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BI Theme Book

Digital Transformation Outlook

Technology - Retail
June 2020

Bloomberg Intelligence

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Covid-19's Strong Push to Digital Products Unlikely to Reverse

The drive to digital is reaching hyper speed and Covid-19 may be the spark that makes the trend irreversible, with online sales in the U.S. potentially surging 25% in 2020 while the use of e-wallets could hit $1.4 trillion by 2023. The virus is forcing corporations and consumers to adopt new technology faster. After this year's growth spurt, digital retail in the U.S. may expand by midteens through 2024, according to Bloomberg Intelligence analysis, led by grocery, home and athleisure segments. Digital payments could grow by 27% a year.

Digital media, cloud, security software and hardware can see steady demand as they provide the IT infrastructure for this change. Companies enabling video-streaming services also benefit, while businesses such as traditional advertising and cinemas could struggle for years to come.

Key Investment Topics

The New Normal: Digital Disruption to Accelerate

U.S. Retail Digital Sales Penetration Could Double by 2024

The advance of e-commerce sales in the U.S. may double to 22% in 2024 from 2019, our analysis shows, as coronavirus-related store closings that pushed consumers online amid more integrated shopping via mobile apps and social networks takes root. The rate could rise when brick-and-mortar retailers' share is included.

Topic Takeaways

- Amazon, Walmart, Target Lead E-Commerce
- Digital Surge Accelerates, With Grocery Leading
- Online Grocery Could Reach $160 Billion in Sales by 2024
- Mobile to Lead E-Commerce Gains
- Store Closings Accelerate as Digital Grows

Amazon, Walmart, Target Lead E-Commerce

Double-digit e-commerce sales gains should continue even if trends moderate from peak pandemic levels, in our view. We expect grocery, home and athleisure to outperform this year, providing firm footing for a doubling of overall digital sales penetration by 2024, based on our estimate for a 25% jump in 2020 and mid-teens growth through 2024. Amazon.com, Walmart, Target, Wayfair, Lowe's, Williams-Sonoma and Kohl's digital efforts stand out. Walmart's e-commerce sales during the initial peak of Covid-19 reached 74%, while Target's rose 141%. Apparel retailers' digital sales surged, even as stores start reopening. Wayfair cited a 90% gain in 2Q-to-date sales through May 5.

In 1Q, Lowe's digital sales rose 80% and William's Sonoma delivered a low-single-digit same-store sales gain, despite being closed for most of the quarter.

Digital Leaders Across Retail Sectors

Digitally Native	Mass Merchants, Grocery	Apparel	Home Focus
Amazon.com	Walmart	Lululemon	Home Depot
Wayfair	Kroger	Nike	Lowe's
Etsy	Ahold Delhaize	Adidas	Williams-Sonoma
eBay	Target	Kohl's	Best Buy
	Costco	Macy's	

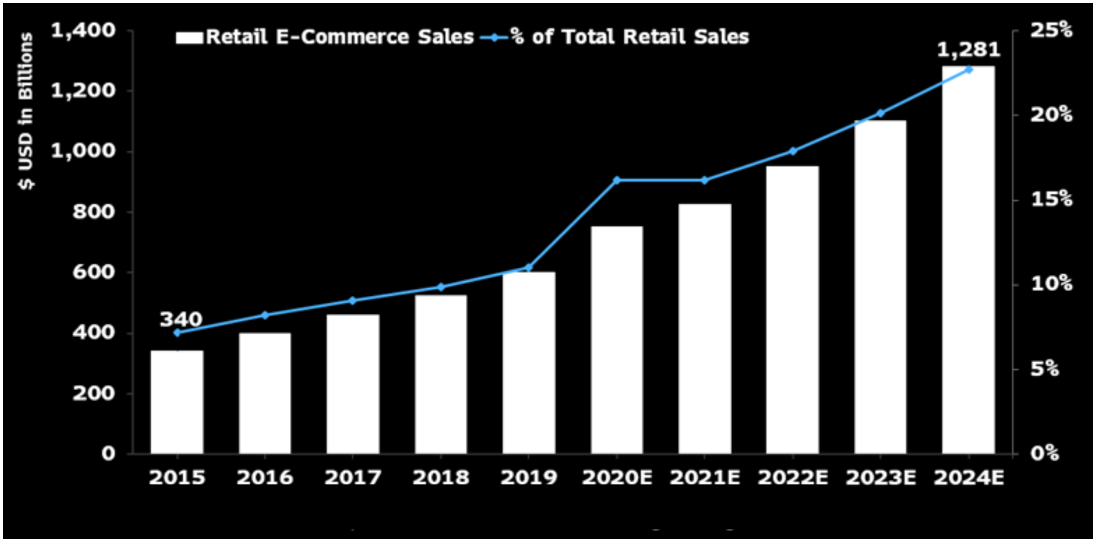
Source: Bloomberg Intelligence

Digital Surge Accelerates, With Grocery Leading

Retail e-commerce sales could see a 25% increase in 2020, led largely by the forced shift to digital, given store closings from the pandemic. Forced behavior changes likely fostered new habits that we think could double e-commerce penetration by 2024. In April and May, at the height of the Covid-19 pandemic and the number of states under shelter-in-place mandates was at its peak, e-commerce sales already made up for 22% of total U.S. retail sales, based on Mastercard SpendingPulse data, which exclude brick-and-mortar retailers' share of digital. We expect double-digit gains across all subcategories in 2020, with grocery in the lead.

