



March 2019

Cloud Services Insights

Trends in Cloud Services and Infrastructure

1 The cloud is changing how we work



- Cloud computing enables businesses to focus on performance as directly as possible, with minimal interruption
- The foundations of cloud computing were greater agility, mobility, flexibility, and security
 - However, new advantages to the cloud emerge when highly scalable and flexible computing technology fuses with existing technology and processes (whether on-premises or in the cloud)
- Operating in the cloud requires a mindset shift both within the IT industry, as well as within the lines of business
 - Economic model for IT changing from Capex to Opex → financial flexibility
 - Virtualized infrastructure → much greater agility
 - Scalable and available application architecture → more innovation

Businesses are quickly adopting cloud computing

77%

of decision makers say they will use cloud for a majority of their needs by 2029.

A cloud for everyone

64%

of decision makers believe everyone will have access to computing by 2029, including remote regions.

Cloud: The new growth lever

87%

of decision-makers expect cloud computing to become an important driver of revenue growth by 2029.

Implications

The promise of cloud computing represents more than just a faster, more efficient version of everything we did before—it's an entirely new way of thinking and working across any IT environment.

Trends in Cloud Services and Infrastructure

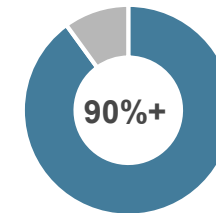
2 The cloud is fundamentally changing computing and application development paradigms



The cloud has dramatically changed:

- How IT professionals provision computing infrastructure
- How their operations counterparts deploy, manage, and terminate those applications throughout their lifecycle
- Most of all, the cloud has changed the relationship between the development (Dev) side and operations (Ops) side, ushering in the era of DevOps
- As providers like AWS and Microsoft have exponentially scaled their businesses, many once cutting-edge technologies and methodologies have become established fixtures of the cloud era
 - Container platforms and microservices architectures
 - Infrastructure-as-code solutions
 - Software-defined networking and storage
 - Continuous integration/continuous delivery
 - AI/ML

The growing cloud



By 2024, most enterprises will have intensively multi-cloud environments, with on-premise, off-premise, public, and private cloud.

2018

\$160 billion

2020

\$277 billion

Global spending for public cloud services is on track to reach \$277 billion in 2020.

Implications

Cloud is enabling more flexible, cost effective, cutting-edge application development and infrastructure deployment methodologies.

Trends in Cloud Services and Infrastructure

3 Most enterprises seeking a multi-cloud strategy



- Enterprises looking to prevent vendor lock-in
- Three main strategies for public cloud deployments:
 - “All in” on a single cloud
 - Cost optimization: Run workloads wherever they will be cheapest to deploy
 - Kubernetes is a key tool enabling this segment to deploy workloads in the most capittally efficient manner
 - Optimize based on functions: Pick and choose clouds for different capabilities (e.g. AWS for cost, GCP for AI and data pipelines, Azure for legacy app migration)
 - Individual teams must manage their own instances and budget

Implications

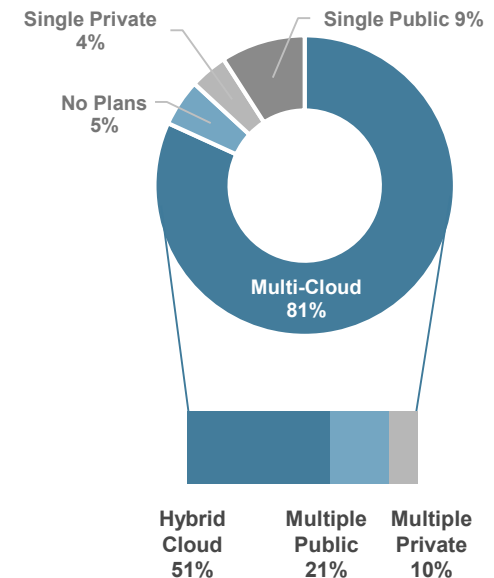
Enterprises evolving toward hybrid cloud configurations with deployments across private clouds and multiple public clouds.

Enterprises solving for optimizing cost and flexibility, but also managing for constraints around legacy applications, compliance considerations, security issues, etc.

