



# COVID-19 outlook for the US technology industry

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# Positioning industries for a stronger future

The continuing COVID-19 crisis is creating enormous uncertainty and change—and questions with no obvious answers: Which changes will persist? What will the new world look like? How will people and firms adapt?

Even as US technology, media, and telecommunications companies focus on responding to the global pandemic and its immediate repercussions, they hopefully will soon need to pivot toward recovering from the crisis and setting themselves up to thrive in the next era. Sudden change can loosen old foundations, creating opportunities for greater progress. Companies should reassess what and how they sell, how they operate, and how they can forge stronger and more direct relationships with customers.

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## *About this series*

This series will frame a discussion and explore what's changing, what strategic issues to consider, their impacts, key actions to take, and questions to ask. There are many different scenarios, and we may not have all the answers yet, but we can act with foresight to better position ourselves for a stronger and more resilient future.

## **Key takeaways**

To recover from the crisis while making a bold play for a thriving future, there are three key strategic opportunities that technology companies should consider:

- **How to upgrade supply chains for greater transparency, responsiveness, and resiliency**
- **How to modernize capabilities by accelerating adoption of cloud, XaaS, and edge intelligence**
- **How to capitalize on asset valuations with mergers and acquisitions**

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## Emerging stronger

Nobody knows when the pandemic will subside, or how exactly it will reshape the world.

# Tech hits a glitch

The COVID-19 pandemic has affected most tech companies, whether they sell smartphones, semiconductors, servers, or cloud services. No one can say with certainty when the crisis will end or the precise effect it will have on tech companies. But we can identify some major impacts of COVID-19 to date—and consider how they could shape leaders' options and actions as tech companies seek to recover from the crisis and thrive.

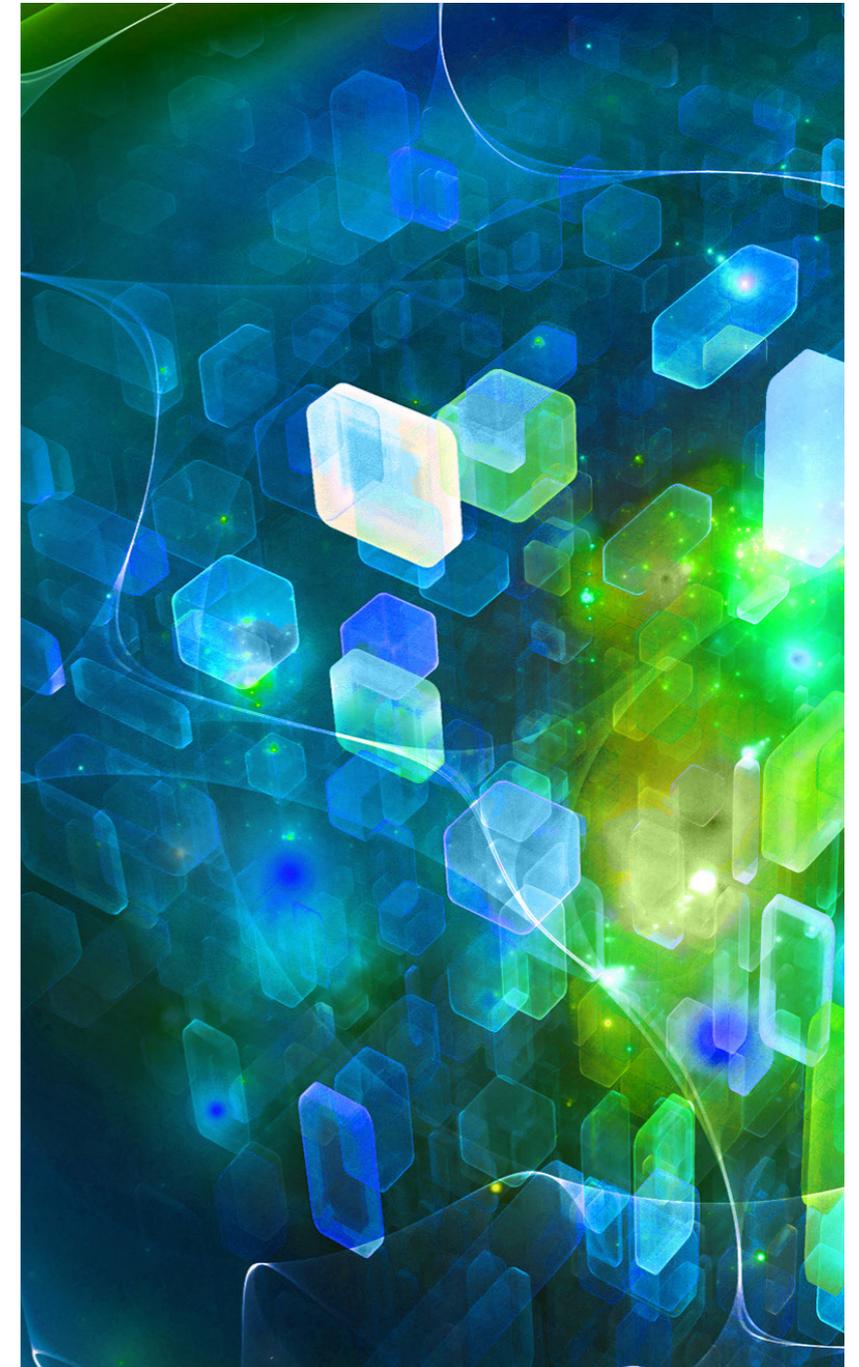
There are bright spots for the technology sector. Cloud services are in higher demand than ever. Videoconferencing and remote collaboration use are at all-time highs as companies scramble to keep employees productive.<sup>1</sup> And companies have a fresh appreciation for the scalability and resilience of the public cloud and have been rapidly shifting to cloud services.<sup>2</sup> But that does not mean the sector has been insulated.