Mastercard's May consumer survey found the shift to online should have a lasting effect, with 47% of consumers indicating they'd shop less in stores post-virus.

Retail E-Commerce Growth Projection



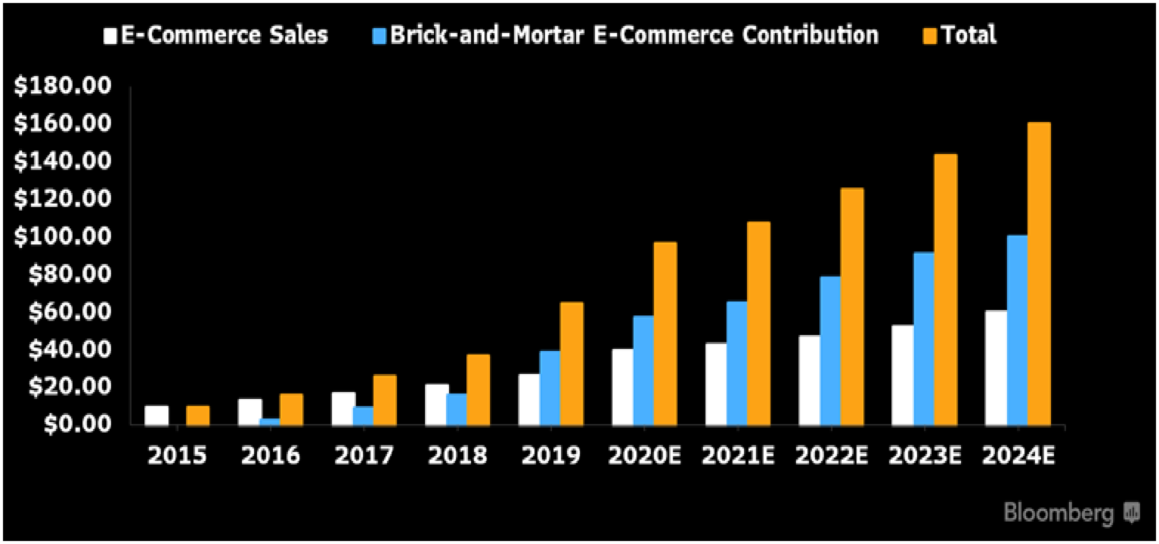
Source: 2015-2019 eMarketer, 2019 -2024 Bloomberg Intelligence

Online Grocery Could Reach $160 Billion in Sales by 2024

Food and beverage e-commerce sales could rise to $60 billion, or 5% of total retail e-commerce sales, by 2024. Factoring in online orders that are filled by stores -- which aren't included in Census Bureau e-commerce data -- sales could reach as high as $160 billion in online grocery, in our view. This reflects the growing availability of click-and-collect services and consumers who are leaning away from home delivery, particularly outside of city centers. The rapid rise in e-grocery is supported by accelerated long-term adoption, stemming from consumer trial and use during the Covid-19 pandemic.

Walmart, Kroger, Albertsons and Ahold Delhaize are among retailers with the strongest grocery digital platforms. Costco and Target have a more limited food assortment and less robust click-and-collect grocery options.

E-Grocery Estimated Growth Through 2024 ($ Bln)



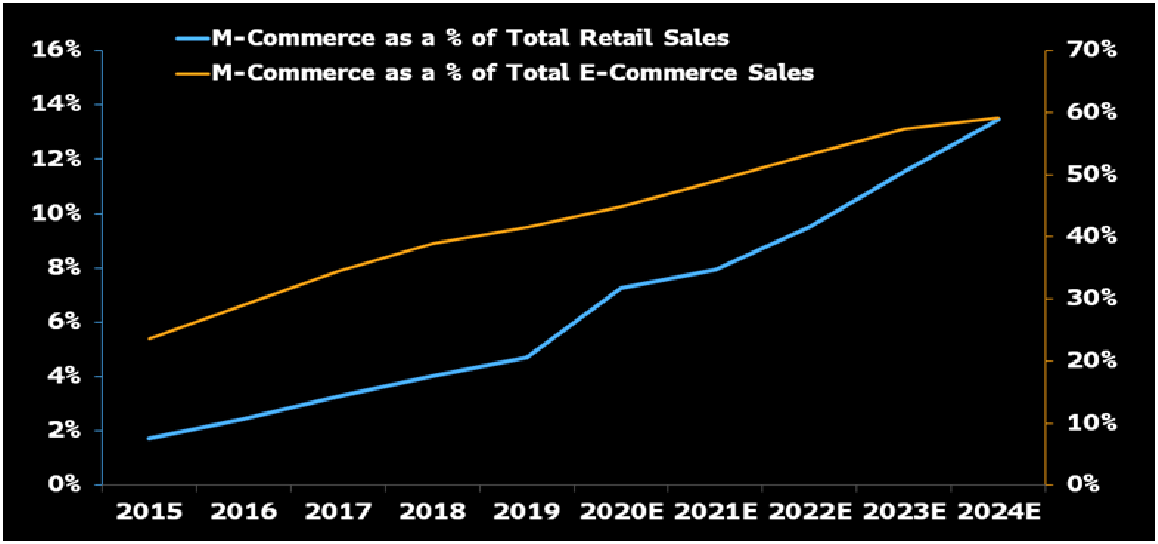
Source: 2015-2019 eMarketer, 2019 -2024 Bloomberg Intelligence

