

Abstract

COVID-19 has impacted every economic market, and cybersecurity is no exception. Concerns of spreading infections are driving people to remain vigilant. Businesses continue to favor work-from-home protocols; when working from home is not possible, businesses are enforcing policies for social distancing. This document focuses on NSS Labs' view of how the pandemic will affect the cybersecurity market through 2021 and beyond.

Summary

COVID-19 has disrupted the global economy and will continue to strongly drive behavior for the next 12-18 months, possibly longer. The heightened awareness this pandemic has created is likely to last much longer than the pandemic itself. Business leaders should adapt and plan accordingly, as many of the pandemic-related changes will become permanent. Businesses leaders will be confronted with the “three Ds”: Distancing, Decentralization, and Depression; social distancing, working remotely vs. in an office (decentralization), and a severe and sustained downturn in economic activity in multiple economies around the world (depression).

The pandemic and economic downturn have forced organizations to reprioritize. CISOs are hesitant to ask for money when CFOs are trying to cut costs to save jobs (or stave off bankruptcy). Organizations have reprioritized to enable remote work and placed all non-essential projects on hold. Technologies that enable remote work will see rapid growth over the next 12-18 months; others will find themselves operating in a challenging environment:

- The *enterprise firewall* market will be flat overall; some customers are increasing capacity to enable remote work while others have cut expenses and frozen projects. The net effect is that growth will stall.
- There will be accelerated adoption of *cloud network firewalls* and *secure access service edge (SASE)* as applications are moved to the cloud and remote workforces require easily deployed, scalable protection.
- *Software defined wide area networking (SD-WAN)* will see slower growth as businesses lay off workers and reassess office space requirements. Crowded open offices are not feasible in the short and medium term – lower density equals higher cost per seat with fewer seats available in existing office space; remote workers do not require permanent office space.
- The market for *branch office firewalls* will experience contraction. Unlike enterprise firewalls, increased branch office capacity is not required to enable remote workers; expect dollars to shift to SASE. Branch office firewalls will be targets for budget cuts. NSS Labs predicts market consolidation: the market winners will combine branch office firewalls with SD-WAN and SASE to route employees to the right digital resources from any location.
- The *SMB firewall* market will contract; a few customers will increase capacity to enable remote work, but many small businesses will hunker down, while others will go bankrupt. Expect additional downward pressure as the SMB adopts more and more SaaS solutions, moving everything they can to the cloud.
- The *Endpoint* protection market will experience a modest contraction that will be visible in Q4 2020 – Q1 2021 when renewals come due and new deals fail to materialize. Customers that have not already begun deploying new products are in a holding pattern, and no new deals are being approved unless absolutely necessary. Expect pressure on margins, especially as the newer technologies fight for market share and are forced to absorb migration and implementation costs.

Analysis



While slowdowns of economic activity (recessions) occur as part of a normal business cycle, the COVID-19 Pandemic has caused a disruptive shock to economic activity outside of the normal business cycle. The result is a severe downturn (depression) marked by sudden economic contraction, mass unemployment, and economic scars that are likely to be long-lasting. Research indicates that the downturn will be marked by two phases: the first phase is a sudden contraction followed by a rapid partial recovery; the second phase will be recognizable as the partial recovery stalls and persistent unemployment depresses demand, leading to another downturn and eventual recovery.

The epicenter of the economic crisis is retail, transportation, and hospitality (restaurants & hotels). Secondary markets impacted are construction, oil & gas, education, entertainment, and manufacturing. Tertiary markets impacted are financial services (due to debts not being repaid), healthcare (delayed elective treatments due to COVID-19), and state and local governments as tax revenues dry up while expenses increase (budget crunch).

Retail, hospitality, transportation, and other highly impacted industries have furloughed and laid off employees. Research indicates that there will be an increase in bankruptcies; small businesses within the retail and hospitality sectors will be particularly hard hit. Surveys find that consumers will remain cautious for both health and financial reasons, putting a dampener on any recovery. A significant number of businesses that closed “temporarily” are not reopening; it will take many years for industries that were the worst hit to return to pre-crisis levels. Government stimulus has filled some of the demand gap and reduced the severity of the crisis, at least for now. But the initial consensus among policymakers has ended, and there is significant uncertainty about how much support the economy will receive (and the form it will take) moving forward.

Our research points to increased downside risk for cybersecurity companies that service vulnerable verticals. Product Suppliers should reexamine their business model assumptions and rebalance priorities to profitability or at least protecting cash, especially if continued rapid growth is required to pay for expansion. Cloud computing and telecommuting have reduced disruption and enabled knowledge workers to be productive from home. The online delivery economy has provided a lifeline to consumers who have limited access to shopping malls, department stores, grocery stores, and restaurants.