## Demand shocks

The COVID-19 crisis has reduced overall demand for many consumer and enterprise technology products and services. Deloitte has developed scenarios forecasting a reduction of real US GDP growth between -5 and -10 percent.<sup>3</sup>

In comparison, US GDP declined by 4.3 percent during the Great Recession of 2007–09.<sup>4</sup> Shelter-in-place orders are curtailing many business operations, forcing them to furlough or cut employees: In the United States, jobless claims from the first month of the shutdown topped 22 million.<sup>5</sup> The effect on companies across industries has been immediate, with steep declines in both sales and output,<sup>6</sup> and the economic damage could be far-reaching and lasting, even when restrictions are lifted.

With consumers and businesses facing losses, IT spending has declined—as of April 2020, IT spending for the year is forecast to fall by 3 percent, revised down from a 5 percent increase in January.<sup>7</sup> Smartphones



could be hit especially hard: Many consumers have held onto smartphones they consider “good enough” instead of buying new ones,<sup>8</sup> and that trend could continue as they look to cut expenses. Declines could be coming in servers, storage, and network hardware as enterprise IT services also look to reduce costs. Software had been poised for double-digit growth in 2020, but as companies postpone enterprise upgrades and big projects to preserve cash, growth could be closer to 1 or 2 percent.<sup>9</sup> Supply has suffered as well. With work-at-home mandates, tech companies saw a spike in orders for laptops and related hardware, but they couldn’t take full advantage because their supply of needed components quickly dried up.<sup>10</sup> These conditions are likely to worsen the longer the crisis continues.

What was expected to be a banner year for tech revenue is now uncertain. Most tech companies will likely need to preserve cash and find ways to stabilize supply and spur demand.

### Supply shocks

COVID-19 is a large [black swan](#) event,<sup>11</sup> but tech supply chains can be vulnerable to events of lesser magnitude as well, because chains are highly concentrated: A handful of companies, mostly concentrated in Asian cities, orchestrate manufacturing ecosystems to produce a high percentage of components such as semiconductors, memory chips, touchscreens, and monitors.<sup>12</sup> For specialized machines, such as lithography used in semiconductor manufacturing, there is sometimes a single supplier. Exacerbating this problem, many tech companies don’t

have fully digitized supply chains, which means they lack visibility into the supply of required components and can’t quickly adjust when their suppliers fail to deliver. Digitizing supply chains should be considered a priority for tech companies that have been forced to remake their supply chains on the fly during the COVID-19 crisis. In the long term, tech companies may need to rethink whether concentrating production so narrowly in Asia is tenable. Building regional diversity, including “reshoring” production, might help avoid future disruptions.