Source: RightScale State of the Cloud Report.

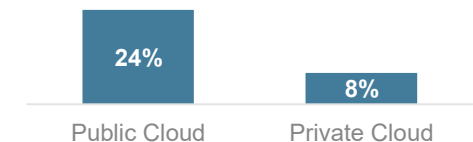
Multi-cloud continues to be a key strategy for enterprises...

Enterprise Cloud Strategy (1,000+ employees)



...with public cloud spend growing the fastest.

(2019 vs. 2018)



Trends in Cloud Services and Infrastructure

4 Public clouds looking to also compete on-premise

- AWS partnership with VMWare, AWS Outposts announcement
- Microsoft's Azure Stack
- Google Kubernetes Engine
- IBM's acquisition of Red Hat

- Enterprises unlikely to fully abandon on-premises infrastructure to operate fully in a public cloud environment
- Relevant for organizations that have built their architecture around cloud platforms such as AWS and want the public cloud capabilities in their data centers.



Containers to future-proof business



1 in 3 workloads are containerized across on-premise and cloud in the enterprise segment.

↑ 46%

*Containerized workloads are expected to grow by **46%** in the public cloud by 2021.*

Implications

Enterprise continues to be the battleground for the three hyperscale cloud providers:

- AWS has the largest market share, with the greatest set of cloud features and functions
- Microsoft has the traditional presence in the enterprise data center
- Google currently lags behind in terms of enterprise presence

Trends in Cloud Services and Infrastructure

5 Cloud enables greater flexibility, interoperability, and automation in enterprises

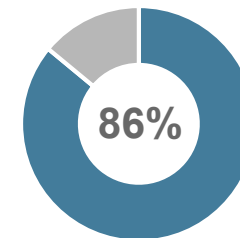


- Given the powerful capabilities available in the public cloud and in cloud-native software, several emerging trends are enabling further abstraction of the physical infrastructure, greater flexibility, and smaller code footprint
- **Serverless:**
 - Enables enterprises to simply execute snippets of code without bothering developers with provisioning underlying infrastructure
- **Managed containers**
 - Containers allow distributed applications to be deployed on any platform (on-premise/cloud) in a more lightweight fashion compared to traditional virtualized software
- **Microservices:**
 - Enterprises move away from “monolithic” application frameworks to smaller, interconnected services
 - Developers implementing a microservices architecture are now discovering the value of a service mesh: an emerging technology that connects, discovers, monitors, and authenticates communications between containerized microservices running across environments

Cloud enables faster feedback, quicker software releases, and more innovation

↑ 60%

of decision-makers expect to update code weekly or daily by 2029, up from 37% today.



of respondents say it's important to their company to develop and release new software quickly.

Implications

Cloud platforms create new opportunities for automation: speed and agility at scale, real-time insights from a large volume and variety of data, and improved security and reliability.



Key Strategic/M&A Themes in Cloud Services

We expect that larger vendors will continue to look to augment organic growth with smaller, technology-oriented deals

Implications

- Consolidation in the industry is expected to continue as other vendors acquire to compete
- Domain expertise, recognizable success, and talent in emerging ecosystems (e.g. AWS, GCP, Azure, Salesforce.com, and Workday), remain the most important factors, by far, in cloud services M&A
- Vendors that support digitization services will command a higher multiple in the market
- On-premise vendors will likely pivot, either via higher internal investments, M&A, or transition to adjacent growth areas

Consolidation to rapidly build scale

- Rackspace/Datapipe
- CloudReach/Relus Cloud
- Flexera/RightScale
- VMware/CloudHealth
- AWS/CloudEndure

Domain expertise trumps business model for emerging ecosystems

- Many cloud service companies have had success expanding beyond one-off consulting or implementation projects by adding managed services capabilities
- Domain expertise → highly sticky customer base

Digitization-focused IT service providers are in demand

- Strong demand for IT service providers with digital transformation capabilities (DevOps, automation, app modernization)
- End-market expertise also a critical determinant of competitive positioning
 - Crucial in gaining a leg up in highly fragmented, competitive IT service market

Not all sectors are winners in cloud migration

- Vendors and service providers indexed to on-premise IT spending are negatively impacted by cloud adoption—hardware, VARs, BPOs, etc.