If the global economy is not in the midst of a strong recovery by Q4 2020, or if a recovery is not obviously imminent, expect additional economic contraction as business leaders, who held onto employees in anticipation of a rapid recovery, begin layoffs. Expect sales to be impacted by reduced renewals of software licenses in Q4 2020 and Q1 2021, when annual license renewals traditionally occur. Secondary ripple effects will cause widespread disruption for people and organizations; these may be more damaging than the original disruption.

Recommendations:

- The changes brought about by this pandemic will outlast the pandemic itself. Business leaders should adapt and plan accordingly.
- Leaders should think through secondary and tertiary ripple effects in order to minimize disruption.
- Companies should raise money and reduce expenses to preserve cash while they can.

1. Distance

Research indicates that a new normal based on a “distance model” will reshape society, altering the cybersecurity landscape in the process. The companies that successfully navigate this transition will be purposeful and considerate of security issues surrounding the changes in their operations.

Society is adapting to COVID-19 by instituting social distancing to reduce transmission of the virus; avoiding contact when possible and adhering to a bubble of personal space when avoidance isn’t possible. Retail, transportation, entertainment (movie theaters, plays, live sporting events), and hospitality (restaurants & hotels) have been disrupted. Food processing, manufacturing, and other crowded work environments have been beset by virus outbreaks. Offices are largely vacant as employees work from home.

This distance model will drive economic growth for the foreseeable future. Consumers that are averse to the risk of shopping or eating in close quarters increase demand for drive-up, drive-through, and delivery services; businesses with crowded work environments will deploy the Internet of Things (IoT) to automate and reduce the risk for employees, and deployment of Industrial IoT (IIoT) equipment that performs undesirable tasks will make industrial environments safer. Employers are realizing that modern, open office spaces will not be workable, even after the pandemic recedes; more space per employee will be required.

- 1.1. The commercial real estate market will go through a multi-year transformation as more employees permanently work from home, while others return to offices equipped with larger and more isolated workspaces.
- 1.2. The pandemic related increase in online purchases will persist and accelerate. In person, experience-based shopping will falter. Online retailers like Amazon are well-positioned; companies tied to large retail spaces will be challenged as the market changes; traditional mall giants are in serious trouble, as are the small vendors who rely on their foot traffic.
- 1.3. While companies like J.C. Penney, Macy’s, and Nordstrom have an online shopping presence, it has clearly not been their primary focus. As a result, they have lost market share to online vendors like Stitch Fix that are 100% online. How many of these companies will be able to reorganize and refocus on a distance model that allows them to shift to online sales?
- 1.4. The distance model will drive innovation in the education, mobile product and delivery services (i.e. food) markets. Applications will service more customers with greater functionality and richer content; expect to see more video, augmented reality (AR) and virtual reality (VR) in support of this new economy, making online customers’ buying decisions easier. For example, Apple’s iPad Pro 2020 has LiDAR (laser + radar) built in and the iPhone 12 is rumored to as well. Combine that with the IKEA Place app and you can try out virtual furniture in your living room to see how it looks and whether or not it fits.
- 1.5. 5G wireless will be widely available in 2021. More apps, more content, and more online services require more bandwidth (and more data security).
- 1.6. The COVID-19 pandemic will be a catalyst, accelerating adoption of 5G and the IoT for business and industrial use – as a way of managing devices from a distance. Smart devices equipped with built-in 5G capabilities will be deployed at scale – connecting with the cloud where they can then be managed.

Deployment of Industrial IoT (IIoT) capabilities will accelerate in cases where equipment can augment humans and make industrial applications safer. For example, systems within electrical powerplants can now automatically throw a breaker and prevent a cascading outage.
- 1.7. The COVID-19 pandemic destroys the last semblance of a perimeter that once was the backbone for cybersecurity defense. Mobile workforces will bypass traditional security controls and force a reckoning within the security market.

2. Decentralization

The COVID-19 pandemic has served as a catalyst, accelerating technology adoption that was already underway: virtual offices (mobile/remote), robotics, e-commerce, and smart devices (IoT). Adoption of cloud computing has accelerated as companies moved business applications to the cloud so they can be accessed by remote employees.

Companies have transitioned their white-collar workforce from working in traditional office space to working from home; many have identified the potential savings by keeping their workers out of the office ... and they've already absorbed the pain. As a result, investments in traditional IT and cybersecurity infrastructure are declining and will continue to do so through the rest of 2020.