### Workforce disruptions and remote work

Many tech companies have enabled remote work for years—at least for certain functions. They are now equipping a broader range of employees with laptops and virtual desktops and finding that many jobs, and even client

interactions, can be done remarkably well remotely. Remote work is increasingly popular with both current and prospective employees, particularly those averse to long commutes.<sup>13</sup> Once lockdowns are lifted, remote work will likely play a bigger role in corporate operations and human resources strategies, with leaders looking at savings in travel costs, the ability to recruit nationally (and internationally), and potential reduction in real estate and environmental footprints.

## Cybersecurity vulnerabilities exposed

With so many employees working from home and using new services, some are, inevitably, exposing corporate networks—and their own data—to hackers. Phishing campaigns are reeling in unsuspecting employees; cybercriminals are spreading malware.<sup>14</sup> Hackers are also exploiting vulnerabilities in cloud-based services and computer hardware, and employees working from home are not the only targets. Cyberattacks on health care facilities, laboratories,

and government have spiked during the COVID-19 crisis, as have state-backed attacks.<sup>15</sup> Improving cybersecurity in every aspect of the tech value chain—especially how software is developed, hardware is made, and cloud services are delivered—can be critically important.

## Data-sharing and AI prove their value

The pandemic may make people around the world newly appreciate the benefits of sharing personal data. Apps using anonymized location data are tracking the spread of COVID-19 to prevent further infections—and showing the positive effects of social distancing.<sup>16</sup> Artificial intelligence (AI) is accelerating the hunt for a vaccine by helping researchers understand viral protein structures and searching research papers for potential solutions.<sup>17</sup> Big tech companies have shared algorithms and donated the use of supercomputers to aid the search.

Many consumers remain concerned about the privacy and security of their personal data; they want tech companies to give them more transparency and control over how their data is used.<sup>19</sup> And tech companies can seize this moment—when the societal benefits of sharing data are evident—to reassure consumers by prioritizing privacy and trust. Something similar is happening with AI: The benefits are clear, but many people are concerned about unintended consequences and the potential for job losses. Now is the time to manage AI's risks head-on and to set guidelines for the technology's ethical use.

# The road to a strategic recovery

For all its pain, the COVID-19 crisis can be an opportunity to make significant upgrades to infrastructure and processes that may be long overdue. Developing more transparent and dynamic supply chains, enabling higher-performing remote workforces, and accelerating migration to public clouds are potential ways to recover strongly while setting up long-term strategies for success.

## Create transparency across supply chains

In recent weeks, some tech companies have found themselves unexpectedly unable to sell products due to missing components.<sup>20</sup> And a lack of visibility throughout their supply chains has complicated the issue. Primary, or tier one, suppliers often manage webs of their own suppliers, and companies may have no relationship with these second- and third-tier suppliers—or know which components they provide, their inventories, or production constraints.<sup>21</sup> When disruptions happen, companies may lack the data to determine where failures are occurring and to make swift course corrections.<sup>22</sup>

## Actions to take:

Tech companies should consider digitizing their supply chains to gain visibility throughout their supplier networks. They can start by developing business continuity plans for supply chains and using supply chain mapping to identify suppliers of critical components, from tier one down to raw materials providers. They can coordinate with suppliers to build digital supply networks that visualize the flow of components, receive alerts when suppliers' stocks are low, and automatically switch to alternatives before missed shipments occur.<sup>23</sup> And they can test new technologies such as AI and blockchain. Some supply chain visualization applications use AI to analyze supply chain performance, predict problems, and suggest alternatives. Blockchain offers tech companies a real-time view of their supply chain partners<sup>24</sup> and the ability to execute financial settlements.

In the longer term, tech companies should consider building—or reopening—production facilities in North America to build redundancy into the supply chain. Tech companies talked about diversifying production after the Japanese earthquake in 2011 and trade disputes in 2019,<sup>25</sup> including reshoring manufacturing capacity. In the wake of the pandemic, that talk may turn to action. Advances in robotics, driven by AI and the intelligent edge (see below), are making manufacturing in high-cost countries more affordable.