Recent News

Topic

Recent News

Insights



Public Company News



Feb. 2019: Amazon and Microsoft reported earnings and both companies' cloud businesses beat expectations, with AWS growing revenue 47% YoY and Azure growing revenue 76% YoY.



This market is still nascent and we are seeing all players post impressive growth numbers considering the scale of the businesses; Azure is slowly capturing market share.



Recent Industry News



Dec. 2018: Cloud giants, led by Amazon and Microsoft, battle to win a \$10 billion cloud-computing contract that will be awarded by the Pentagon.



A single vendor is likely to get this cloud deal, which could have ramifications across the enterprise and government cloud landscape for years to come.



Cloud Partners



Feb. 2019: Microsoft now boasts more than 70,000 cloud partners around the world, more than Amazon, Google, and Salesforce combined.



The role of cloud services partners is increasingly important as businesses look to adapt multi-cloud/hybrid environments to optimize infrastructure based application and data requirements, performance, costs, and compliance.



Capex Investment



Jan. 2019: Basket of 14 largest global cloud computing companies exhibited weakening cloud capex spending in 2018, decelerating from 53% to 20% YoY growth from Q1 to Q4 2018.



Fears about slowing Capex investment appear misplaced; Amazon described 2018 as “light investment year”—momentum in the overall market shows no evidence of a pause.

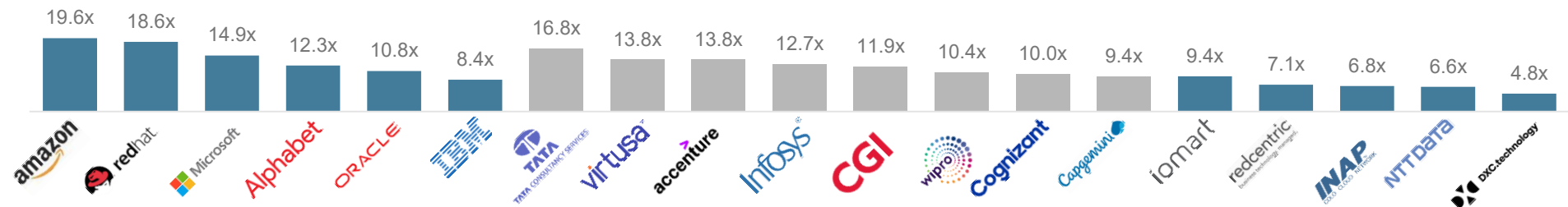
Public Company Comparables: Trading & Operating Metrics

