

Hybrid Enterprise Cloud Services RadarView™ 2019-2020

Reshaping enterprise IT and
driving digital transformation

December 2019

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About the Hybrid Enterprise Cloud Services RadarView™ 2019 Report



1

With enterprises becoming more aware of the need for IT environment modernization to enable true digital transformation, there has been a sustained increase in the adoption of hybrid cloud strategies over the last 12 months. With increasing maturity of hybrid environments, the focus has now shifted from migration to optimization.

2

Avasant's ongoing interactions with digital leaders highlight that multi-cloud deployments have become a standard part of enterprise IT strategy, with more and more enterprises also looking to move critical industry-specific functions to public clouds. Consequently, cloud management platforms (CMPs), which help to easily port, govern and optimize multi-cloud environments, are becoming an essential part of the enterprise IT toolkit.

3

The Hybrid Enterprise Cloud Services RadarView 2019 Report addresses the need of the enterprises to understand the key trends in the hybrid enterprise cloud space, and to identify cloud system integrators (Cloud SIs) that can help migrate monolithic applications to the cloud and then manage the resulting environment optimally.

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Avasant evaluated 41 cloud SIs through a rigorous methodology across key dimensions of Practice Maturity, Partnership Ecosystem, and Investments and Innovation to recognize the top 24 Cloud SIs that brought the most value to the market over the last 12 months

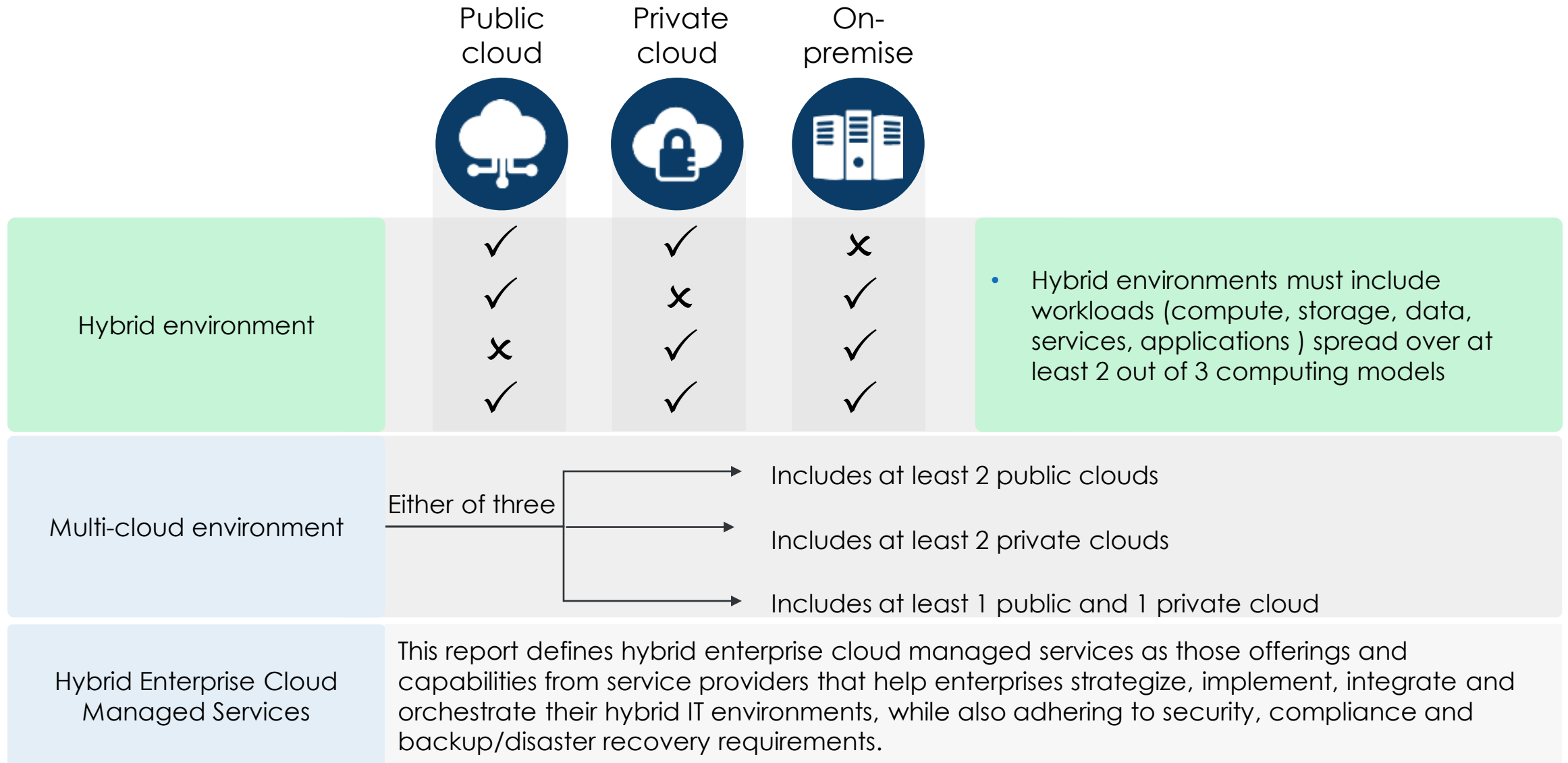
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The report also highlights the key trends in the market and Avasant's view on the road ahead for enterprises leveraging hybrid enterprise cloud over the next 12 to 18 months



Executive Summary

Defining Hybrid Enterprise Cloud (HEC) Managed Services



Key enterprise hybrid cloud trends shaping the market

Hybrid strategy has become pervasive and is going mainstream

- Hybrid cloud continues to grow on back of multi-cloud, with 60-70% of the Global 2000 organizations adopting 3.5 clouds on average. Increased maturity in cloud offerings has enabled enterprises to undertake modernization initiatives and evaluate possibilities through IaaS, SaaS and PaaS services.
- The SaaS market, at over USD 100 B annual run rate, is witnessing a transition towards more industry-specific solutions. IaaS and PaaS are growing faster than SaaS, albeit on a smaller base.

Rapid shift from infrastructure-centric to industry and converged tech use cases underway

- As cloud adoption proliferates, there is an increased shift from pure-infrastructure based horizontal offerings to industry-specific cloud solutions. Major cloud providers and cloud system integrators (SIs) have already developed customized offerings for multiple industries.
- Progressive enterprises continue to develop new use cases for convergence of digital technologies, with hybrid cloud as the fundamental building block, to unlock new opportunities and innovations.

CMPs and container tools are prerequisite for optimal cloud strategy

- Increased complexity in cloud offerings has pushed enterprises to leverage a host of third-party and proprietary cloud management platforms (CMPs) aimed at devising spend optimization strategies, enabling automated governance, real-time compliance and implement cloud brokerage services.
- Seamless workload portability and application deployment has led to exponential growth in container adoption in the past 12 months. Kubernetes continues to dominate enterprise adoption .

Cloud security and open-source convergence gains momentum

- As high-profile breaches continue to occur, enterprises have increased their cloud security budgets through partnering with cloud security providers and startup communities, enacting policy-based security frameworks, and develop tools that comply with country and industry regulations.
- In the past 12 months, bolt-on acquisitions and significant investments in open-source ecosystem have transformed the provider landscape along with fueling innovation and security improvements.

Enterprise hybrid cloud adoption: The road ahead



Select Cloud SIs with complex hybrid IT experience and diverse partnerships

- Enterprises should seek Cloud SIs that have large application migration & rationalization expertise, structured training programs, flexible pricing models and extended global coverage.
- They need to partner with SIs with expertise in industry specific processes, ability to address multi-vendor integration issues, involvement in joint solution development and integrated joint marketing development programs, and combined thought leadership across business processes.

Optimizing cloud spend and fully utilizing discounts should be top priority

- There should be an increased focus from enterprises to optimize cloud spend, and at the same time efficiently leverage all negotiation levers in their contracts (such as volume discounts, usage of specific resources, spot instances etc.) with multiple cloud providers.
- Enterprises should leverage third-party benchmarks, and seamlessly integrate proprietary IPs with third-party cloud management tools to gain insights on spend optimization and reduce overall spend.