## Questions to ask:

- When we consider our compliance and risk management spending, how much do we invest in mitigating supply chain risk versus compliance risk? Where are the greatest risks to our company's financial health?
- Do we have real-time data throughout our supply chain, or do we rely on “human intelligence” and relationships for mission-critical data?
- Do we have ready alternatives for the bill of materials of our most important products?
- Are there new technologies and approaches we could use to improve our ability to anticipate problems and switch suppliers before a shortage occurs?
- How can we ensure that the components we use in our products don't have design flaws that hackers can exploit?
- What happens if we need “surge capacity”? Which suppliers can meet the demand?

## Enable high-performing remote workers

Mandatory shutdowns make it hard to develop products with in-person teams. It's unclear how long current shutdowns will last or whether there will be multiple waves of them over the next year. Tech companies should consider developing new products, services, and software—and performing essential updates and upgrades—even when engineering and design teams have no choice but to work remotely. They should also help ensure that product development moves ahead if key personnel are unavailable. Enabling more regular remote capabilities after the crisis can ultimately lower costs and ensure greater resilience without sacrificing performance.

### Actions to take:

Tech companies should consider digitizing their design processes, from knowledge-sharing through the simulation of physical products. The benefits can include bolstered resilience and the ability to launch new services. The main steps can address three key areas:

1. *Knowledge management.* Build a knowledge exchange to prevent “single points of failure” if key personnel are unavailable. Identify top skills and experts and ensure that their knowledge is available to others on the design team.
2. *Digital design.* Design data should be captured and managed through “digital threads” that enable virtual collaboration and maintain version control. Digital threads can be especially important in maintaining DevOps for software development in a remote work setting.
3. *Digital testing.* Build digital twins of physical products that simulate all components and systems. This can allow companies to do much of their product testing virtually. Digital twins can also enable predictive analytics services and maintenance for complex products.<sup>26</sup>

With digital product development in place, tech companies can be better able to develop products virtually, protecting them from risk and helping them to recruit design talent from around the world instead of being limited to specific locations.

### Questions to ask:

- How prepared are we if key product design engineers were to become unavailable? Would important projects stall?
- Could our design projects continue if shutdowns lasted longer than a few weeks?
- How do we manage version control with remote teams?
- Can we simulate product design and testing to minimize the need for physical prototypes?
- Product development data is valuable intellectual property and can be the target of industrial espionage attacks. How can we ensure that our “digital threads” are secure?

## Accelerate migration to the public cloud

The COVID-19 pandemic has helped show the value of the public cloud. Many companies that use the public cloud, such as videoconferencing services, have been able to scale as demand spiked. In contrast, some companies that rely on their own IT infrastructure have had trouble scaling their operations during the crisis, resulting in service degradation and lost revenue.<sup>27</sup> Some have also struggled to fix infrastructure and install new hardware because they couldn't get IT staff onsite.<sup>28</sup>

### Actions to take:

Companies should consider migrating more of their applications and workloads to public cloud services. Cloud migration often requires careful strategy and planning,<sup>29</sup> and some applications may be unsuitable for public clouds. But for those that make sense, public clouds can help tech companies reach two critical goals during the COVID-19 crisis. The first is to cut costs, though for this strategy to pay off, companies should decommission data centers to avoid paying both to operate multiple data centers and for cloud-based workloads. The second goal is to make IT more agile by adapting dynamically to spikes in demand while paying only for what companies use. Another benefit of cloud migration can be the ability to develop cloud-native apps that are more efficient, modular, and adaptable.

### Questions to ask:

- Which applications can we shift quickly to public clouds?
- Are there cloud-based services or applications we can use right away to reduce costs?
- What steps can we take to migrate legacy applications from our data center to the cloud?
- How can we ensure that our data in the public cloud is secure? How can we ensure that we work closely with cloud providers to have best-in-class cybersecurity policies?

# Thriving in the coming era

The COVID-19 crisis is forcing many businesses into a defensive posture amid unprecedented change and uncertainty. Yet the world will likely inevitably return to a new equilibrium, as it has after every past crisis. Done smartly, recovery can take advantage of sudden opportunities to make bold changes that shift tech businesses into a position of thriving in the coming era.