For those businesses not fully prepared to move to a remote workforce, investments will shift from on-premises infrastructure to cloud services, endpoint security, secure access service edge (SASE), and other cybersecurity technologies that enable decentralization.

- 2.1. On-premises infrastructure is expensive to purchase and maintain as it requires planning for worst case or peak utilization. On the other hand, with cloud services, businesses are free to purchase only what they need, and the infrastructure will scale automatically, up or down, based upon immediate needs.
- 2.2. Many companies were not prepared to provide all employees with a system (laptop or desktop) to be used from home. They have adopted varying strategies to enable employees to work using their personal devices such as requiring installation of BYOD software on non-company owned devices to ensure compliance with corporate policies and governance. *Note: All parties should proceed with caution as inadvertent intrusion into employees' personal lives may occur as a result.*
- 2.3. Companies migrated internal resources to the cloud so that employees might reach them regardless of location.
 - 2.3.1. Virtual Private Networks (VPNs) enable remote employees to securely access internal infrastructure. Most companies purchased VPN technology as part of their firewall solution.
 - 2.3.2. Many organizations found their VPN connectivity to be inadequate as they shifted the majority of the workforce to "work-from-home."
 - 2.3.3. Increasing the VPN capacity was simple enough, however, as employees transitioned to work-from-home, bandwidth requirements increased dramatically. Even if a company was able to increase VPN capacity, they lacked sufficient (and reliable) internet connectivity, a more difficult and time-consuming problem to solve. The answer was to migrate internal applications to the cloud.

The US CERT, specifically the Cybersecurity and Infrastructure Security Agency (CISA), has issued a national alert.¹ Phishing attacks on companies are not going to decrease because of this decentralization. In fact, they are likely to increase as misconfigured VPNs, home networks, personal computers, and other threat vectors open up to adversaries. The IT security team must also address data loss prevention and insider threat risks, because the centralization of data has been disrupted. Before the giant push to work from home, it was much easier to identify where critical information was stored. Now, the challenge is bigger. Risk tolerance must be reevaluated, and organizations must adapt.

3. Depression

Research indicates the global economy is experiencing a severe downturn with aftereffects that will linger for several years. Economies are perpetual motion machines that are not designed to be shut down; unemployment has already reached its highest levels in nearly 90 years. The USA, Europe, and other economies disrupted by the COVID-19 pandemic will experience a depression for the first time since the Great Depression. The larger effects of this economic downturn will reshape the cybersecurity market.

Indicators point to a high likelihood the economy will experience a “dead cat bounce,” a brief (and incomplete) recovery followed by a sudden downturn. Survey data supports the view that even if governments do not issue stay at home orders to limit the spread of the virus, households are modifying their behaviors to reduce the risk of contracting COVID-19 while also reducing expenses to increase savings. This shift from spending to savings reduces aggregate demand, depriving the economy of the fuel necessary for a quick recovery. As a result, the economic recovery is likely to stall, triggering a double-dip economic downturn with unemployment likely exceeding 20%. There will not be a complete recovery so long as the virus persists, and until an effective treatment or a vaccine is developed and widely used.

Given the politics of the 2020 presidential election in the USA, it is probable that the federal government will provide significant economic relief in the near term. However, it is unclear how long that next relief package will last and what the longer-term needs will be. And it is unclear what will happen after the election, with different political outcomes resulting in vastly different levels and types of government support. So far, much of the government rescue package has been focused on supporting the supply side of the economic equation. It makes sense. Pay employers to retain employees on their payrolls during a short-term government mandated shutdown. However, the longer the pandemic continues, the more likely it is that some structural changes (like working from home) will be made permanent. If demand is shifting to alternative solutions such as videoconferencing and meal delivery, how long will/should the government pay employers to retain pilots, flight attendants, waiters, etc.? And when government supply-side support eventually stops, redundant employees will be let go; it is unclear whether political support exists for government spending to stimulate demand.

