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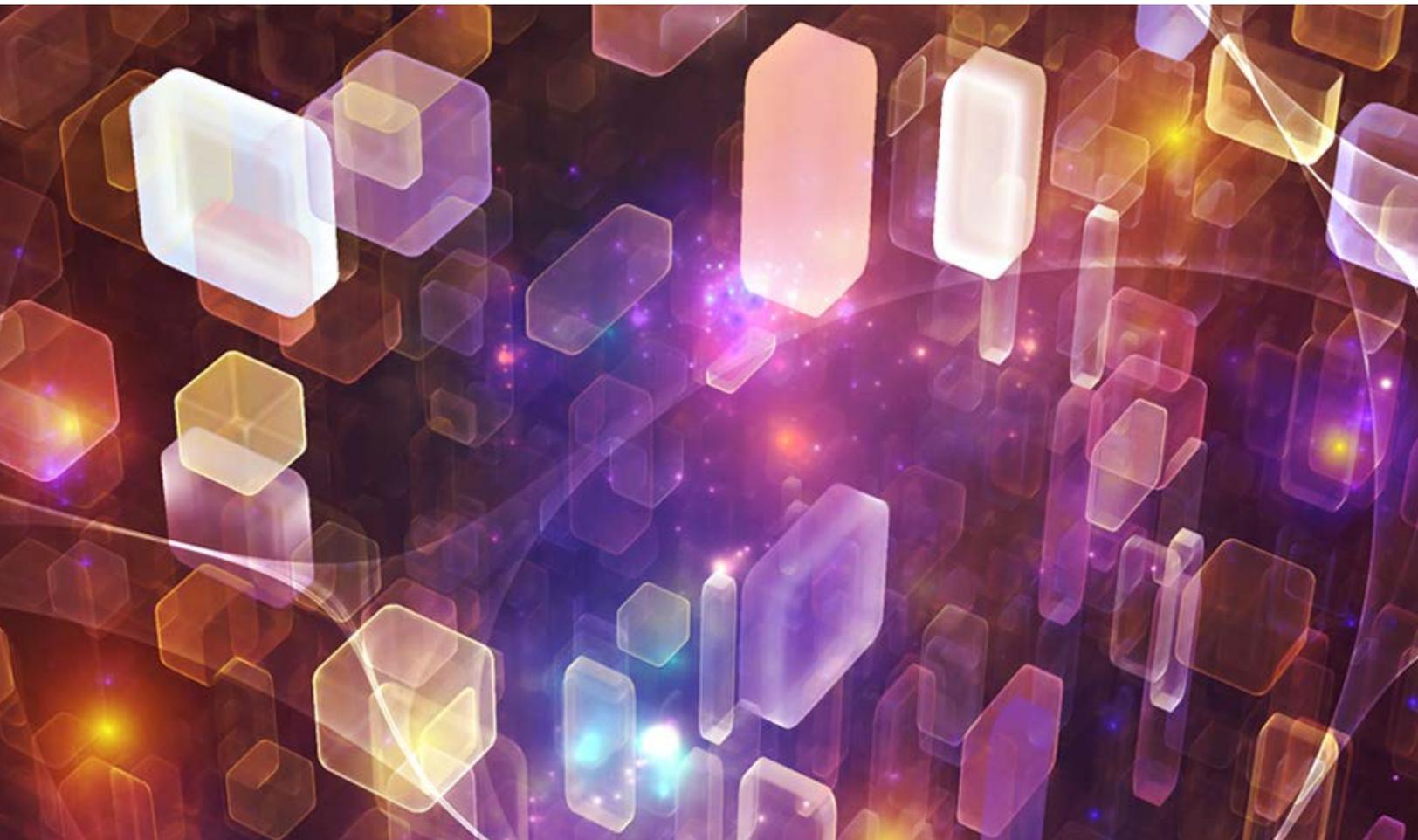
## 2020 Technology Industry Outlook