## Manage costs and responsiveness with everything-as-a-service

Increasingly, many companies across industries prefer to pay for technology based on usage instead of the traditional IT model involving an up-front purchase or licensing. That will likely accelerate as they seek to preserve cash during and after the COVID-19 crisis. Most importantly, leaders see everything-as-a-service (XaaS) as a critical way to increase business agility<sup>30</sup> and to access innovative technologies such as artificial intelligence.<sup>31</sup>

## Actions to take:

Tech companies that sell hardware and services should consider accelerating their transition to XaaS offerings. This process involves a series of steps that enable companies to market, sell, deliver, support, and scale XaaS solutions.<sup>32</sup> Tech companies should also establish customer success organizations to improve renewal rates and new service adoption. By ensuring that XaaS customers get maximum value from their subscriptions and are offered complementary services based on their usage and needs, tech companies can develop strong recurring revenue streams.<sup>33</sup> Finally, tech companies should develop channel partners that can help them build upon XaaS services with vertical and regional-specific offerings.

## Questions to ask:

- What are the most important product lines to move to XaaS?
- What steps are needed to adapt our sales operations and incentives to XaaS?
- Which channel partners can make the transformation to XaaS with us? Who is positioned to add value on top of a service-based offering?
- Can we expand our XaaS portfolio through acquisitions and partnerships?
- As we move into XaaS, how do we build cybersecurity into our new services?

## Expand automation with edge intelligence

Companies across industries are looking to cut costs and develop value-added services by automating and digitizing their operations. Even as they look to cut costs, companies will likely invest in technologies that advance these strategic goals. Intelligent edge technologies can be essential for building automated, efficient manufacturing facilities—which many industries may be looking to reshore to make their own supply chains more resilient. Critically, the intelligent edge can enable rapid evaluation of data right where it is collected.

### Actions to take:

Develop intelligent edge product and service portfolios. The intelligent edge is the combination of processing power, data analysis, and advanced wireless connectivity that takes place near—or on—network endpoints. These endpoints are devices that generate and consume data: smartphones, robots and drones, and sensors. Importantly, the intelligent edge isn't a single thing—it's a complementary piece of a holistic enterprise, from cloud to servers to sensors, devices, and users.

Some tech companies are developing important components of the intelligent edge now, including compact, modular, and ruggedized converged systems; Wi-Fi 6 networking gear; and inexpensive, low-power [edge AI chips](#).<sup>34</sup>

Tech businesses can partner with telecom companies and enterprises to develop industry-specific solutions around proven use cases. Many intelligent edge technologies are helping to automate warehouses, ports, retail stores, and factory floors, often with new technologies such as AI-enabled robots. Codeveloping solutions with these companies can help accelerate the adoption of managed intelligent edge services. It can also slow commoditization: Edge services can be built with software using white-box hardware.

### Questions to ask:

- Which intelligent edge use cases show the most promise in terms of effectiveness, adoption, and market size? How would these align with and affect existing enterprise services?
- How can we develop an integrated solution instead of providing hardware components? How can we connect that solution to customers' data centers and cloud environments?
- Which partnerships might help us enter promising industries and markets?
- Edge devices can increase the “attack surface” of the enterprise. How can we secure these devices and our data centers at the edge?

## Seize the M&A opportunities

In the immediate term, the COVID-19 pandemic has stalled most mergers and acquisitions, if not sinking them altogether.<sup>35</sup> The shutdown has also cut the stock price of nearly every company and reduced the valuations of promising startups.<sup>36</sup> Soon, there may be significant opportunities available.

### **Actions to take:**

As the immediate crisis fades—but before the recovery begins in earnest—tech companies with ready cash should consider strategic acquisitions to enter new markets and make tech and talent deals to bolster their capabilities.