Mobile to Lead E-Commerce Gains

Mobile-commerce sales could make up almost 60% of total e-commerce sales and more than 10% of overall retail sales by 2024, BI analysis shows. This compares with 41% and 4.7% in 2019. We expect mobile sales to increase 35% this year as shoppers spend more time on their devices amid stay-at-home mandates. While the growth could moderate in 2021, a more than 20% gain is still possible through 2024. Larger screen sizes, better retailer app implementations, coupled with the rise of social, image and video shopping, are factors contributing to the expansion. More mobile-payment use by consumers, along with integration of that technology, will help propel growth.

Amazon.com, Walmart.com and ebay.com were the most popular mobile-commerce apps in 2019, based on Statista data.

M-Commerce Penetration to More Than Double



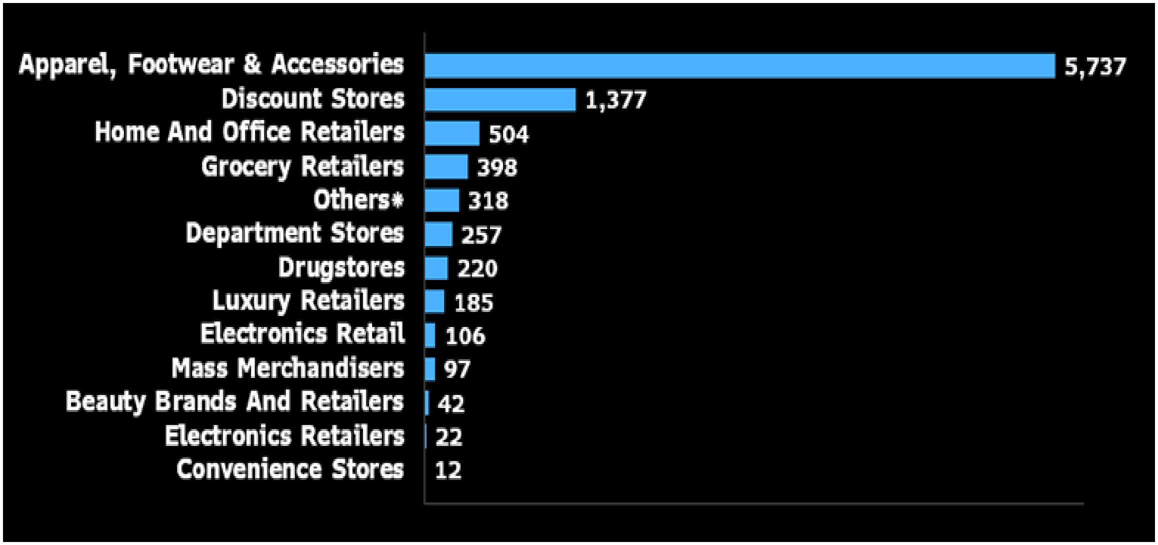
Source: 2015-2019 eMarketer, 2019 -2024 Bloomberg Intelligence

Store Closings Accelerate as Digital Grows

An accelerated pace of store closings and bankruptcies, amid heightened digital disruption, will transform the U.S. retail store landscape in 2020, in our view. Many retailers can still reduce their physical footprint by 30-50 stores. In 1H, more than 15 consumer companies filed for bankruptcy including J.C. Penney, Pier 1, Modell's Sporting Goods, Hertz and Neiman Marcus. Amid coronavirus-driven store closings -- as long as three months in some cases -- we expect many retailers won't reopen as they seek to exit existing leases. Gap and L Brands are actively reducing their store fleet amid the acceleration of secular weakness.

Counterpoint: We see store expansion at off-price apparel and discount retailers where digital is small and demand for in-store treasure-hunt shopping is high.

