private connections VPNs/Cloud Peering's/AWS Direct Connect/Azure Expressroute/GCP Interconnect/VNET-VPC peering options

b) *Green Cloud:*

All major cloud providers are considering in green energy and carbon reduction initiatives, AWS/Azure/GCP have already running operations on 100% renewable energy for business with sustainability goals, this is another factor for Cloud provider decision-making process

IV. CONCLUSION

- A. Choosing the right cloud provider involves above provided advices for careful considerations and evaluations for business needs, based on how big the business presence regional/global/cross-country expansions, required skills
- B. Architectural decisions at every level technical architectures involvement for Infrastructure Network Architecture/Server Management Architecture/SAP Technical Architecture recommends to adapt which SAP suite of products to be added into environment considering/evaluates consistent S/4 HANA products versioning's, compatible product add-on's deciding, other frameworks integration decisions,
- C. SAP helps and provides guidance all through this constructed best practice supervision choosing right Cloud Provider, Services, Support and tools for decision making.

Based on above technical framework grounded then Functional Architectures (Supply Chain/Manufacturing/Global Trade/Finance/other business verticals) are involved for next steps SAP Business models design to be studied.

Compute Resources for SAP Environments are significant benchmarks for enhanced business efficiency and helps business growth and helps focusing on other areas like Innovations, Sustainability.

However, this is not the end but rather a simple read to narrow down your decision-making approach in these fast pace advancements.

V. REFERENCES

- [1] Gavin Davis, <https://www.linkedin.com/pulse/guide-choosing-right-hyperscaler-gavin-davis-6ygte/>
- [2] Stephen Jerald, Assisted Professor of Commerce, 2nd ed., R. M. Osgood, Jr., Ed. Berlin, Germany: Springer-Verlag 6(4) (1999) 10-16.
- [3] Flexera https://info.flexera.com/CM-REPORT-State-of-the-Cloud?utm_source=google&utm_medium=PPC&utm_content=finops_cloud_computing&lead_source=PPC&cq_cmp=21430958132&cq_term=cloud%20computing%20services&cq_plac=&cq_net=g&cq_plt=gp&gad_source=1&gclid=CjoKCQjwmt24BhDPARIsAJFYKkorRVzkWtTtcOPdeZmbYDKHCAJJrybjflv5DbkVycorZBGppfe_09gaAmnTEALw_wcB
- [4] canalys, <https://www.canalys.com/newsroom/worldwide-cloud-services-q2-2024>
- [5] Shreyas Patil, <https://www.readycontacts.com/blog/fortune-500-companies-that-use-sap/>
- [6] Melissa Palmer, Hyperscalers the complete guide <https://orangematter.solarwinds.com/2023/01/24/hyperscalers-the-complete-guide/> Kara Reynolds and Luciano Floridi Impact and Countermeasures RMB appreciation on Export-Based Enterprise in U.S. Patent 657238, 86(7) (1998) 98-106.
- [7] AWS reference: <https://aws.amazon.com/ec2/instance-types/high-memory/>