EV/2019E EBITDA Multiple

Diversified Cloud/Software Median: **13.6x**

IT Services Median: **12.7x**

Managed Service Providers Median: **6.8x**

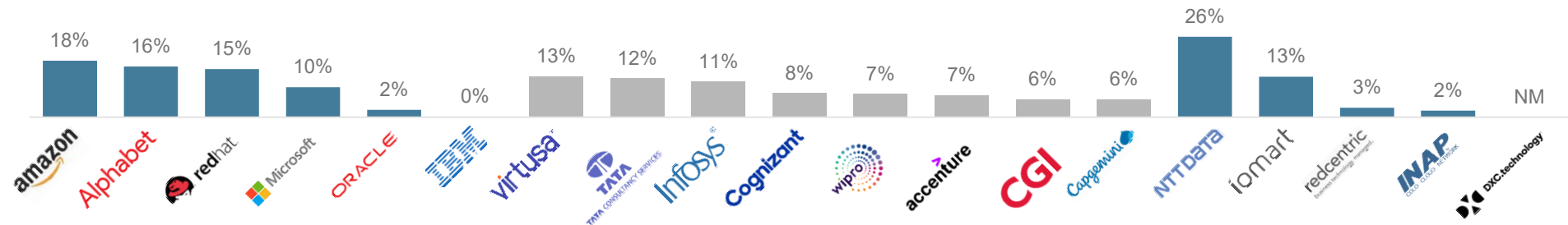


2019-2020E Revenue Growth

Diversified Cloud/Software Median: **13%**

IT Services Median: **8%**

Managed Service Providers Median: **13%**

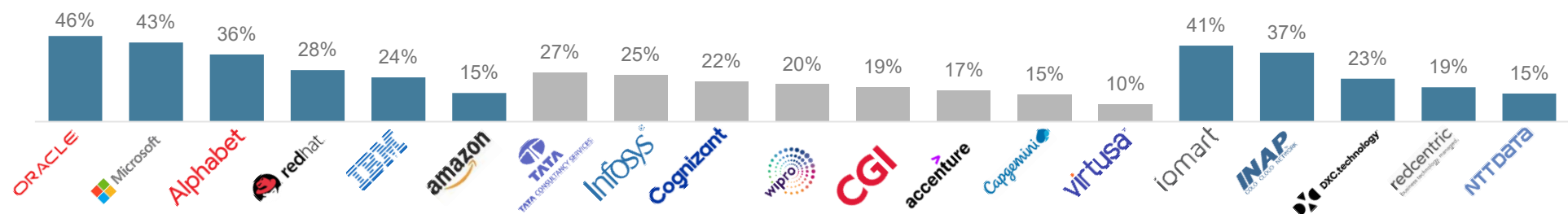


2019E EBITDA Margin

Diversified Cloud / Software Median: **32%**

IT Services Median: **20%**

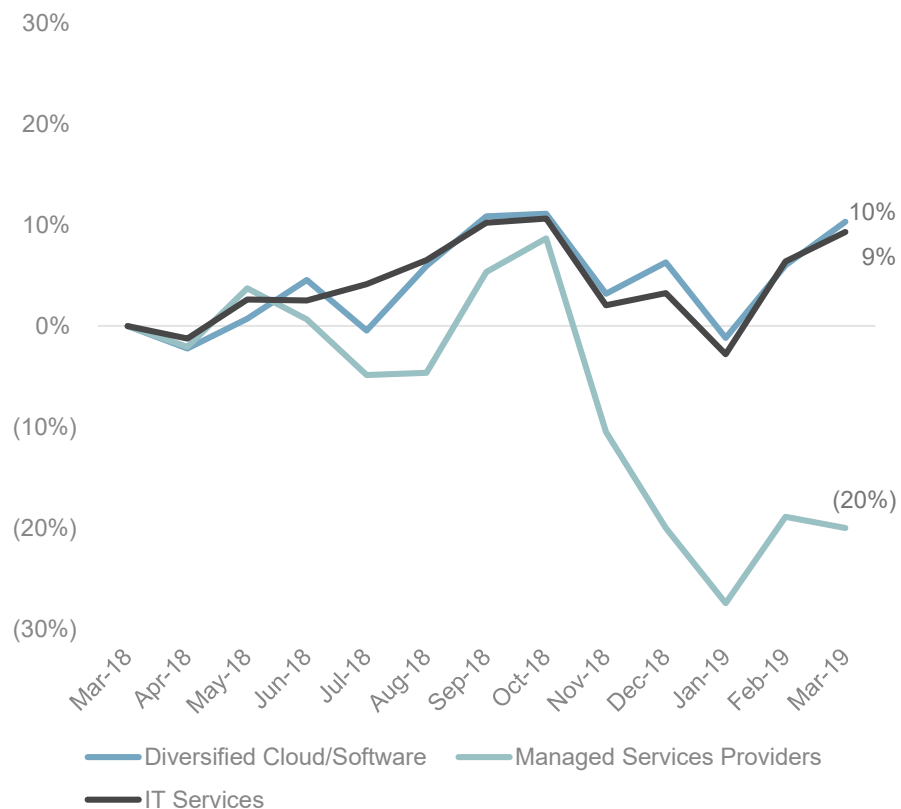
Managed Service Providers Median: **23%**