As cloud and AI deployments rise, edge computing is poised to join the mix

Deloitte Center *for*  
Technology, Media &  
Telecommunications

# Interview with Paul Sallomi

While familiar themes such as cloud computing (including everything-as-a-service, or XaaS) and artificial intelligence (AI) will once again dominate technology headlines, 2020 could be a breakout year for “edge computing.” According to Paul Sallomi, global technology, media, and telecommunications industry leader and US global technology sector leader, the time is right for companies to seriously consider exploring the advantages—including reduced latency and lower bandwidth costs—of processing data locally, at the edge of their networks. In terms of strategy, partnerships will likely become even more essential for technology companies looking to deliver solutions that drive true business outcomes for customers.



# Where do you see opportunities for growth in 2020?

As we enter a new decade, one thing is certain: cloud adoption will continue to rise as companies embrace flexible consumption through both hybrid and multicloud environments.

For many companies, the **hybrid-cloud** approach serves as an interim step in the long process of digital transformation. Due to several factors, including a reliance on legacy systems and the need to comply with corporate regulations, many organizations have opted to place their workloads on both private and public clouds.<sup>1</sup> In fact, Gartner predicts that by 2020, 90 percent of organizations will adopt hybrid infrastructure management.<sup>2</sup>

In addition to hybrid cloud, enterprises are increasingly adopting **multicloud** solutions that combine cloud services from multiple providers. According to a 2019 Kentik report, 58 percent of businesses are already using a combination of Amazon Web Services (AWS), Microsoft Azure, and Google Cloud in their multicloud networks.<sup>3</sup> A multicloud approach enables companies to assess the strengths and weaknesses of several vendors before committing for the longer term. Multicloud can also help organizations optimize costs and avoid vendor lock-in issues.<sup>4</sup> The good news is that cloud providers are developing capabilities that allow companies to operate seamlessly across multiple environments.

Many companies, however, still harbor serious reservations about utilizing public clouds—a major reason hybrid clouds have become so popular. According to a recent FileCloud report, 50 percent of companies don't plan on moving mission-critical workloads to the public cloud.<sup>5</sup> In addition, Symantec reports that more than half of organizations face challenges in protecting their workloads—and fear that the maturity of their security might not keep pace with their cloud adoption.<sup>6</sup>

This growing concern about **cloud security** presents providers with a unique opportunity. In many cases, cloud providers possess far greater security capabilities and expertise than most businesses could ever hope to develop themselves. For this reason, security has become a key driver of hybrid cloud adoption. Cloud-based security solutions continue to gain traction across many industries, especially in financial services, government, and other highly regulated sectors. As we pointed out last year, cloud-based solutions also provide the most popular path for acquiring **AI capabilities**. Increasingly, enterprises are viewing AI as essential to their continued innovation and growth. Deloitte's "Global State of AI in the Enterprise, 2nd Edition" survey found that AI early adopters consider this technology

to be "very" or "critically" important to their company's success today. The percentage of executives rating AI as "critically important" is expected to surge globally over the next two years.<sup>7</sup>

As a result, they're investing in AI—and getting a return. In fact, 51 percent of our survey respondents expected to boost their AI investments by 10 percent or more in 2019, and 80 percent indicated that their AI investments had driven ROIs of 10 percent or more.<sup>8</sup>

According to our survey, the primary AI benefits to date have been "enhancing products and services" and "optimizing internal business operations."<sup>9</sup> In the coming year, companies will likely also increasingly implement AI for managing customer interactions, developing and testing products, personalizing products and services, delivering connected equipment, and enabling deeper involvement of personal assistants in consumers' day-to-day activities.<sup>10</sup>

With the explosion of Internet of Things (IoT) devices, combined with the increased portability of computing power and AI-driven tools, the time is right for **edge computing** to experience significant growth. Consider this: according to Gartner, companies generated a modest 10 percent of their data outside a data center or cloud in 2019; this amount is expected to reach 75 percent in the next six years.<sup>11</sup> As a result, IDC predicts that in three years, 45 percent of IoT-generated data will be stored, processed, analyzed, and acted upon close to or at the edge of networks. This will largely be driven by IoT applications across industries like manufacturing, retail, health care, energy, financial services, logistics, and agriculture.<sup>12</sup>

We expect to see more and more portable and fixed networks with local high-capacity, low-latency (real-time) processing capabilities that embed analytics and AI to transform the customer experience. The benefits of edge computing can extend to factories, distribution facilities, autonomous vehicles—essentially any situation where data must be processed locally versus sending it to the cloud or a data center.