Store Closings to Surge From 2019



Source: Statista, Bloomberg Intelligence

Digital Transformation in Payments

Digital Payments Adoption to Push E-Wallet Activity Up 2.5x

By 2023, the wallet most people will reach for to make payments will be digital, accounting for $1.4 trillion in payments, a 27% annual increase, we calculate. A confluence of events, including social distancing, adoption of contactless solutions and rising smartphone penetration is accelerating the shift away from cash to digital-payment methods.

Topic Takeaways

- Advantages Vary, But Are Strongest for Card Brands
- Demand Catalysts, Infrastructure Readiness Form Sweet Spot
- Wallets Grow as Applications Address Post-Covid Needs
- Growth Can Stick as New Functionality Is Added; Watch PayPal

Advantages Vary, But Are Strongest for Card Brands

Digital--wallet providers were originally dedicated to one of three applications, but are now blurring the lines between functionality with differing goals in mind. No matter which wallet vendors win, Visa and Mastercard will benefit since their branded cards fund a majority of payments.

For digital payments in-store, smartphone makers embedded their own wallets - ApplePay, Google Pay and Samsung Pay. Their goal is less about revenue, and more to drive handset stickiness and utility. P2P apps PayPal, Venmo and CashApp are popular mobile wallets for (mostly free) peer-to-peer payments, but are shifting focus to related functionality that can be monetized. Finally, e-commerce wallets from marketplaces and retailers are evolving from a checkout convenience to sales drivers via incentives based on better customer data.

Major Wallet Providers by Application

Proximity Point-of-Sale Payments	P2P App Payments	E-/M-Commerce	Other Eco-System Beneficiaries
Apple Pay	PayPal	Amazon	Visa
Google Pay	Venmo (PayPal)	Walmart	Mastercard
Samsung Pay	CashApp (Square)	Facebook	Fiserv
	Zelle	Ebay	

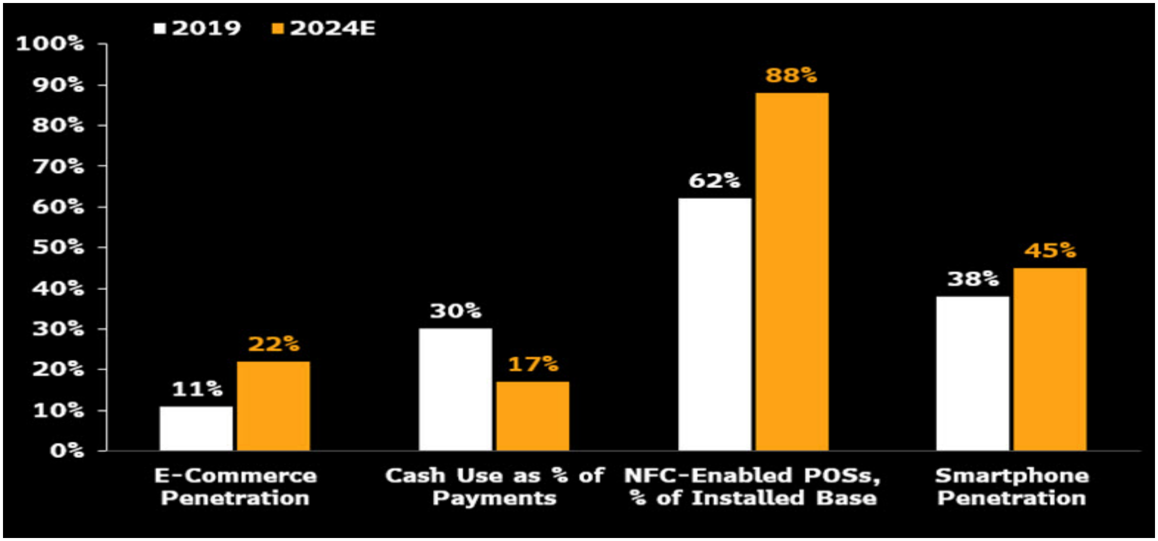
Source: Bloomberg Intelligence

Demand Catalysts, Infrastructure Readiness Form Sweet Spot

There are four drivers of accelerating payment volume and adoption of digital wallets. First is the surge in demand for e-commerce following store closures and social distancing. BI expects e-commerce to double to 22% of total U.S. retail by 2024, bringing e-payments with it. And digital payments are replacing cash, which is less-sanitary amid the pandemic. Some merchants have stopped accepting it, and ATM withdrawals are falling. Cash use has been eroding 1-3 percentage points annually, and could decline even faster from 30% globally today.

Digital-payments infrastructure has reached critical mass. In-store, 62% of worldwide merchant terminals are NFC-enabled for contactless cards and smartphone wallets. And the proliferation of smartphones puts wallets in the hands of 38% of the world's population, 72% in the U.S.