- 3.1. The pandemic decimated the retail, transportation, and hospitality (restaurants & hotels) markets. The epicenter of this economic crisis is in these markets; vast numbers of businesses have closed down entirely. Restaurants across the country have been shuttered, while some remained open with minimal staff to provide take-out or delivery services. Hotels laid off hundreds of thousands of staff members as the number of travelers dropped to a small fraction of levels seen before the pandemic. Airlines, bus lines, and Amtrak reduced schedules. Ridesharing is virtually non-existent.
- 3.2. The second tier of markets impacted includes construction, oil & gas, entertainment, and manufacturing. These businesses are suffering because people have been told to stay at home and practice social distancing.
 - 3.2.1. Oil & Gas industry has been hit hard. It takes years for new oil production to come online and oil companies plan months in advance, adjusting their future production based on forecasts within certain bounds. The sudden and drastic drop in the demand for oil (as people are driving less) has led to price drops such that it is no longer profitable to pump oil from the ground, yet it often costs over \$1 million to shut down a single well. In late April, the price of oil futures went negative, and producers paid buyers to take their oil.
 - 3.2.2. The pandemic slammed the entertainment industry as well. Social distancing requirements forced theaters to close and sporting events to be canceled; theme parks and other venues like bowling alleys and game centers closed as people stayed home. Movies and TV shows stopped being filmed as sets closed down although Hollywood has established new safety rules so that production can resume. While theaters have been in lockdown, consumer spending is up on digital platforms offering a larger inventory for video on demand.

- 3.2.3. Manufacturers are finding the requirements of social distancing to be challenging operationally. They have also run head-on into supply chain problems, while they are contending with a drop in demand.
- 3.3. Third order effects of the COVID-19 economic downturn will hit financial services, healthcare, and state and local governments as revenues dry up while expenses continue. The U.S. federal government's rescue package will reduce the severity and length of a downturn, but it will not prevent it entirely.
 - 3.3.1. Financial institutions will feel the inevitable impact as individuals and small businesses fail to pay their debts in the coming months. The numbers of small businesses filing for bankruptcy will skyrocket.
 - 3.3.2. Over the next three quarters, there will be budget shortfalls for hospitals, clinics, and emergency centers as fixed expenses continue and fearful patients decline to visit. An early indicator that people have put off a visit to their doctor is that the number of cancer diagnoses over the past two months is down significantly.^{2,3} Fewer diagnoses also means fewer patients, for less time, receiving less treatment, which (in addition to more people dying) leads to a downturn in hospital revenue.
 - 3.3.3. Many state and local governments are likely to experience significant revenue shortfalls both from a smaller tax base as people are out of work and because of lower sales tax revenue as people stay at home. These shortfalls will trigger budget cuts, and without any other meaningful way to reduce costs, civil servants (police, firefighters, school teachers, etc.) will be laid off, deepening the economic downturn. The federal government can backstop state and local governments in order to avoid this, but so far have not demonstrated the political consensus to do so.

Therefore, while some foresee a rapid recovery, we believe, as was the case in the airline industry after 9/11, the recovery will be much slower. Fear will slow the return to public places, large social gatherings, and areas of compressed humanity (like restaurants, sporting events, airplanes, subways, schools, buses, and trains.) Some people will never stop wearing face masks in public places and will continue to social distance long after the threat of COVID-19 has passed.

SASE

Value Prop: Low-cost alternative to replace MPLS

Use Case: Branch office/Rapid enablement

Change in Outlook	Market Environment	Note
Positive	Faster Growth	Forcing function - expect acceleration.

Primary Customers	Pre-Pandemic	Post-Pandemic
Technology	Up	Up - Rapid Deployment
Financial Services	Up	Up - Rapid Deployment
Healthcare	Up	Up - Rapid Deployment
Government	Up	Up - Rapid Deployment
Construction	Up	Down
Hotels	Up	Down
Restaurants - Chains	Up	Stall
Higher Education	Up	Up - Rapid Deployment
Pharmaceutical	Up	Up - Rapid Deployment
Manufacturing	Up	Stall
Transportation	Up	Down
Retail	Up	Down
Oil & Gas	Up	Down
Electric	Up	Up - Rapid Deployment

Cloud Firewall

Value Prop: Scale and specificity

Use Case: Cloud security/Enable migration to cloud/Enable remote work/Security tied to the app

Change in Outlook	Market Environment	Note
Slightly Positive	Slightly Faster Growth	Natural transition with cloud adoption.

Primary Customers	Pre-Pandemic	Post-Pandemic
Technology	Up	Up - Rapid Deployment
Financial Services	Up	Up - Rapid Deployment
Healthcare	Up	Up - Rapid Deployment
Government	Up	Up - Rapid Deployment
Construction	Up	Down
Hotels	Up	Down
Restaurants - Chains	Up	Stall
Higher Education	Up	Up - Rapid Deployment
Pharmaceutical	Up	Up - Rapid Deployment
Manufacturing	Up	Stall
Transportation	Up	Stall
Retail	Up	Down
Oil & Gas	Up	Down
Electric	Neutral	Neutral

SD-WAN

Value Prop: Low-cost alternative to replace MPLS

Use Case: Branch office/Replace MPLS over time

Change in Outlook	Market Environment	Note
Slightly Negative	Slower Growth	Still growing, but headwinds.