# Which strategies are tech companies using to facilitate growth?

Last year, we emphasized the growing importance of **partnerships** as a strategic tool that every technology company should employ. Until recently, strategic discussions typically began with the following question: “Should I buy or build?” As we head into 2020, that question should be modified: “Should I buy, build, or *partner*?”

With fast-paced developments in emerging technologies, partnerships can be critical for tech companies looking to enhance their existing solutions or provide more targeted offerings. Based on the key strengths and expertise of partners, companies can pursue research and development; offer more integrated solutions across their hardware, network, platform, or software stack; or target different markets altogether. Tech companies have leveraged this model extensively to offer improved products and services across areas like AI, cloud, and processing.

For many companies, this approach will require a permanent shift in their overall mindset. But today’s ultra-competitive, highly complex technology environment demands nothing less. After all, why buy an asset that’s not best-in-breed when you can team with someone who has the specific capabilities you need? Partnering represents a more efficient use of capital and will probably drive better outcomes.

This “partnership” concept also extends to **multiplayer alliances**—complex ecosystems of providers who combine best-of-breed assets to create end-to-end solutions for clients. Successful ecosystems are those that simplify issues like systems integration and contractual obligations so that the customer experience is transparent.

When it comes to strategies for developing and expanding their cloud business, many tech companies are increasingly shifting toward the **everything-as-a-service (XaaS)** model, which encompasses capabilities such as platform-as-a-service (PaaS), infrastructure-as-a-service (IaaS), and software-as-a-service (SaaS).

Within the PaaS environment, database and application platform services represent the largest market segments, with blockchain, digital experience, serverless, and AI/machine learning platform services the most recent offerings.<sup>13</sup> The global IaaS market is mainly driven by advantages such as improved disaster recovery, ease of deployment, and platform scalability.<sup>14</sup> Larger than PaaS and IaaS,<sup>15</sup> the worldwide SaaS market features solution providers that leverage microservices to offer customizable end-to-end solutions, increased agility, and better ROI measurement.<sup>16</sup>

Tech companies are also offering new solutions like security-as-a-service, data-as-a-service, and device-as-a-service to help

companies deliver XaaS benefits, such as operational efficiency and faster innovation.

In the new world of XaaS, tech companies should deliver highly tailored solutions that reflect a deep understanding of each customer’s business and desired outcomes. Most tech firms can’t do this on their own: They have long relied on **indirect channel partners** to help drive their business growth. And with the shift to XaaS, tech companies will likely continue to depend on partners’ domestic presence and localized knowledge to serve customers across regions.

Some channel partners are changing their business models to match tech companies’ XaaS transformation efforts and deliver new forms of value. But many partners are struggling to adapt their business approach for the new as-a-service world. Their concerns range from a lack of specialized talent to worries about the near-term financial implications of transforming their business models.

To address this situation, tech companies should invest the time required to make their channel partners an integral part of the XaaS transformation journey. This includes providing a clear XaaS transformation vision to partners, as well as articulating the potential long-term benefits. Some major tech companies are already investing to strengthen their indirect channels in areas such as understanding customer requirements, recommending services, deployment, integration, and simplifying billing and management of diverse cloud services.<sup>17</sup>

Of course, **mergers, acquisitions, and divestitures (M&A&D)** will remain a viable growth strategy for tech companies in the coming year, with revenue growth, tech assets, and intellectual property (IP) expected to be the top drivers. However, companies are looking to do more than simply enhance technology through M&A&D. Increasingly, they’re employing this strategy to expand into new markets and build their consumer bases.<sup>18</sup> In particular, divestitures can be important where best-of-breed assets are becoming a drain on capital and partnering is a preferable alternative.