Covid-19 Drives Demand that NFC, Phones Support

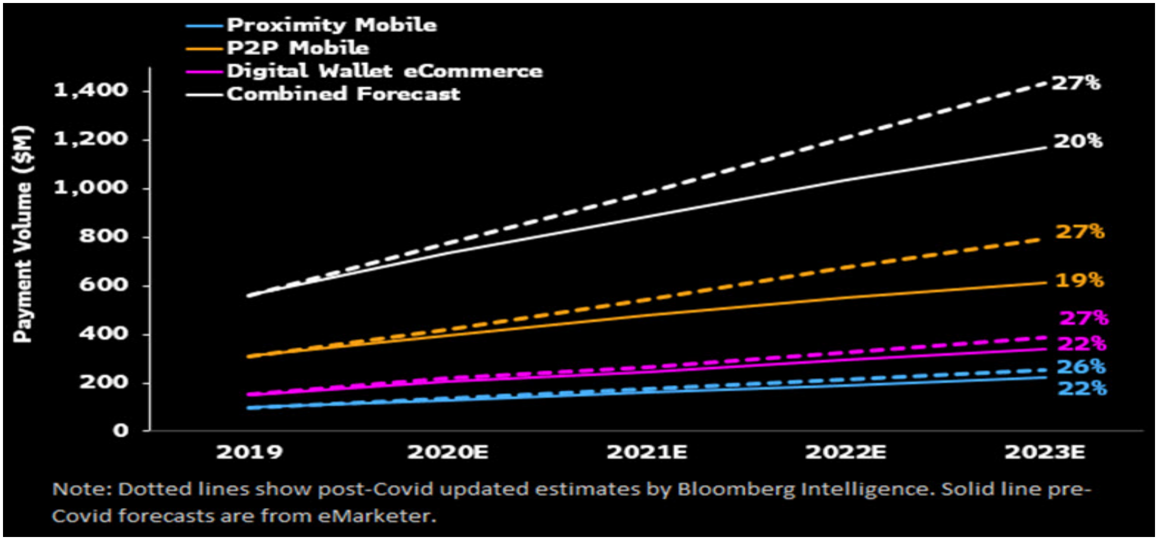


Source: eMarketer, Berg Insight, Worldpay, Bloomberg Intelligence

Wallets Grow as Applications Address Post-Covid Needs

Three killer applications can increase digital-wallet payment volume 27% compounded annually, from pre-Covid-19 industry forecasts of 19%. First, P2P apps have evolved quickly from tools used to share expenses with friends, to a substitute for cash when paying individuals and a social media outlet for fundraising. As these apps add functionality, growth could reach 27% a year. Next, E/M-commerce is growing given store closures and social distancing, and digital wallets offer a faster, easier, more secure and rewarding way to pay online. Greater use could expand annual payment volume by 27%. Lastly, proximity payments via mobile phone wallets are an alternative to touching cash or card readers. Later this year, upgrades to 5G will speed smartphone payment-transaction time, driving annual gains to 26%

Digital Wallet Sources and Estimates of Growth



Source: eMarketer, Bloomberg Intelligence

Growth Can Stick as New Functionality Is Added; Watch PayPal

Paying by digital wallet is a behavior that will stick post-pandemic, in our view, as providers add new services that increase utility. P2P app vendors lead in new product roll-outs, led by Square's CashApp. Handset makers and retailers can catch up with their deep pockets and large user bases. Samsung Pay announced some banking services this Spring, and Walmart has vast financial offerings for its own ecosystem. Valuable new capabilities allow users to send/invest/shop with stored balances; receive direct deposits and earn loyalty benefits, giving them reasons to engage regularly, generating revenue.

PayPal stands out as a pure play in digital wallets, with its greater user awareness, merchant site presence, suite of offerings, large user base in e-commerce and P2P, and recent entry into proximity point-of-sale payments.

Product Portfolios of Leading Digital Wallets

	OPERATING SYSTEM-LED			COMMERCE-LED			P2P-LED		
	Apple Pay	Google Pay	Samsung Pay	Facebook	Amazon	Walmart	PayPal	Venmo	Cash App
Proximity Payments (NFC)	√	√	√						
QR Code Payments						√	√	√	
P2P Transfers	√	√	√	√		√	√	√	√
Debit Card			√		√	√	√	√	√
Credit Card	√				√	√	√	√	
Direct Deposit						√	√	√	√
Crypto/Stock Trading			√						√
Consumers using it to pay online (2019)	19%	20%	na	nr	22%	na	89%	28%	na
Online Merchants w/ Pay Button (2019)	1%	4%	na	nr	15%	nr	70%	na	nr
# U.S. Users	30M	12M	11M	na	na	na	300M	27M	37M

Note: Includes expected Google Cache, Facebook Pay, and Venmo Credit Card features. When feature is available but not in US, it is excluded (Amazon P2P). na = not available, nr = not relevant.

Source: eMarketer, SensorTower, Bloomberg Intelligence

Expect Much Faster Shift to Cloud in 2021

Cloud Applications, Infrastructure Get Massive Boost Post-Virus

Cloud is the cornerstone to any digital transformation and could see a significant boost as enterprises invest more aggressively when the coronavirus pandemic subsides. While collaboration and communication applications are seeing strong growth, the next phase will likely be led by sales productivity and customer service, in our view.