Primary Customers	Pre-Pandemic	Post-Pandemic
Technology	Up	Up - Implementation slowed
Financial Services	Up	Up - Implementation slowed
Healthcare	Up	Up - Implementation slowed
Government	Up	Up - Implementation slowed
Construction	Up	Down
Hotels	Up	Down
Restaurants - Chains	Up	Stall
Higher Education	Up	Stall
Pharmaceutical	Up	Up - Implementation slowed
Manufacturing	Up	Stall
Transportation	Up	Stall
Retail	Up	Down
Oil & Gas	Up	Down
Electric	Up	Up - Implementation slowed

Enterprise Firewall (NGFW + VPN)

Value Prop: Scale and specificity

Use Case: Data protection/Network segmentation/Work from home

Change in Outlook	Market Environment	Note
Neutral	Increased volatility/ Disruption	Some customers increase capacity to enable remote work while others have cut expenses and frozen projects.

Primary Customers	Pre-Pandemic	Post-Pandemic
Technology	Up	Up - Rapid Deployment
Financial Services	Up	Up - Rapid Deployment
Healthcare	Up	Stall
Government	Up	Stall
Construction	Neutral	Down
Hotels	Neutral	Down
Restaurants - Chains	Neutral	Down
Higher Education	Neutral	Up - Rapid Deployment
Pharmaceutical	Up	Up - Rapid Deployment
Manufacturing	Up	Stall
Transportation	Up	Down
Retail	Up	Down
Oil & Gas	Up	Down
Electric	Up	Unchanged

Endpoint

Value Prop: Scale and specificity

Use Case: User data protection/Enable remote work/Compliance

Change in Outlook	Market Environment	Note
Slightly Negative	Increased volatility/ Disruption	No new projects. Customers maintain status quo or go out of business/mass layoffs.

Primary Customers	Pre-Pandemic	Post-Pandemic
Technology	Up	Stall
Financial Services	Up	Slightly down
Healthcare	Up	Stall
Government	Up	Stall
Construction	Up	Down
Hotels	Up	Down
Restaurants - Chains	Up	Stall
Higher Education	Neutral	Stall
Pharmaceutical	Up	Stall
Manufacturing	Up	Stall
Transportation	Up	Down
Retail	Up	Down
Oil & Gas	Up	Down
Electric	Up	Stall

Branch Office Firewall

Value Prop: Scale and specificity

Use Case: Data protection/Network segmentation/Work from home

Change in Outlook	Market Environment	Note
Negative	Market Contraction/ Disruption	No new projects. Replaced by SASE. Customers maintain status quo or go out of business/mass layoffs.

Primary Customers	Pre-Pandemic	Post-Pandemic
Technology	Up	Down
Financial Services	Up	Down
Healthcare	Up	Down
Government	Up	Stall
Construction	Neutral	Down
Hotels	Neutral	Down
Restaurants - Chains	Neutral	Down
Higher Education	N/A	N/A
Pharmaceutical	Up	Stall
Manufacturing	Up	Down
Transportation	Up	Down
Retail	Up	Down
Oil & Gas	Up	Down
Electric	N/A	N/A

SMB Firewall

Value Prop: Scale and specificity

Use Case: Data protection/Network segmentation/Work from home

Change in Outlook	Market Environment	Note
Negative	Market Contraction/ Disruption	A few companies will increase capacity to enable remote work while most others hunker down or go bankrupt.

Primary Customers	Pre-Pandemic	Post-Pandemic
Technology	Up	Slightly Up
Financial Services	Up	Stall
Healthcare	Up	Stall
Government	N/A	N/A
Construction	Neutral	Down
Hotels	Neutral	Down
Restaurants - Chains	Neutral	Down
Education	N/A	N/A
Pharmaceutical	Up	Down
Manufacturing	Up	Down
Transportation	Up	Down
Retail	Up	Down
Oil & Gas	Up	Down
Electric	N/A	N/A

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¹ <https://www.us-cert.gov/ncas/alerts/aa20-073a>

² <https://qz.com/1856836/uk-deaths-from-undiagnosed-illnesses-may-be-greater-than-covid-19/>

³ <https://www.emergencyphysicians.org/globalassets/emphysicians/all-pdfs/acep-mc-covid19-april-poll-analysis.pdf>