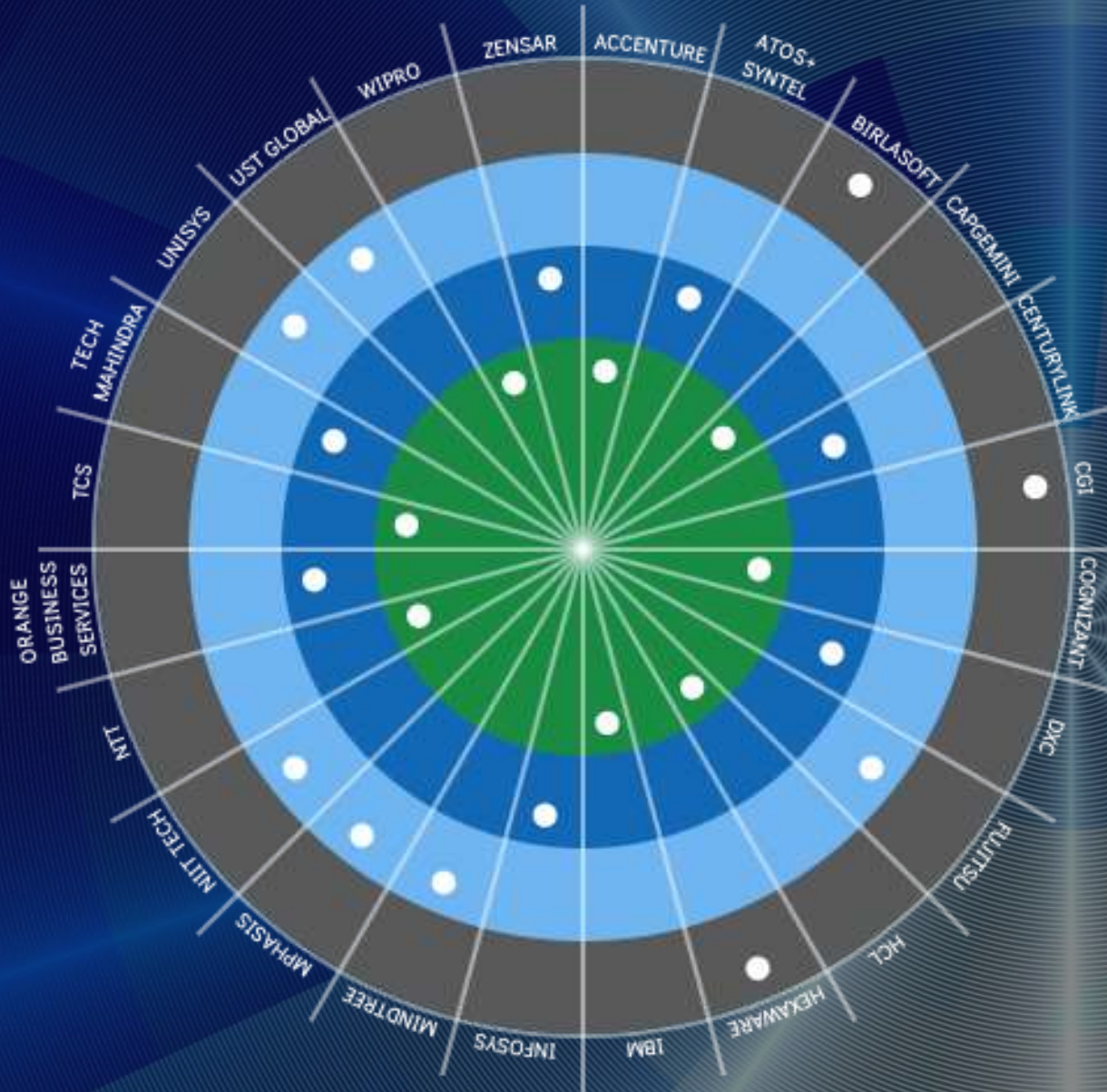
Ensure that CISOs take a central role in business decision making

- It becomes imperative for CISOs to involve themselves into board level decisions to proactively address cyber risks, data breaches and financial losses. Enterprises leadership should be cognizant of the importance of strong strategic cloud security initiatives.
- Enterprises need to also leverage cybersecurity teams' capabilities around vigilance, security management, training etc., and integrate with the organizations strategy and product development.

Transform central cloud teams and invest in upskilling existing resources

- As cloud becomes central to digital strategy, enterprises need to invest in realigning hiring process, change management and training to develop skills around cloud management, development, cloud brokerage, spend optimization and automation.
- Enterprises need to upskill cloud experts with emerging digital technologies such as AI, ML, NLP, Internet of Things (IoT) etc. in addition to core cloud-native technical capabilities,

Avasant has recognized 24 top-tier providers supporting the enterprise adoption of Hybrid Enterprise Cloud Services



LEADERS

- Accenture
- Cognizant
- IBM
- TCS
- Capgemini
- HCL
- NTT
- Wipro

INNOVATORS

- Atos | Syntel
- DXC
- Orange Business Services
- Zensar
- CenturyLink
- Infosys
- Tech Mahindra

DISRUPTORS

- Fujitsu
- Mindtree
- Unisys
- Mphasis
- NIIT Technologies
- UST Global

CHALLENGERS







- Birlasoft
- Hexaware
- CGI








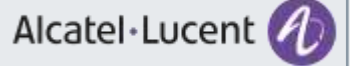

Hybrid Enterprise Cloud Services Market: Lay of the Land

Enterprises across industries are implementing hybrid clouds to optimize operations and enhance customer experience

35%+
Average growth in public cloud market in 2019

Organization	Industry	Description	Business benefits delivered
	Manufacturing	Built a hybrid cloud strategy, migrating mission-critical applications to private cloud based on VMware, while keeping fewer workloads on-premise and some on data lakes in public cloud.	Reduced TCO by 10%, increased DR by 100%, and zero security incidents.
	Banking	Leveraged a dynamic hybrid cloud, including public cloud for ITaaS, for non-critical applications and private cloud environment for selected applications.	Consolidated 23 data centers to 2 and reduced CAPEX from 50% to 26%.
	Healthcare & Life Sciences	Incorporated hybrid cloud solution, managing ~300 servers in private cloud and core systems and R&D information on next-generation data center spread across US, EU, and Japan.	Resolved 80% of the tickets on first call and provided enhanced governance.
	Energy & Utilities	Deployed a hybrid cloud, integrating multiple public and private, rolled out a software-defined network, and set up an intelligent service desk and digital workplace.	Faster time-to-market and always-on net connectivity across 50 countries.
	Travel & Transportation	Migrated some of its critical workloads to public cloud, including mobile app and check-in kiosks, while maintaining backend connectivity apps on-premise and third-party systems.	Better handling of site traffic and scaled business operations.
	Education	Implemented a hybrid cloud solution, including a private cloud at a data center in San Jose, to manage suite of applications for 479K students, 50K faculty across 23 campuses.	Enhanced operational efficiency, reduced costs and mitigated cyber threats.

Emerging digital technologies used in conjunction with cloud helps enterprise to improve operational effectiveness