Topic Takeaways

- Microsoft, Salesforce, Shopify Key DX Beneficiaries
- Collaboration, Communications Near-Term Winners
- Commerce, Customer Service, Sales Could be Next
- ERP, Human Resources Pick-Up Likely to Start in 2021
- Free Trials to Prolong Revenue Recognition
- Cloud Infrastructure Shift Likely Another 2021 Story

Microsoft, Salesforce, Shopify Key DX Beneficiaries

Pure-play cloud providers such as Salesforce.com, Workday, Shopify, Slack and Zoom should keep seeing steady sales growth as enterprises accelerate digital-transformation efforts. Among larger technology companies, Microsoft, Amazon.com, Google, Oracle, VMware, IBM, SAP and Cisco may see increased demand for their hybrid and public cloud products. The hybrid products bridge the gap between older on-premise products with new public cloud software that can speed the pace of their digital shift.

Digital Transformation for Top Software Players

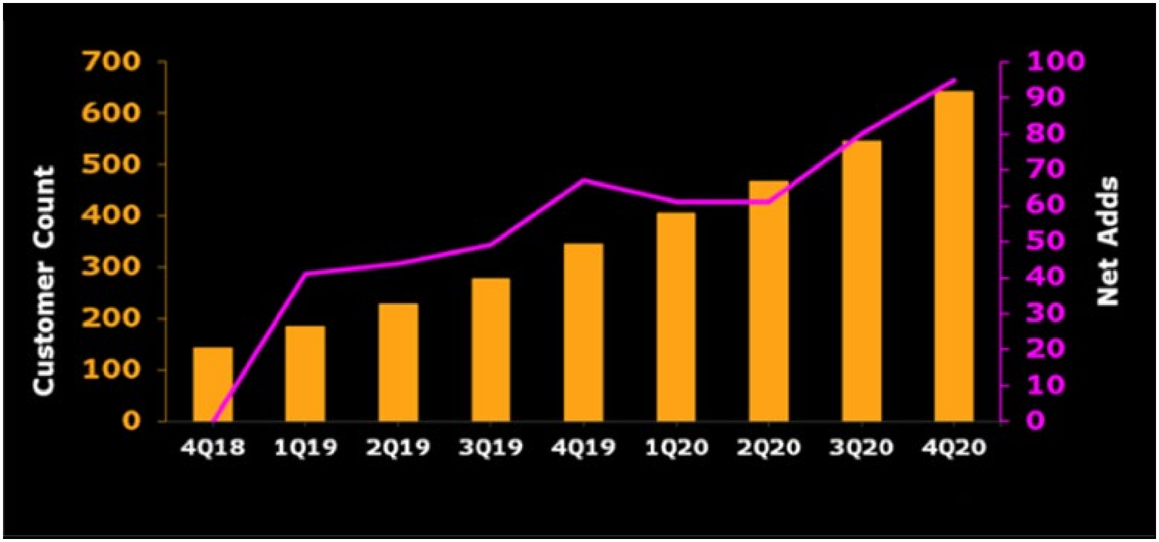
Collaboration, Communication	Commerce, Customer Service	Finance, HR, Planning	Cloud Infrastructure
Zoom	Shopify	Anaplan	Microsoft
Slack	Zendesk	Coupa	Amazon.com
DocuSign	Salesforce.com	Workday	VMware
Microsoft	SAP (Hybris)	Oracle	IBM (RedHat)
Citrix	Oracle	SAP (Ariba)	Oracle

Source: Bloomberg Intelligence

Collaboration, Communications Near-Term Winners

The near-term beneficiaries of the disruptions caused by Covid-19 are software products that help improve productivity and collaboration as more people work from home. The most obvious applications seeing a demand boost are Zoom, Microsoft Teams, Slack, Cisco Webex, Adobe, RingCentral, Twilio, DocuSign and Citrix. It's highly likely that people will keep using these products after the pandemic subsides and employees go back to work. Most of these products are cloud-based and far superior than their on-premise counterparts.