One other strategy that no tech company can afford to overlook is building a **diverse workforce**. There is empirical evidence that inclusive companies generate up to 30 percent higher revenue per employee, are more profitable than competitors, and are eight times more likely to achieve positive business outcomes.<sup>19</sup> Diversity in the workforce and among partners can also promote ethical use of AI by reducing the potential for bias in certain applications.

# What should businesses be mindful of as they plan for growth?

In 2020, the **regulatory** arena promises to become even more complex as various jurisdictions continue to develop their own laws and guidelines. Given the lack of a consistent global regulatory standard, tech companies must closely monitor developments in this space; the price for not doing so can be steep, including potential audits and monetary penalties that can impact brand reputation.

While AI delivers a host of potential benefits, it also brings its share of risks—particularly in the area of **AI ethics**. These ethical concerns typically fall into four areas:

- *Privacy*: Collection of data and usage of facial recognition technology without consent
- *Lack of transparency*: Insufficient visibility into the “secret logic” used by AI algorithms to make critical business decisions
- *Bias and discrimination*: Underlying data set reflects biases that taint decision making
- *Lack of governance and accountability*: Who is accountable for data and AI systems, ethical norms, and unethical practices?<sup>20</sup>

How companies use AI ethically and build trust with their customers, partners, and the general public will likely be key differentiating factors now and in the future. A 2019 Edelman Trust Barometer study shows that 86 percent of respondents report more loyalty to ethical companies, whereas 93 percent say that companies have a responsibility to positively impact society.

To ensure ethical use of AI, it is important to include a broad set of employees and partners in ethics-related conversations. Major tech companies have begun to introduce AI ethics boards, but there has been a substantial amount of concern raised about the lack of diversity in some of those groups.<sup>21</sup>

Another area of concern for both tech companies and enterprises is cybersecurity—including **AI-enabled attacks** that are becoming more advanced and serious. Adversarial AI can be used, for example, to reverse-engineer an algorithm to produce damaging output. Bad actors can also employ AI to intensify cyber-attacks by impersonating trusted users, then blending into the background/environment and executing faster attacks. In addition, AI’s machine learning and natural language processing can be hijacked to create highly targeted phishing emails.<sup>22</sup>

However, AI also has the potential to **protect against existing cyber threats** and identify new ones. For example, AI applications

can create smarter event-monitoring and incident-response systems. Firewalls with embedded machine learning capabilities can identify patterns in network traffic and flag potential threats. AI-enhanced systems can also enable next-generation identity and access management that tracks users’ activities based on their roles and privileges. In the case of any exceptions, such systems can ask for added authentication based on biometric evidences.<sup>23</sup>

To continue growing, tech companies should address **skills gaps**—particularly in the area of AI. According to our most recent AI survey, “Future in the Balance? How Countries Are Pursuing an AI Advantage,” 68 percent of AI early adopters indicated moderate-to-extreme AI skills gaps; the top three roles needed to fill those gaps are AI researchers, software developers, and data scientists. However, many companies are also looking beyond technical skills and focusing on attracting or developing business leaders who can interpret AI results and make informed decisions based on them. While organizations may believe that hiring talent will provide an advantage, training their current workforce can be another option.<sup>24</sup>

Last, but certainly not least, is the area of data—or, more specifically, the imperative for companies to become more “**data-centric**.” To enable digital transformation and truly leverage AI’s capabilities, companies should develop strategies that treat data as a crucial asset. However, many companies seem to face obstacles that prevent them from developing a “data culture.” According to NewVantage Partners’ 2019 Big Data and AI Executive Survey, 72 percent of companies report that they’ve been unable to forge a data culture, and 69 percent say that they haven’t created a data-driven organization. In addition, 53 percent say they are not yet treating data as a business asset.<sup>25</sup>

AI systems are likely to make erroneous or biased decisions if the data entered into them is error-prone, inconsistent, incomplete, or outdated. Hence, data preparation and standardization is an important first step for AI technologies to deliver their true business value.<sup>26</sup>

Simply put, “You can’t analyze what you can’t see.” To thrive in the next decade, companies will likely need the ability to harvest data and visualize its implications across the enterprise. New enterprise resource planning (ERP) systems can help with harvesting “one version of the truth” for companies, but this technology should be complemented by transformed processes that enable the system to work across an entire company.