Emerging tech	Organization	Description
Internet of Things (IoT)		<ul style="list-style-type: none"> City of Taipei has rolled out a pilot project with AAEON, a Microsoft partner based in Taiwan, to implement a lighting control system based on the Azure IoT Hub, connecting 3,000 streetlights across the city. The smart lighting system, which resides on Microsoft Azure cloud, provides real-time operational and GPS data for monitoring, ensuring citizen safety and creating a 5G network throughout the city in next phase.
		<ul style="list-style-type: none"> Biesse Group, a global leader in technology for processing wood, glass etc., has deployed an Industrial Internet of Things (IIoT) solution built on Accenture's connected-platform-as-a-service (CPaaS) IoT platform, powered by Azure. The connected platform has helped address asset management challenges across its industrial machinery, along with 50% increase in response time for machine outages and opening new revenue streams.
		<ul style="list-style-type: none"> Rockwell Automation leverages Microsoft IoT services and the Azure IoT Hub to collect, integrate, and analyze sensor data from remote equipment across global supply chains and connect to Azure cloud for continuous monitoring. The digital dashboard provides real-time information on equipment's performance (pressure, temperature, flow rates etc.), enables preventive maintenance, predicts equipment failures, tracks upstream explorations and performance.
Artificial Intelligence and Advanced Analytics		<ul style="list-style-type: none"> Metro, a leading B2B wholesaler in Germany, has built a new data lake and analytics solution with Google Cloud Platform (GCP) managed services, leveraging data science and machine learning (ML) capabilities from freiheit.com. It also migrated its ecommerce platform to GCP, which reduced platform instability by 80%, increased daily intakes of events 45x, and reduced OPEX costs by 30%.
		<ul style="list-style-type: none"> AB InBev, a leading beverage company, partnered with Pluto7, a Google cloud partner in data analytics and ML, to evaluate manufacturing data from multiple breweries via TensorFlow ML engine running on GCP. The prototype helped the company optimize the beer filtration process, predict and prevent potential issues during filtration, increase barrelage per run by 60%, and scale the platform to 120+ countries globally.
Software-Defined WAN (SD-WAN)		<ul style="list-style-type: none"> Alcatel-Lucent Enterprise (ALE) chose the Dimension Data (part of the NTT Group) SD-WAN solution to facilitate its Vision 2020 of harnessing the power of cloud to help its global customer base. It will be centrally deployed on Dimension Data's cloud platform, resulting in 300% increase in bandwidth availability increase and will help ALE to dynamically reallocate network resources and achieve network resilience.
Blockchain		<ul style="list-style-type: none"> HARA, a Jakarta-based company, has migrated its blockchain-based data exchange platform to AWS cloud, leveraging AWS Lambda for serverless computing, AWS EC2 for server foundation and Amazon SNS for notifications. The AWS-based blockchain platform will enable HARA field officers to collect several types of farmer-related data (crop planting and harvesting) with 60% reduced costs, gain runtime, and enable easy server scaling.

Enterprises are exploring different clouds for different workloads, ushering in a predominantly multi-cloud world



Analytical workloads

SAP workloads

US Government

Windows workloads (Windows Server and Microsoft SQL Server)

Enterprise applications including corporate websites, SharePoint

E-commerce portals

Oracle workloads

SAP workloads

Windows workloads (Windows Server and Microsoft SQL Server)

IoT workloads







Oracle workloads

SAP HANA

Type of workloads and enterprise preferred public cloud

Most enterprises now have multi-cloud environments that, on an average, utilize around 3.5 public or private clouds



Organization	AWS	Azure	GCP	Private Clouds	Illustrative examples
 Unilever	✓	✓	✓	✓	<ul style="list-style-type: none"> Unilever, world's largest consumer goods manufacturer, uses a host of public and private cloud platforms to enhance targeted advertising and improve customer experience. It uses Google Cloud AI tools, Cloud Vision APIs for data-driven marketing decisions, migrated and managing ~1,700 web properties on AWS, and Azure IoT platform to improve productivity
	✓	✓		✓	<ul style="list-style-type: none"> Ford utilizes AWS cloud to host its Autonomic Transportation Mobility cloud to expand its customer base, provide preventive maintenance and service upgrade possibilities. It also uses Microsoft Azure to automatically update its car infotainment system and plumbs the connection between Ford's private cloud (storing customer data) and Azure public cloud.
JPMORGAN CHASE & CO.	✓	✓	✓	✓	<ul style="list-style-type: none"> JP Morgan Chase & Co. has revamped its cloud strategy by transitioning its data center workloads to 3 public cloud providers and formed a 50-person cloud security team. The bank also launched a private cloud called Gaia in 2016 for its internal use and serves as a developer platform running 2,000+ applications, supported by 5,000+ developers.
		✓	✓	✓	<ul style="list-style-type: none"> Koger has split its cloud investments between Microsoft, Google, pivotal and internal private cloud. It leverages Azure to offer RaaS (retail-as-a-service) to transform shopping experience. It used Google cloud for e-commerce delivery and data-focused initiatives such as smart pricing. Also, it created a cloud enablement team to focus on private and public cloud.
	✓	✓			<ul style="list-style-type: none"> Fortis Healthcare, largest healthcare provider in India, pursued multi-cloud integration to manage its Hospital Information System (HIS) and make healthcare delivery more effective. Its existing application workloads were hosted on Microsoft Azure, managed HIS architecture on AWS cloud and established connectivity between AWS VPC to Azure and its MPLS network
	✓	✓			<ul style="list-style-type: none"> Aviva, a leading insurance company based in UK, has placed cloud at the heart of its digital strategy and migrated its on-premise workloads to AWS public cloud. Additionally, it uses Microsoft Azure Cloud to track customer behavior, collect telematics data on Azure SQL Database and bring customers to save up to 20%.
	✓		✓		<ul style="list-style-type: none"> Apple relies heavily on Amazon S3 and the Google cloud platform to store data for its iCloud services in its latest version of the iOS Security Guide. Last year, Apple switched from Microsoft Azure to Google Cloud platform and utilizes Google cloud to store user photos and videos. It pays around USD 30M per month for AWS services.

To support enterprise multi-cloud strategies Cloud SIs are building deep partnerships with all public cloud providers



	Premier Consulting Partner	Expert Managed Service Provider	Global Partner		Premier Consulting Partner	Gold Certified Partner	Managed Service Provider
	Advanced Consulting Partner	Gold Certified Partner	Global Strategic Partner		Advanced Consulting Partner	Gold Certified Partner	System Integrator Partner
	Select Consulting Partner	Gold Certified Partner	Global Partner		Premier Consulting Partner	Gold Certified Partner	Global Partner
	Advanced Consulting Partner	Expert Managed Service Provider	Global Partner		Advanced Consulting Partner	Gold Certified Partner	Managed Service Provider
	Advanced Consulting Partner	Gold Certified Partner	Global Partner		Premier Consulting Partner	Expert Managed Service Provider	Premier Partner
	Premier Consulting Partner	Expert Managed Service Provider	Global Partner		Select Consulting Partner	Gold Certified Partner	Global Partner
	Premier Consulting Partner	Gold Certified Partner	Premier Partner		Premier Consulting Partner	Expert Managed Service Provider	Global Partner
	Premier Consulting Partner	Expert Managed Service Provider	Global Partner		Advanced Consulting Partner	Gold Certified Partner	Premier Partner
	Select Consulting Partner	Expert Managed Service Provider	Global Partner		Advanced Consulting Partner	Gold Certified Partner	Enterprise Partner
	Premier Consulting Partner	Gold Certified Partner	Premier Partner		Advanced Consulting Partner	Gold Certified Partner	Technology Partner
	Advanced Consulting Partner	Global Partner	Global Partner		Premier Consulting Partner	Global System Integrator Partner	Global Partner
	Premier Consulting Partner	Gold Certified Partner	Premier Partner		Advanced Consulting Partner	Managed Partner	Global Partner