Zoom Net Additions of Customers Spending Over $100,000

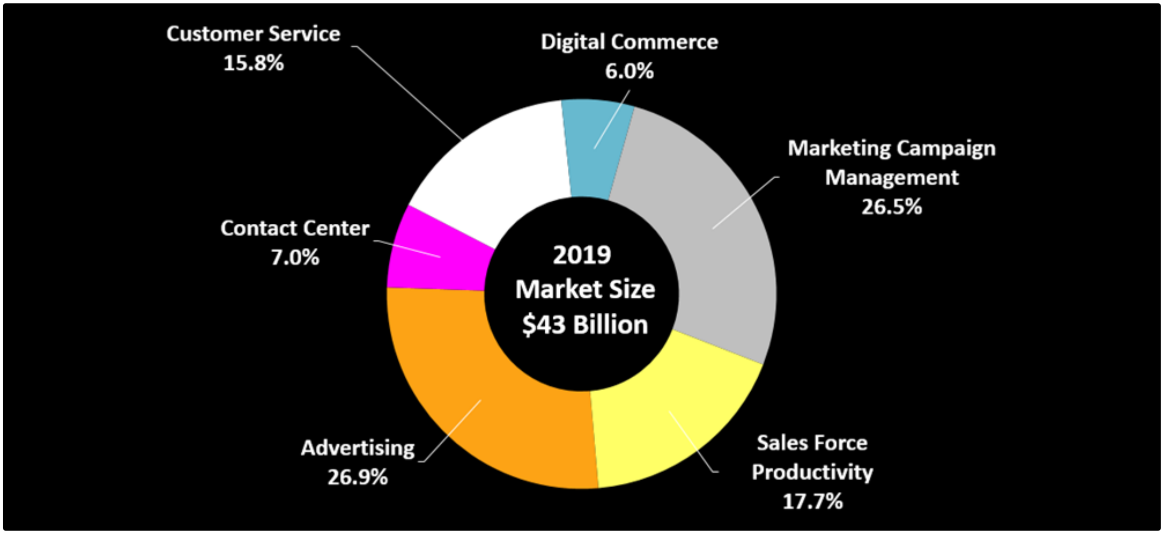


Source: Company Filings, Bloomberg Intelligence

Commerce, Customer Service, Sales Could be Next

Cloud-based commerce software is another category experiencing strong demand, which we expect will continue, driving sales for companies such as Shopify, Salesforce.com (Demandware) and SAP (Hybris). Sales productivity and customer service could be the next big category that may see a strong revival, perhaps as early as 2H, as enterprises upgrade to cloud-based applications. These front-office applications are critical for increasing sales or retaining clients and should see funding before back-office functions.

Cloud CRM-Market Breakdown



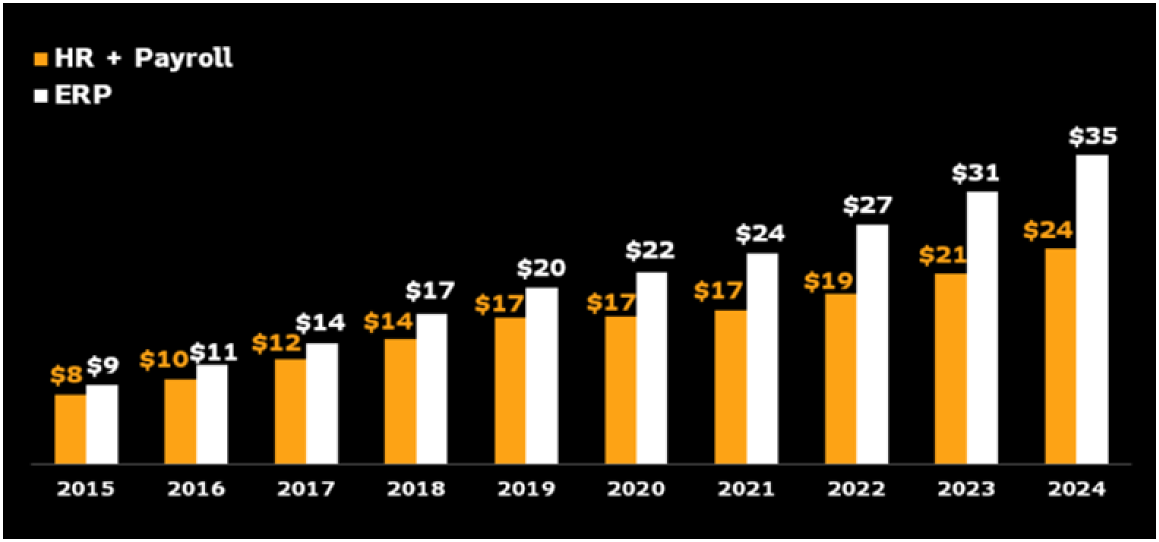
Source: IDC, Bloomberg Intelligence

ERP, Human Resources Pick-Up Likely to Start in 2021

Back-office functions such as finance, which is part of the broader enterprise resource-planning (ERP) category and human resources could take longer than commerce or customer service, in our view. The cloud penetration rate of broader ERP is far lower than areas such as customer service and HR and the pandemic is making finance professionals realize the importance of cloud-based software, especially as it relates to planning and budgeting.

Given the critical nature of this function and tight IT budgets, we believe that the big push for this market may come in 2021. Oracle, Workday and SAP would be the primary beneficiaries of such investment.