### **Questions to ask:**

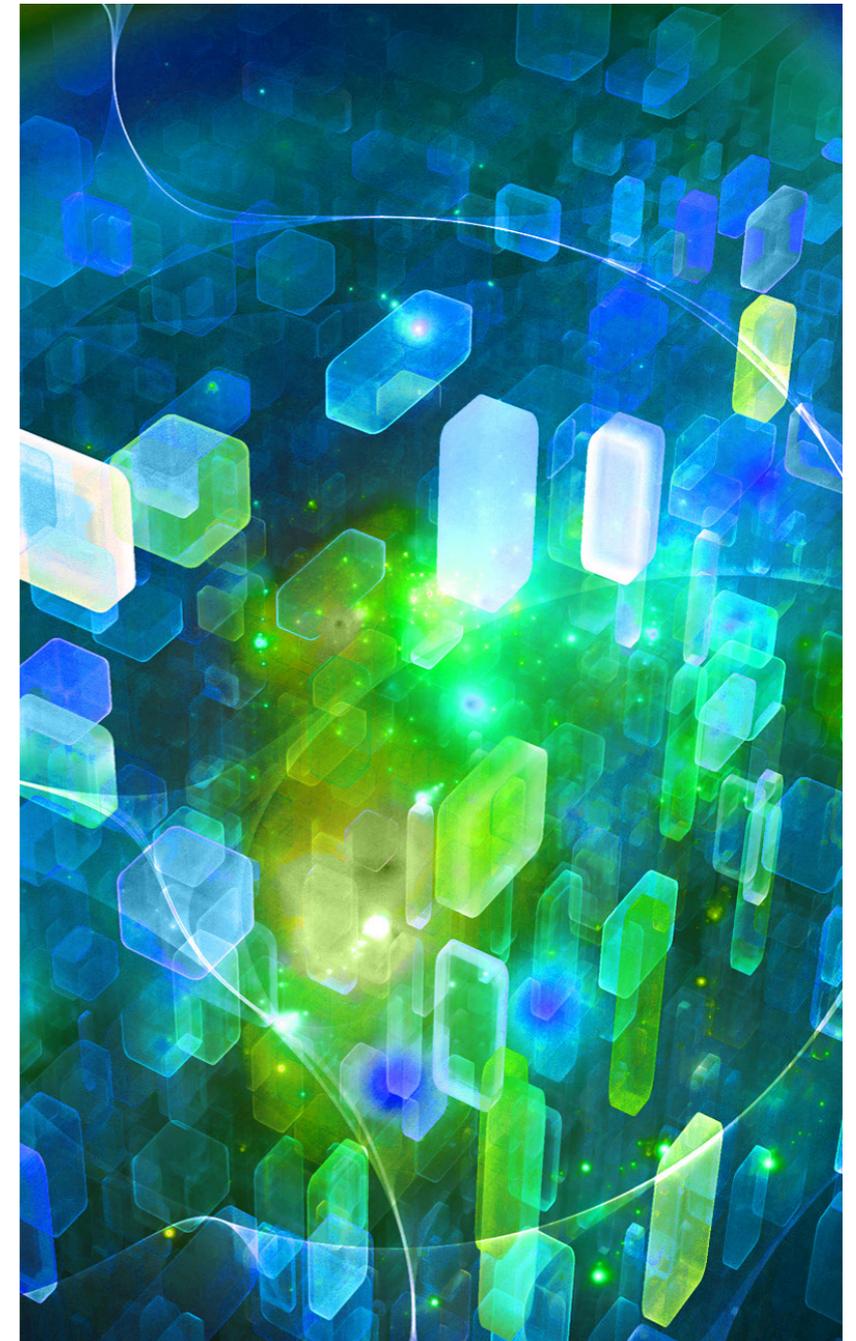
- Which markets or adjacencies can we enter with the right acquisition? Have the “right” opportunities changed in the wake of the pandemic?
- Are there companies we had considered as acquisition targets and rejected due to overly high valuation? Has the situation changed?
- Are there skills we need that can be met through a “tech and talent” deal at an attractive price?



# Emerging stronger

Nobody knows when the pandemic will subside, or how exactly it will reshape the world. The tech industry has helped people and companies stay connected and, in many cases, stay in business. The decisions tech companies make today can help them to recover from the impacts of COVID-19.

But the goal shouldn't be merely to bounce back after governments lift the lockdowns. Tech companies have the opportunity to emerge stronger, more resilient, and more innovative. And because technology has changed the way every industry operates, the decisions tech companies make today can help companies from every industry recover and thrive as well.



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