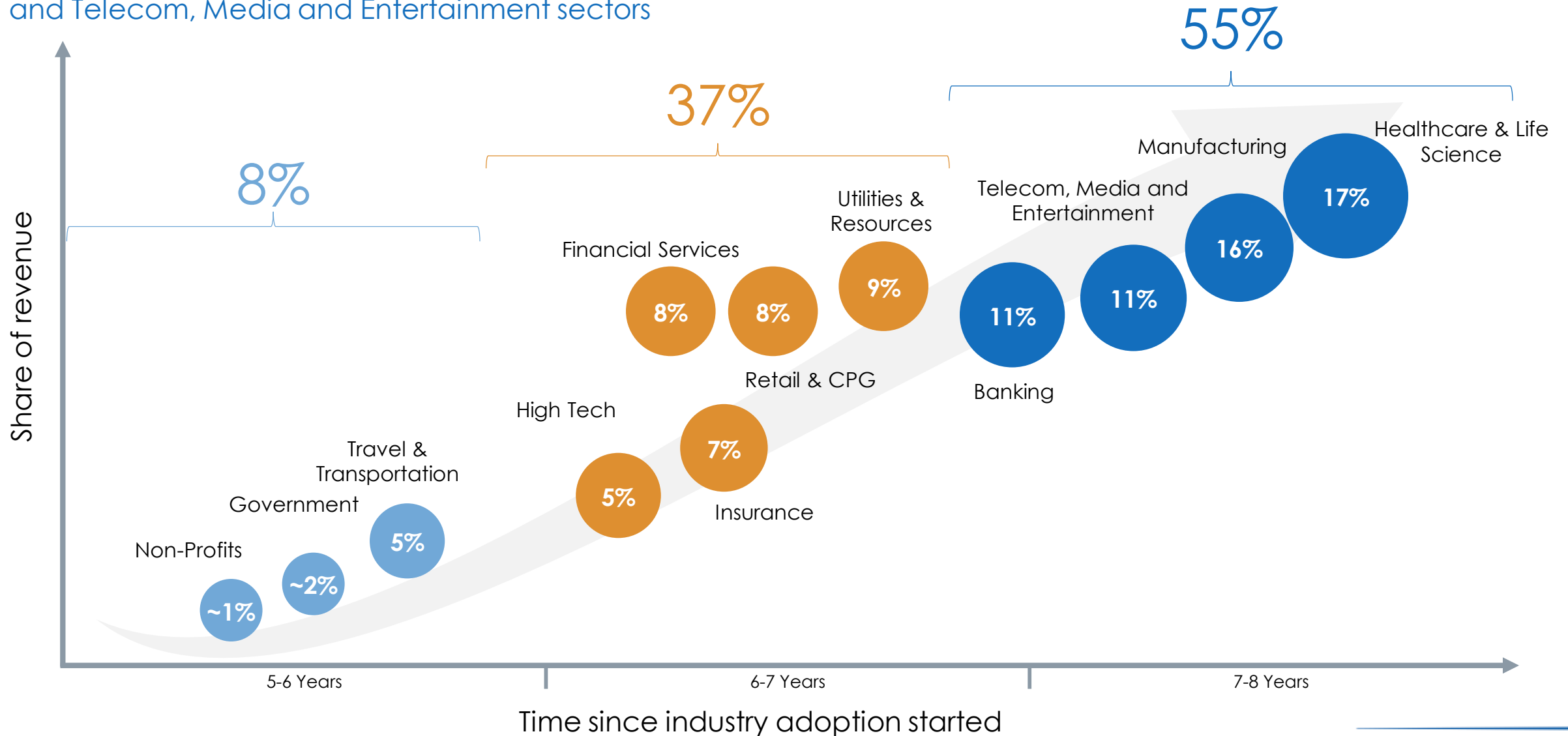
Darker color indicates higher certification level

Source: Avasant Hybrid Enterprise Cloud Services RadarView Survey July-September 2019



Healthcare and manufacturing remain major adopters, however, there is strong traction in the government sector

Government sector has grown around 3.5 times in past 12 months, followed by significant growth in financial service and Telecom, Media and Entertainment sectors








SaaS, both horizontal and industry-specific solutions, has become a deployment mode of choice for enterprises

The rapid growth of industry-specific SaaS solutions companies continues to show strong performance and have disrupted the enterprise-grade SaaS market with new product launches and significant findings.

Companies with Industry-specific SaaS solutions are proliferating

>30%
Growth of SaaS market, including both horizontal and vertical solutions















Illustrative industry-specific SaaS companies		
Company	Industry with SaaS solution	Growth
	Healthcare & Life Sciences	Veeva Systems had a revenue of \$862 M in 2019 with 25% growth and raised over USD7 M since its launch.
	Automotive	Dealertrack was acquired by Cox Automotive after a strong performance in the market and funding of ~\$436 M.
	Retail & CPG	Meicai, with an estimated revenue of \$150 M has raised ~\$800 M in 2018 and has been evaluated between \$10-12 B.
	Construction	Plangrid with over 1M projects and 12K customers into construction industry was acquired by Autodesk in an \$875 M deal.
	Healthcare & Life Sciences	Allscripts acquired Practice Fusion to leverage its 30K ambulatory sites, e-prescribing lab and patient portal.

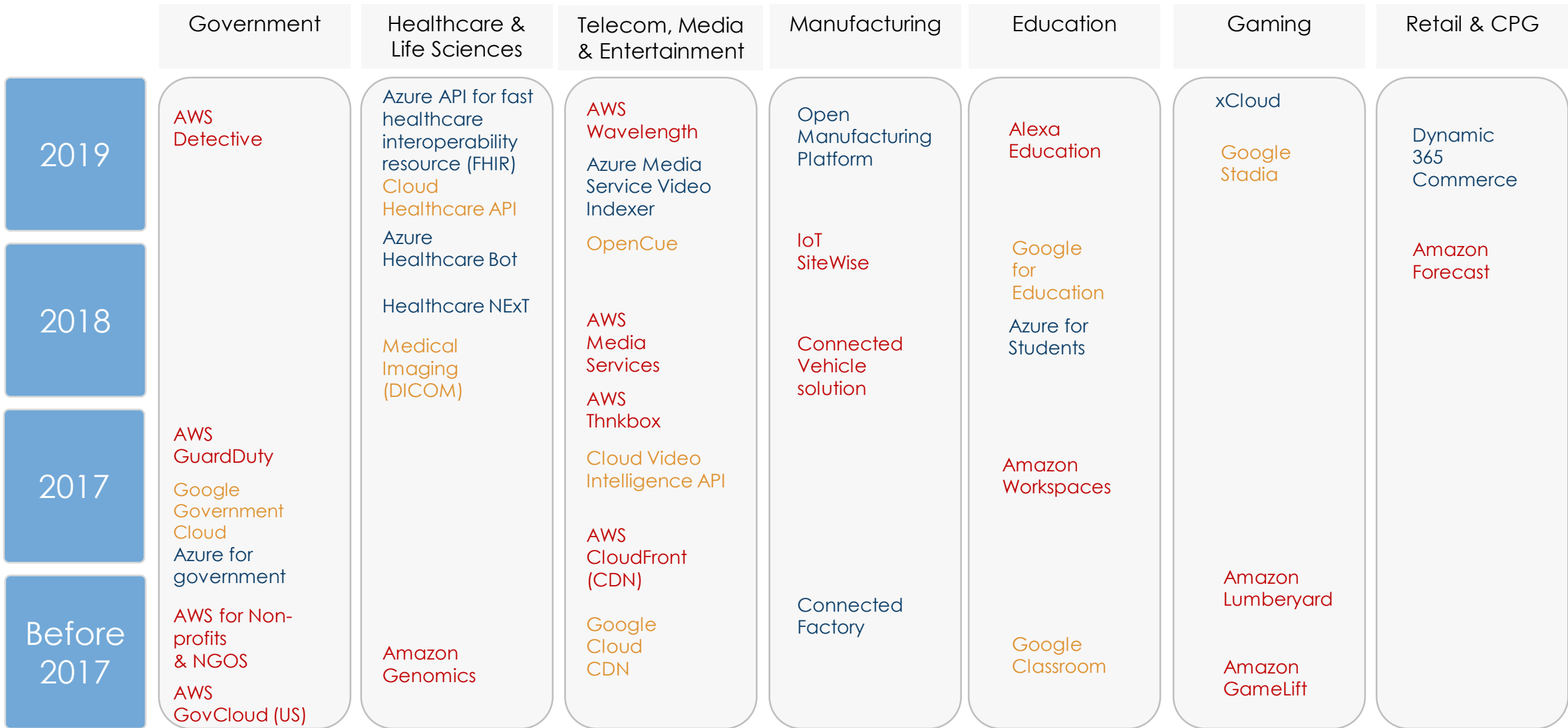
~2X
Revenue growth for industry-specific SaaS centered organizations

Several large technology providers are also entering and expanding their SaaS portfolio through marquee acquisitions

60+
SaaS-based
mergers and
acquisitions
(M&A) deals in
2019

Technology Provider	Acquired company	Acquisition date	Deal Size (in USD billion)	Description
		Aug,2019	15.7	With the acquisition of Tableau, Salesforce will bolster its AI-enabled platform Einstein and offer integrated analytics stack in its own cloud for newly added 86K customers.
		Aug,2019	1.3	Salesforce acquired Click Software to drive innovations in field service management (FSM), accelerate growth of service cloud, and deepen penetration in the manufacturing sector.
		Feb,2019	8.0	SAP completed the acquisition of Qualtrics, a pioneer in experience management (XM) software, to incorporate real-time feedback and extend offerings across 413K users.
		Feb,2019	3.0	Twilio acquired SendGrid, a leading email API platform, to redefine its position in the unified communication market and manage 140K users together.
		Jan,2019	5.2	Hortonworks has entered into definite agreement with Cloudera (40% stake) around solution development (100% open-source data cloud) and joint GTM initiatives.
		Oct,2018	4.7	Adobe integrates Marketo's customer engagement platform with its Experience Cloud to transform customer experience across B2B and B2C, along with onboarding 5K customers.