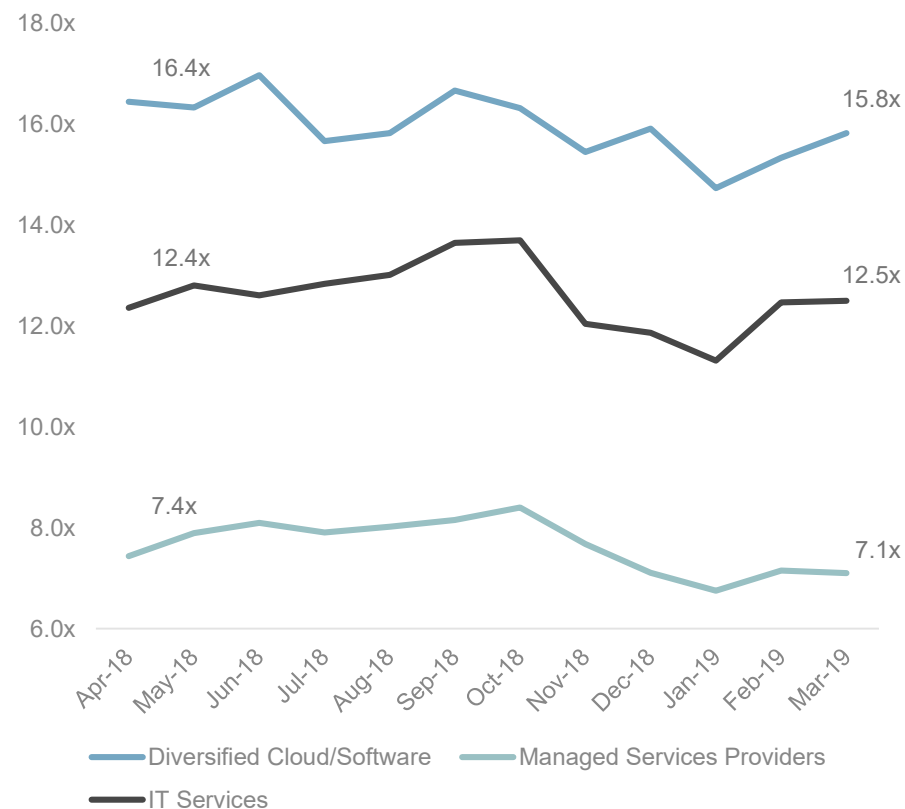
(1) Calculated using Enterprise Value as of 10/26/18, prior to IBM transaction announcement.
Source: CapIQ. All negative multiples or multiples greater than 50.0x are listed as "NM;" negative growth rates also listed as "NM."