# Endnotes

1. Joe McKendrick, "Hybrid Cloud Serves as Bridge to Our Bright All-Cloud Future," ZDNet, August 12, 2019.
2. Tarun Dua, "Hybrid Clouds Play Key Role in Strategies Across Organisations," Financial Express, April 11, 2019.
3. Macy Bayern, "Rise of Multicloud: 58% of Businesses Using Combination of AWS, Azure, or Google Cloud," TechRepublic, January 24, 2019.
4. Kunal Agarwal, "The Future of Big Data Is in the Hybrid Cloud: Part 2," Forbes, January 17, 2019.
5. Ian Barker, "Half of Companies Won't Move Mission Critical Workloads to the Cloud," BetaNews, August 2019.
6. Anthony Spadafora, "Companies Don't Think Their Cloud Can Keep Up with Security," TechRadar, August 7, 2019.
7. Jeff Loucks, Susanne Hupfer, David Jarvis, Timothy Murphy, "Future in the Balance? How Countries Are Pursuing an AI Advantage," Deloitte, May 2, 2019.
8. Ibid.
9. Ibid.
10. Christina Aguis, "Evolution of AI: Past, Present, Future," Medium, February 2, 2019.
11. Anne Taylor, "Edge Computing Is in Most Industries' Future," Network World, April 23, 2019.
12. Ibid.
13. Alex Hickey, "Cloud-Only Services Lead Growing PaaS Market, CIO Dive," March 4, 2019.
14. "Infrastructure as a Service (IaaS) Market Worth USD 101.56 Billion, at a CAGR of 28%, During 2019-2023," Bloomberg, June 3, 2019.
15. Ron Miller, "Enterprise SaaS Revenue Hits \$100B Run Rate, Led by Microsoft and Salesforce," TechCrunch, June 28, 2019.
16. Vignesh Ananthraj, "With Microservices, SaaS Firms Are Giving Large Vendors a Run for Their Money," TechCircle, February 8, 2019.
17. David H. Deans, "How Channel Partners Are Set to Drive New Cloud Computing Growth," Cloud Tech News, February 19, 2019.
18. Scott Carey, "Notable Technology Acquisitions 2019," Computerworld, August 23, 2019.
19. Mike Fucci, Terri Cooper, "The Inclusion Imperative for Boards," Deloitte, April 2, 2019.
20. Nihar Dalmia, David Schatsky, "The Rise of Data and AI Ethics," Deloitte, June 24, 2019.
21. Sam Levin, "Bias Deep Inside the Code: the Problem with AI 'Ethics' in Silicon Valley," *The Guardian*, March 29, 2019.
22. William Dixon, Nicole Eagan, "3 Ways AI Will Change the Nature of Cyber Attacks," World Economic Forum, June 19, 2019.
23. Sam Bocetta, "Is AI Fundamental to the Future of Cybersecurity?," CSO, June 12, 2019.
24. Jeff Loucks, Susanne Hupfer, David Jarvis, Timothy Murphy, "Future in the Balance? How Countries Are Pursuing an AI Advantage," Deloitte, May 2, 2019.
25. Randy Bean, Thomas H. Davenport, "Companies Are Failing in Their Efforts to Become Data-Driven," *Harvard Business Review*, February 5, 2019.
26. John Murawski, "How Data Management Helps Companies Deploy AI," *Wall Street Journal*, April 29, 2019.



## Let's talk

If you're interested in learning more, please contact me and I would be happy to schedule a meeting with you.

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