Availability of several vertical-specific SaaS solutions directly from key hyperscale providers has accelerated adoption



● AWS ● Azure ● GCP

Source: Company Announcements, Avasant Research
Note: Microsoft's xCloud will be officially launched in 2020













Progressive enterprises dealing with multi-cloud complexities are leveraging cloud management platforms (CMPs)



Organization	Industries	CMP	Illustrative examples
	Telecom, Media & Entertainment		<ul style="list-style-type: none"> EE, a leading 4G network provider in UK, has implemented CloudHealth's cloud management solution to manage more than 2,000 AWS EC2 and RDS instances on. The cloud management platform supports peak traffic events such as device launches and flash sales, identifies underutilized instances, checks and sets thresholds for cost and usage.
	Manufacturing		<ul style="list-style-type: none"> Siemens incorporated CloudCheckr platform to monitor its AWS-based Railigent ecosystem, a solution for rail operators, enabling corporate policy compliance and assessment of security vulnerabilities. CloudCheckr helped Siemens reduce cloud costs by 20% and increase overall efficiency. It also provided recommendations related to cost, security, and cost optimization.
	Manufacturing		<ul style="list-style-type: none"> Koch Industries deployed Cloudability's Account Group Mappings and Views solution to manage its multi-cloud architecture and enable its cloud team to deliver accurate billing information. The platform also increased ECS reserved instance (RI) from 25% to 87%, generated USD 5M savings, successfully migrated 25% of 230 AWS accounts, and helped create global filters on its cloud usage.
	Healthcare & Life Sciences		<ul style="list-style-type: none"> Houston Medicine, a non-profit healthcare organization, implemented Turbonomic's VMTurbo Operations Manager to manage ~2,500 VMs, IBM servers and storage, and VMware vSphere ESX 5.5 With VMTurbo, the organization was able to realize total cost of ownership (TCO) within days, achieve and maintain compliance, improve capacity planning, and improve performance.
	Government		<ul style="list-style-type: none"> The US Department of State centralized IT Group selected CloudBolt software to automate the management of VMware's vCenter and XenServer clusters and provide end-to-end provisioning. The CloudBolt also helped reduce VM sprawl, provide real-time accurate chargeback reports, enable IT department to increase agility by adding new service offerings, and reduce shadow IT.
	Telecom, Media & Entertainment		<ul style="list-style-type: none"> Turner chose DivvyCloud as the core of its central cloud strategy to reengineer its end-to-end media supply chain for a more secure and seamless migration of 15 PB library of CNN videos to AWS cloud. It also helped provide real-time discovery of infrastructure resources, implement cloud-native policy guardrail to identity and alert violations, and automate the enforcement of these policies.
	Healthcare & Life Sciences		<ul style="list-style-type: none"> AstraZeneca implemented Flexera's App Portal and FlexNet Manager to manage ~3,700 applications and enhance ITSM capabilities with license optimization. Flexera's solution helped the company with labor savings of around USD 1.9M, saved 267 hours per month due to automated license checks, and improved usability and ongoing governance.

Consequently, leading technology players have made significant investments to acquire niche CMP providers

Technology vendors are leveraging these acquisitions to acquire IP and capabilities, and expand customer base.

Date	Technology provider	Acquired company	Deal size (in USD billion)	Capability Acquired
Aug,2019			2.70	<ul style="list-style-type: none"> VMware acquired Pivotal Software with the goal of achieving strategic advantage in DevOps and extending vSphere to the Kubernetes platform. With this acquisition, VMware will also accelerate its SaaS-based offerings and integrate Cloud Foundry and Kubernetes in its existing portfolio.
Oct,2019			1.05	<ul style="list-style-type: none"> Splunk acquired cloud-monitoring company SignalFx, a SaaS leader in real-time monitoring and cloud spend optimization services. The partnership will enable Splunk to expand its cloud-native capabilities to enter the application performance management (APM) market.
Aug,2018			0.50	<ul style="list-style-type: none"> VMware acquired Boston-based CloudHealth Technologies, leveraging a multi-cloud management platform that works across AWS, Azure and GCP. The acquisition aligns with VMware's strategy to support hybrid cloud environment and gains 3,000+ customers, including Yelp, Dow Jones, etc.
Sep,2018			N/A	<ul style="list-style-type: none"> Flexera acquired RightScale in a non-disclosure deal, aimed at rounding out its asset management portfolio with cloud management products. As part of the deal, Flexera will leverage RightScale Optima (cloud cost optimization solution) and RightScale Cloud Management platform.
May,2019			N/A	<ul style="list-style-type: none"> Apptio acquired Cloudability, which specializes in Financial Operation (FinOps) and managing USD 9B cloud spending across AWS, Azure, and GCP. Apart from the FinOps platform, Apptio also adds 250 enterprise customers as well as meld business technology management software and DevOps.

Even Cloud SIs are investing in developing cloud spend optimization and cloud management platforms

Illustrative cloud SIs developing proprietary tool-based cloud spend optimization capabilities

Key functionalities offered

~35%
Of the Cloud SI investment budgets are attributed towards IP development



Brokerage services	Spend optimization
Identity, security and compliance	Monitoring and analytics
Provisioning and orchestration	Govern IaaS/PaaS/SaaS usage/costs
Report/analyze cloud costs	Automated policies

Container technology has evolved and is now a fundamental building block for hybrid cloud environments

Containers have now become an essential element in the enterprise hybrid IT environment.



Increasing cloud security requirements

- Container provides increased security across hybrid and multi-clouds.
- Container platforms enable industry and country specific compliance.
- It also helps with image scanning, and identity management.



Cost impact and TCO realization

- Eliminate costs related to application downtime and management.
- Less overhead costs through effective resource utilization.
- Containers reduces multiple server and workload consolidation and costs.



Ease of deployment and configuration

- Seamless portability to multiple operating systems and hardware platforms.
- Improved developer speed, productivity and operational efficiency.
- Faster and easy application deployment and development.