Public Valuation Trends Peer Group Averages

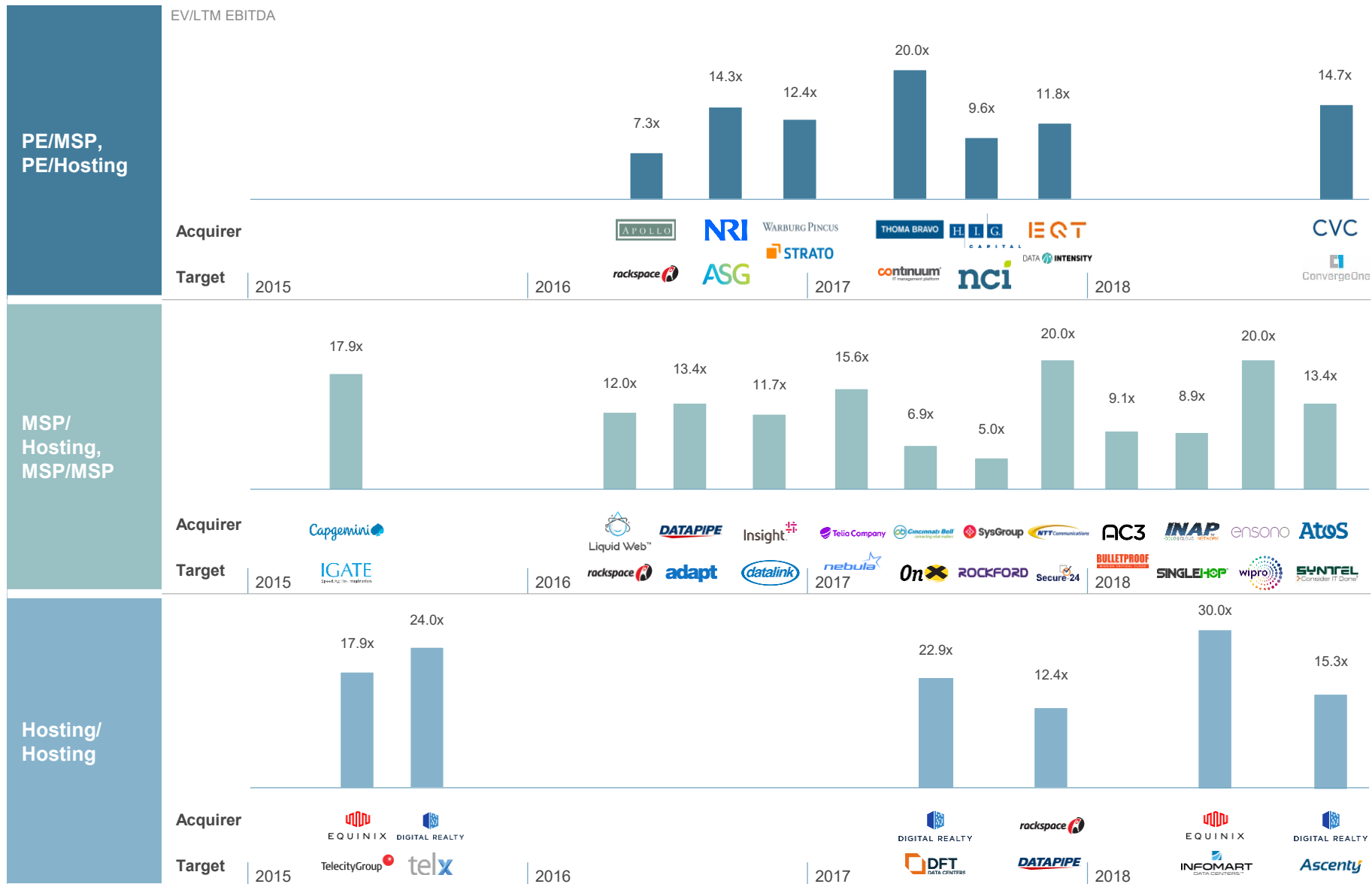
Stock Price Performance (LTM)



EV/NTM EBITDA (LTM)



Transaction Multiple Progression in Managed Services/Hosting



Sources: CapIQ and industry insights. Only includes statistics for transactions where the data is publicly available.

Houlihan Lokey's Fully Integrated Team & Select Transaction Experience

Fully integrated team, with deep industry and sector knowledge

Cloud Services/Tech Team



Vikram Pandit
Director,
TMT
New York



Daniel Dresner
Vice President,
TMT
New York



Tyler Deck
Associate,
TMT
New York



Ben Rapaport
Analyst,
TMT
New York



Neil Shah
Analyst,
TMT
New York

TMT Senior Team



Rob Louv
Managing
Director & Co-
Head,
TMT
San Francisco



Roy Kabla
Managing
Director & Co-
Head,
TMT
New York



Justin Abelow
Managing
Director,
Financial
Sponsors
New York



Andrew Morrow
Managing
Director,
Financial
Sponsors
Los Angeles



Dave Roberts
Managing
Director,
Financial
Sponsors
Washington,
D.C.



Kevin Salmini
Managing
Director,
Financial
Sponsors
New York



Jeffrey Stern
Managing
Director,
Financial
Sponsors
Chicago

Financial Sponsors Team

Select Cloud Services Transaction Experience

Transaction Pending

has agreed to acquire

Buy-side Advisor

has been acquired by

MANSON DEARBORN PARTNERS, LLC

Sell-side Advisor

has been acquired by

Sell-side Advisor

has been acquired by

Sell-side Advisor

has been acquired by

Sell-side Advisor*

has been acquired by

Sell-side Advisor

has merged with

The Global IT Hosting Leader

Fairness Opinion

has completed a financing

\$65,000,000 Senior Credit Facilities
\$27,000,000 Subordinated Notes
\$18,000,000 Preferred Equity

Private Financing

has acquired

Integralis AG

Buy-side Advisor

has been acquired by

Sell-side Advisor

Tombstones included herein represent transactions closed from 2008 forward. Selected transactions were executed by Houlihan Lokey professionals while at other firms acquired by Houlihan Lokey, or by professionals from a Houlihan Lokey joint venture company.