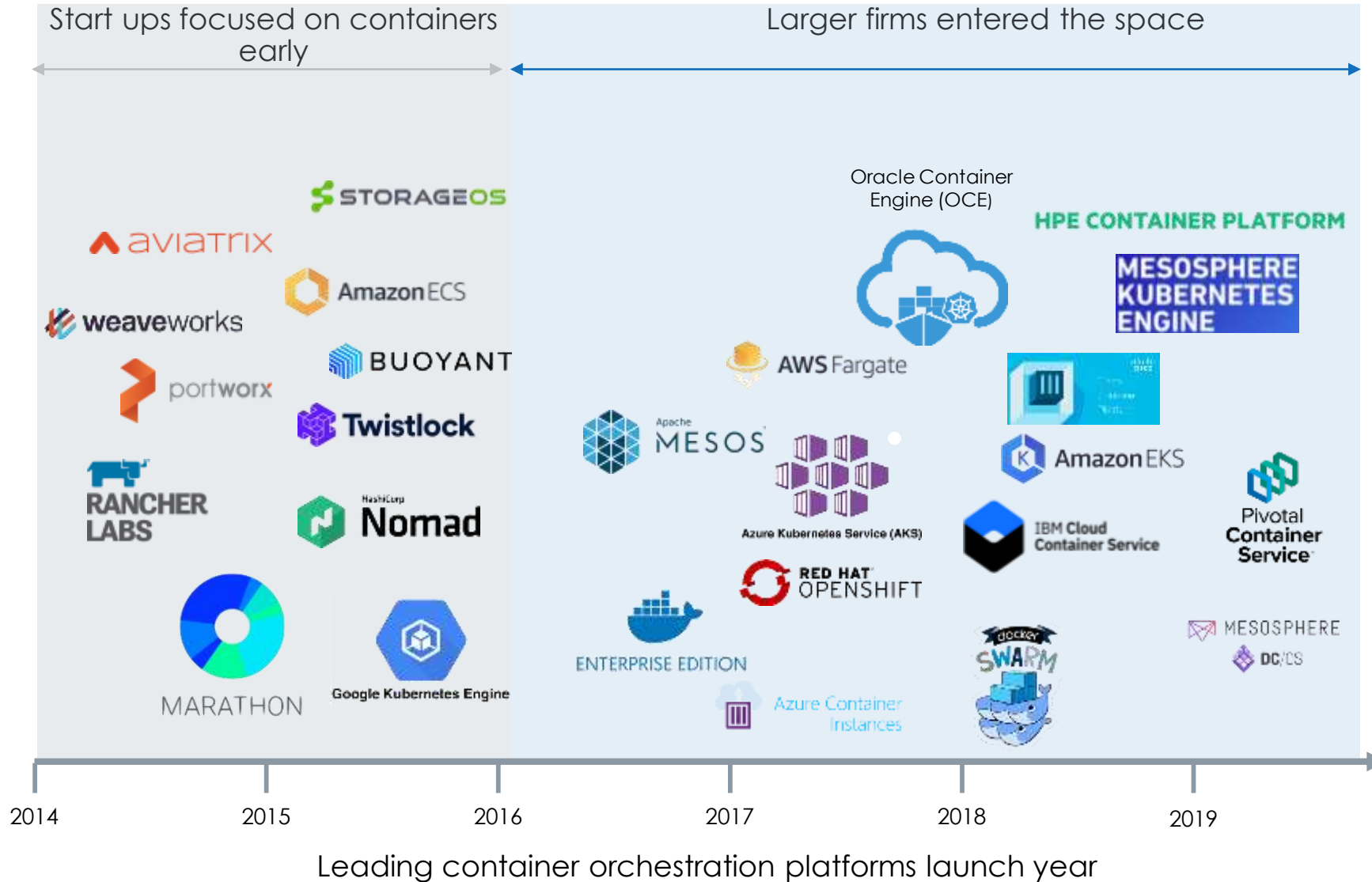


Flexible application architecture

- Maintains consistent test environment and remove application dependency errors.
- Containers provide high scalability without impacting entire application workloads.
- Interoperability across multiple Cloud SIs.

Technology providers are investing in container offerings, and some are doing this through acquisitions

Leading container orchestration platforms launches



Recent container acquisitions

Date	Tech provider	Acquired company
Nov 2019	Mirantis	Docker
Jan 2018	Red Hat	Core OS
Apr 2017	Oracle	Wercker
Aug 2016	Cisco	ContainerX

Both enterprises and Cloud SIs need to work together towards a proactive security approach

Enterprises

Service Providers

People



- Upskill internal IT team with right set of skillsets including DevSecOps, container and cloud-native security.
- Investment in talent development programs, external certifications and digital technologies for virtual training are keys to success.

- Ensure professionals are accredited with tools offered by cloud security providers and leading certifications such as Certified Cloud Security Professional (CCSP) certification and Chief Information Security Manager (CISM)

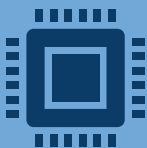
Process



- Establish board level accountability for strategic management of cloud security and governance
- Develop a robust set of cloud security tools for IT team to monitor workloads and malicious payloads.

- Review and outline policies about shared responsibility model, subjecting to baseline security requirements.
- Data ownership and cyber supply chain risk management should be part of contacted services.

Technology













- Leverage best-of-breed solutions and eliminate up-front capital expenses on top of cybersecurity measures.
- Adopt proactive techniques such as Cloud Security Access Broker (CSAB) and enforce security policies to mitigate threats.

- Mandate adherence to country and industry specific regulation requirements
- Develop end-to-end capabilities - acquire niche cloud security tech startups

Enterprises are also joining industry bodies to educate employees on best cloud security practices

A growing number of cloud-security bodies have emerged and are enabling enterprises to implement enterprise-grade security measures and work together with Cloud SIs towards a proactive approach to cybersecurity.

Industry Body	Description	Enterprises Members
	<ul style="list-style-type: none"> Headquartered in Beaverton, OR, TRG helps enterprises with securing computing devices, cloud security, and network security. Currently, it has more than 100 members, including leading enterprises, software vendors, and MSPs. It has 2 regional forums in Greater China and Japan. 	
	<ul style="list-style-type: none"> Cloud Security Alliance, a not-for-profit organization founded in 2008, promotes the use of best practices for providing security assurance to enterprises globally. Currently, it offers its 88,000 members cloud-specific research programs in collaboration with industry, government and educational institutes. 	
	<ul style="list-style-type: none"> Cloud Industry Forum (CIF), established in 2009, promotes Code of Practice by providing common standards for security, privacy, and interoperability. It proactively engages with governments and other relevant bodies to encourage widespread adoption of the Code by industry players. 	
	<ul style="list-style-type: none"> The Confidential Computing Consortium, a Linux Foundation project launched in Aug 2019, intends to offer security for next-generation cloud and edge computing. It is the first industry-first initiative and has already launched several projects, including Software Guard Extensions, Enarx and Open EnclaveSDK 	
	<ul style="list-style-type: none"> DMTF (earlier known as the Distributed Management Task Force) has established management standards spanning cloud, virtualization, servers and storage. It is accredited with cloud auditing federation (CADF), Cloud Infrastructure and Management Infrastructure (CIMI) and Open Virtualization Format (OVF). 	

Enterprises need to align CISO's role with enterprise strategy and business requirements to ingrain security from the onset



Traditional role of a CISO

- Develop an enterprise-wide security strategy and roadmap.
- Bridge gap between IT operations (ITOps) and security operations (SecOps)
- Work with regulatory oversight teams to meet compliance targets
- Support evaluation of security tools and implementation partners.
- Cultivate new technology skills and security landscape related to containers, virtualization and overall cloud technology

Critical skillset

- Predominantly technical skillsets
- Certifications such as Certified Chief Information Security Officer (CCISO), Certified Information Systems Security Professional (CISSP), Certified Information Systems Auditor (CISA), and Chief Information Security Manager (CISM)
 - Regulatory and compliance training such as PCI DSS, HIPAA, FedRamp, and FERPA compliance assessments
 - Traditional security tool experience across Rapid7 Nexpose, SPUNK, Palo Alto Firewalls, etc.

Additional role elements in security conscious enterprises

- Educate business stakeholders about 'Shared Responsibility Model' i.e. cloud security being shared between service providers and IT teams.
- Contribute to business case discussions for all new initiatives to bring in proactive security awareness
- Proactively contribute to enterprise risk management audits and initiatives
- Mandate information security policies for employees, customers, data, partners etc.

New skillsets required

- Predominantly communication and management skills
- Communicate security and risk-related concepts to technical and non-technical audience.
 - Relationship building, leadership and influencing capabilities.
 - Ability to communicate cyber security and risk assessments with business stakeholders.
 - Create awareness programs on security issues, best practices and vulnerabilities.

Enterprises investing in cloud security need to evaluate industry-specific security and compliance requirements

Multi-cloud deployments bring a range of legal and regulatory challenges. Hence, enterprises should evaluate and seek providers who can adhere to industry specific compliance and address the pitfalls of cloud compliance.

Industry-specific compliances (Not exhaustive)

Government

- Federal Information Security Management (FISMA)
 - FedRAMP
- International Arms Regulations (ITAR)

Healthcare & Life Sciences

- Health Information Trust Alliance Common Security Framework (HITRUST CSF)
 - Health Insurance Portability and Accountability Act (HIPAA)
 - HDS

Financial Services

- Financial Industry Information Systems (FISC)
- Payment Card Industry Data Security Standard (PCI DSS)
- Financial Institutions Regulation (FFIEC)



Media & Entertainment

- Motion Picture Association of America (MPAA)
- Multi-Tier Cloud Security Standard (MTCS)
- Independent Security Evaluators (ISE)

Banking











- Financial Conduct Authority (FCA)
- European Banking Authority (EBA)
- Australian Prudential Regulation Authority (ARPA)

Education

- Family Educational Rights and Privacy Act (FERPA)
- Higher Education Cloud Vendor Assessment Tool (HECVAT)

Technology providers continue to acquire open-source companies to offer holistic solutions

Sample Acquisitions

Date	Company	Acquired	Acquisition Value (in USD B)	Capability Acquired
July,2019			34.0	<ul style="list-style-type: none"> IBM has closed its acquisition of Red Hat, extending Red Hat's open source innovation to its wide client base. Together, the companies will offer a next-generation multi-cloud platform based on Red Hat Open Shift, a Kubernetes-based container platform.
Nov,2018			0.5	<ul style="list-style-type: none"> VMware acquired Heptio, a Kubernetes start-up, to boost its Kubernetes portfolio, including training, support and building open source projects. Heptio, which had raised USD 33.5M in funding, was acquired for USD 550M and will further enhance VMware's wide Kubernetes portfolio.
Oct,2018			7.5	<ul style="list-style-type: none"> Microsoft, with its acquisition of GitHub, has gained access to 31M developers and strengthened its focus towards open source. GitHub will be operated as an independent entity, keeping its place as a neutral hub for open source development.
Aug,2018			N/A	<ul style="list-style-type: none"> AT&T completed its deal to acquire open-source threat intelligence firm AlienVault, leveraging Open Threat Exchange to secure threat information. The newly acquired entity will become part of AT&T's cybersecurity division and will expand AlienVault's enterprise-grade security solutions to market.
July,2018			2.5	<ul style="list-style-type: none"> EQT Partners has successfully acquired SUSE, an enterprise-grade open source system provider, to strengthen its position in open-source market. It also gains the access to 1,400 employees, and will explore new projects for Cloud Foundry around Kubernetes, software-defined architecture, etc.

Enterprises need to transform central cloud teams to address critical aspects of hybrid cloud managed services



Senior leadership must continue to invest significantly to transform central IT teams through extensive training in new focus areas

Enterprise Central Cloud Team – New focus areas)

Application migration and Cloud Operations

- Co-develop objectives with Cloud CoE
- Set up an application migration factory
- Ensure billing, audit and governance etc.
- SaaS/PaaS/SaaS operations management
- Supporting CI/CD in the cloud

Cloud Strategy and Economics

- Perform regular ROI/TCO assessments
- Economic models for spend optimization
- Compare costs of public, private and co-location providers
- Identify high value workloads that contribute of self funding and high IT cost

Cloud Security and Governance

- Security analysis (controls, technology) assessment
- Security-related tools and architecture
- Mandate industry and country specific compliances.
- Remediations & implementation for secure cloud.

Adopting diverse skillsets

- Governance, risk and compliance (GRC) and security expertise
- Upskill across automation (Blue Prism, UiPath, Automation Anywhere) tools
- Public/Private cloud certifications
- Cross-skill across DevOps tools and Opensource tools

Cloud SIs are investing in human capital and the ecosystem to capitalize on the hybrid cloud opportunity



~19% investments in human capital development

- Train resources on emerging technologies (AI, automation) in addition to cloud technologies.
- Conduct workshops and hackathons to drive PoCs and ideation on hybrid cloud.
- Partner with hyperscale providers for core training and certifications.

Sample initiatives

	Launched an internal re-skilling program to train 30K+ associates in cloud-native technologies by 2019.
	Collaborated with UC-Berkeley to leverage research in AI, cloud etc. and design short term courses for its resources.
	Partnered with Cornell University to do research on cloud computing and seek more efficient application deployments across public cloud.

~16% investments in leveraging ecosystem

- Form special business groups with leading hyperscale providers and technology vendors.
- Invest in setting up labs, centers, prototypes and point-based solutions.
- Continually invest in partnerships with large technology firms.

Sample initiatives

	Established Cloud Innovation Center in Rome in partnership with VMware to enable clients to test, build, and implement cloud solutions.
	Established Azure CoE to onboard clients to CSP program and invested ~USD 6.9M in reseller channel growth program.
	Created an AWS Business Group with dedicated sales and focused GTM team, and trained ~60K professionals.



RadarView Overview

Avasant's Hybrid Enterprise Cloud RadarView assesses Cloud SIs across 3 critical dimensions:



Practice Maturity

- This dimension considers the current state of the Cloud SI's practice in terms of its strategic importance for the Cloud SI, the maturity of their offerings and capabilities, and client engagement
- The nature and sophistication of solutions, especially around cloud orchestration and management, use cases being addressed, market acceptance, quality of talent and execution capability are all important factors that contribute to this dimension

Partnership ecosystem

- This dimension assesses the focus and nature of engagement of the Cloud SI with the wider CSP and technology provider ecosystem
- The kind of joint development programs around offerings, go-to-market approaches, and overall the overall depth in partnerships are all important aspects. This dimension also assesses the Cloud SI's engagement with startup communities and industry associations

Investments and Innovation

- This dimension assesses the investment approach and innovation focus of the Cloud SI, and how it aligns with the future direction of the industry
- The overall strategic investments, including both organic and inorganic ones, towards capability and offering growth, technology development and human capital development, along with the innovations that the Cloud SI develops with their partners, are critical aspects of this dimension

Research methodology and coverage

Avasant based its analysis on a number of sources:

Public disclosures Publicly available information such as SEC filings, annual reports, quarterly earnings calls, executive interviews and statements

Market interactions Discussions with enterprise executives leading digital initiatives and influencing Cloud SI selection and engagement

Provider inputs Inputs collected through an online questionnaire and structured briefings in September – October 2019

Of the 41 service Cloud SIs assessed, the final 24 featured in RadarView for 2019 are:



Note: Assessments for Accenture, Atos | Syntel, CGI, DXC Technology, Fujitsu, Hexaware, Infosys, Mindtree, NTT, Unisys and Wipro have been conducted based on public disclosures and market interactions only



Hybrid Enterprise Cloud RadarView 2019

Reading the RadarView

Avasant has recognized Cloud SIs in 4 classifications:



Leaders show consistent excellence across all the key dimensions of the RadarView assessment – practice maturity, partnership ecosystem, and investments and innovation – and have had a superior impact on the market as a whole. These providers have shown true creativity and innovation and have established trends and best practices for the industry. These providers have proven their commitment to the industry and are recognized as thought leaders in the space that set the standard for the rest of the industry to follow. Leaders display a superior quality of execution and a reliable depth and breadth across verticals



Innovators show a penchant for reinventing concepts and avenues, changing the very nature of how things are done from the ground up. Unlike the Leaders, Innovators have chosen to dominate in a few select areas or industries and distinguish themselves on the basis of superior innovation. These radicals are always hungry to create pioneering advancements in the industry and are actively sought after as trailblazers redefining the rules of the game