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1,300+ Employees
24 Offices Globally

Corporate Finance

2018 M&A Advisory Rankings All U.S. Transactions		
	Advisor	Deals
1	Houlihan Lokey	207
2	Goldman Sachs & Co	197
3	JP Morgan	154
4	Morgan Stanley	135
5	Jefferies LLC	117

Source: Thomson Reuters

No. 1 U.S. M&A Advisor

Top 10 Global M&A Advisor

Leading Capital Markets Advisor

Financial Advisory

1999 to 2018 Global M&A Fairness Advisory Rankings		
	Advisor	Deals
1	Houlihan Lokey	1,073
2	JP Morgan	971
3	Duff & Phelps	728
4	Bank of America Merrill Lynch	660
5	Morgan Stanley	659

Source: Thomson Reuters. Announced or completed transactions.

No. 1 Global M&A Fairness Opinion
Advisor Over the Past 20 Years

1,000+ Annual Valuation Engagements

Financial Restructuring

2018 Global Distressed Debt & Bankruptcy Restructuring Rankings		
	Advisor	Deals
1	Houlihan Lokey	63
2	PJT Partners Inc.	45
3*	Moelis & Co.	36
3*	Lazard	36
3*	Rothschild & Co.	36

Source: Thomson Reuters
* Denotes tie

No. 1 Global Restructuring Advisor

1,000+ Transactions Completed
Valued at More Than \$2.5 Trillion
Collectively

TMT

2018 M&A Advisory Rankings U.S. Technology, Media, Entertainment & Telecom Transactions Under \$1 Billion		
	Advisor	Deals
1	Houlihan Lokey	35
2*	Duff & Phelps	33
2*	Raymond James Financial Inc	33
4	Moelis & Co	31
5	Morgan Stanley	30

Source: Thomson Reuters * Denotes tie

No. 1 U.S. TMT Practice under \$1
Billion

35 Completed Transactions in 2018

Brief Biographies



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New York

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Qualifications

B.S.	College of Eng. Pune
M.S.	Ohio State University
MBA	University of Virginia
PAST	J.P. Morgan Securities Nimaya MicroStrategy

Mr. Pandit is a Director in Houlihan Lokey's Technology•Media•Telecom Group. He has an extensive background in TMT investment banking, with more than 50 announced transactions, representing more than \$100 billion in aggregate consideration. Over his career in investment banking, Mr. Pandit has advised CEOs, CFOs, and boards of directors on strategic and capital markets alternatives. Mr. Pandit focuses on the cloud services, enterprise software, data analytics, and infrastructure software sectors.

Prior to joining Houlihan Lokey, Mr. Pandit was a Director at J.P. Morgan's TMT Investment Banking group, which he joined in 2009. Prior to J.P. Morgan, Mr. Pandit worked in Business Development and Product Management at Nimaya, an enterprise cloud analytics provider. Mr. Pandit was instrumental in several rounds of fundraising for Nimaya, and in designing and deploying Nimaya's real-time cloud analytics products.

Before joining Nimaya, Mr. Pandit worked at MicroStrategy, a provider of business intelligence, mobile software, and cloud-based services.

Mr. Pandit holds a B.S. and M.S. in Engineering, and an MBA from the University of Virginia's Darden School of Business.



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Qualifications

B.S.B.A.	Washington University in St. Louis
PAST	Drake Star Partners Stifel Berkery, Noyes & Co.

Mr. Dresner is a Vice President in Houlihan Lokey's Technology•Media•Telecom Group.

Before joining Houlihan Lokey, Mr. Dresner served as a Vice President with Drake Star Partners in New York, where he provided M&A advisory to middle-market companies in the technology and media sectors. Prior to Drake Star, Mr. Dresner was an Associate in the Consumer & Retail Investment Banking Group at Stifel, providing M&A advisory and capital-raising services. Before Stifel, Mr. Dresner served as an Analyst with Berkery, Noyes & Co., a middle-market investment bank serving clients in the media and marketing sectors.

Mr. Dresner graduated Washington University in St. Louis with a B.S.B.A. in Finance and Accounting.

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