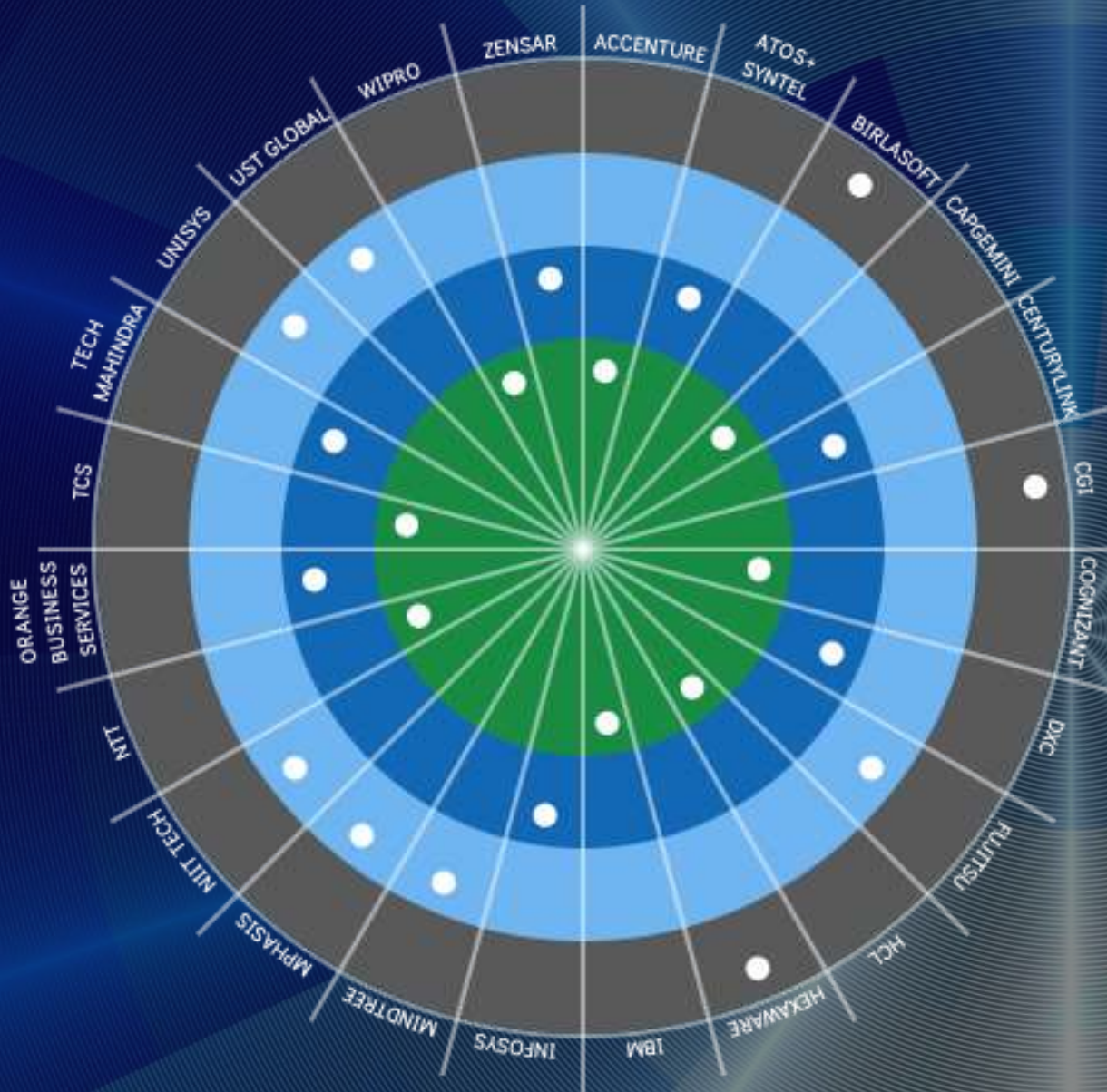


Disruptors enjoy inverting established norms and developing novel approaches that invigorate the industry. These providers choose to have a razor-sharp focus on a few specific areas, and address those at a high level of granularity and commitment that results in tectonic shifts. While Disruptors might not have the consistent depth and breadth across many verticals like the Leaders or the innovation capabilities of the Innovators, they exhibit superior capabilities in their areas of focus



Challengers strive to break the mold and develop groundbreaking techniques, technologies and methodologies on their way to establishing their unique position. While they may not have the scale as providers in other categories, Challengers are eager and nimble, and use their high speed of execution to great effect as they scale heights in the industry. Challengers have a track record of delivering quality projects against for their most demanding Global 2000 clients. In select areas and industries, Challengers might very well have capabilities that match or exceed those of the providers in other categories

Avasant has recognized 24 top-tier providers supporting the enterprise adoption of Hybrid Enterprise Cloud Services



LEADERS

- Accenture
- Cognizant
- IBM
- TCS
- Capgemini
- HCL
- NTT
- Wipro

INNOVATORS

- Atos | Syntel
- DXC
- Orange Business Services
- Zensar
- CenturyLink
- Infosys
- Tech Mahindra

DISRUPTORS

- Fujitsu
- Mindtree
- Unisys
- Mphasis
- NIIT Technologies
- UST Global

CHALLENGERS

- Birlasoft
- Hexaware
- CGI

Orange Business Services : RadarView Profile



Practice Overview

- Practice Size: 2,200
- Active Clients: 1,000+
- Certified/Trained Resources: AWS: 38; Azure:39; Others: 25+
- Delivery Highlights: Trained 850+ cloud experts through Cloud Academy in past 12 months

>50%
Cloud services growth

50-55%
Digital revenue growth

Client Case Studies

- Implemented Flexible Computing Premium solution, along with scalable data center, self-service portal and project management services for Haier, a leading household appliance manufacturer in China. This reduced operational cost by 40% and increased flexibility.
- Designed and rolled out a Hadoop-based analytics platform for a German automobile manufacturer for an environment involving 200 servers, 4.5K computer cores along with hyper-converged platform on RedHat. This improved production and 24*7 operations.
- Helped a public transport authority in Norway manage a multi-cloud platform including private cloud, AWS and GCP public cloud, and DevOps consulting. This removed lock-in and complexity and provided transportation-as-a-service involving 1,200 vehicles.
- Helped the European Union's Earth Observation Programme, Copernicus, by deploying Flexible Engine platform and build the production Kubernetes platform. Results: Launched Sabloo services across 400k users and access real-time data around Copernicus information

Key IP and Assets

- Flexible Engine - Public cloud solution
- Flexible Computing Advanced - Public cloud computing platform built on VMware technology
- CloudHealth - Partner sourced cloud management tool
- Cloud Eye - Monitoring service for Flexible Engine cloud services

Partnerships

Public/Private cloud provider

Networking Services Provider

Others

Sample Clients

- European Space Agency (ESA)
- Kerlink
- Haier
- Amcor
- Simmons & Simmons
- A French multinational luxury goods conglomerate
- A German automobile manufacturer
- Public transport authority in Norway
- Global packaging company

Industry Coverage

Banking
Financial Services
Government
Healthcare and Life Sciences
High Tech
Insurance
Manufacturing
Non-Profits
Retail and CPG
Telecom, Media and Entertainment
Travel and Transportation
Utilities and Resources

Practice Maturity ★★★★★

Partnership Ecosystem ★★★★★

Investments & Innovation ★★★★★★

IP-centric cloud approach, robust GTM partnership, notable client growth augmented by strategic inorganic expansion.

Darker color indicates higher industry concentration: ●●●●●

Analyst Insights

Practice Maturity



- Orange Business Services (OBS) has made stronger inroads after launching the cloud business in 2017. It has achieved over 50% revenue growth in 2018 and gained multi-cloud expertise in managing over 3,500 customers globally and supporting 120K+ VMs across the public and private clouds.
- Its Flexible Engine public cloud platform, powered by Huawei OpenStack technology, has gained significant traction among its loyal customer base. It has already rolled the platform across Western Europe, the US and Southeast Asia, and plans to extend it to the Middle East and Africa in 2019. Some of its recent wins include Midea Group and IIOX.
- With a practice size of 2,200 cloud experts, it continues to invest in human capital quality development through its Cloud Academy, where it has trained 850+ new resources in 2018 itself and plans to hire 300+ employees worldwide.
- It has a distributed client base with a significant focus on manufacturing, telecom, media and entertainment, banking, and utilities & resources, contributing to more than 75% of its hybrid services revenue.

Partnership Ecosystem



- OBS' robust partner network includes leading public cloud providers (Microsoft Azure, AWS, GCP cloud), cloud infrastructure providers (VMware, Nutanix, OpenStack) and networking services providers (Riverbed, InfoVista, and Akamai).
- As part of its notable partnership with Huawei, it will leverage its OpenStack OS for its Flexible Engine Cloud platform, network infrastructure, and opening a new DC facility in Amsterdam in October, complementing its tally of 70+ DCs in 20 countries.
- In terms of catering to financial services clients, it has forged an alliance with Additiv, an expert in digital solutions for the financial market, providing financial institutions with SaaS-based automated wealth management solutions across Europe, the Middle East, Africa, and Asia-Pacific.

Investments & Innovation



- OBS has taken a strategic inorganic route towards enhancing its hybrid cloud capabilities. Some of its recent acquisitions include Basefarm Holdings (2018) and LogIn Consultants (2016). Basefarm, which generated EUR 100M revenues in 2017, have significantly driven its growth plans outside France.
- It has placed big bets on cloud security, where it has set up Orange Cyberdefense, a dedicated unit established in 2015 to secure enterprise IT environment, 4 cybersecurity SOCs and trained 1,200+ cyber defense experts.
- Through its Cloud4Value program launched in 2018, it is accelerating co-development with customers, start-ups and leading technology players. Currently, it has more than 250 start-ups and expects to add over 100 in 2019.

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