Cloud ERP, HR Spending Forecast



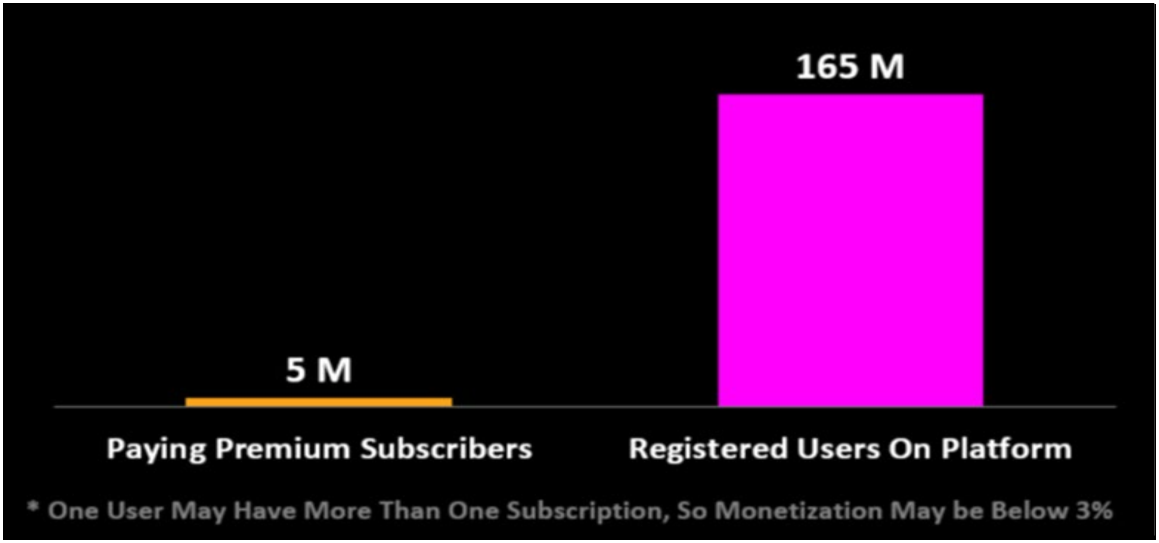
Source: IDC, Bloomberg Intelligence

Free Trials to Prolong Revenue Recognition

While Covid-19 is likely to accelerate the need for applications, we don't expect a boost in sales until 4Q and a recovery in 2021. The economic uncertainty led to greater adoption of free trials, or freemium models, across many software industries from Zoom to GoDaddy. Though this can elevate new user registration, revenue recognition will likely be delayed into a later quarter until these free trials convert to paid subscriptions.

Cloud-based software providers are likely to outperform legacy peers such as SAP and Oracle in this environment since they can easily adopt newer services, such as security enhancements or curb-side pickup, more quickly.

Wix Exemplifies Conversion Lag With Freemium Model

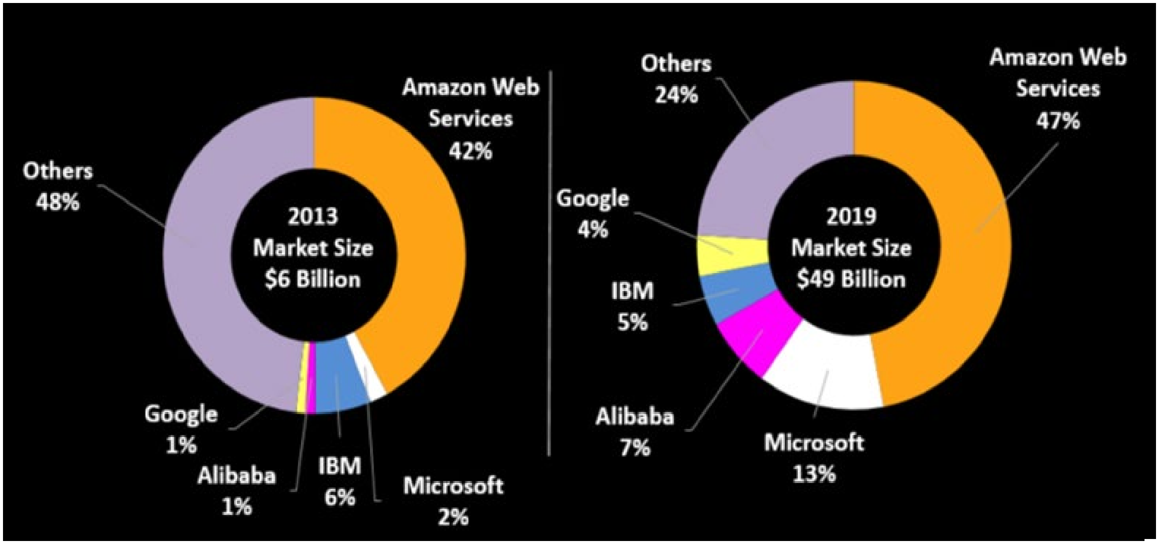


Source: Company Filings, Bloomberg Intelligence

Cloud Infrastructure Shift Likely Another 2021 Story

IT infrastructure should be another major growth catalyst for the software industry, most likely in 2021, as companies move more workloads to the public cloud and invest in upgrading their internal systems at the same time. Companies exposed to this faster adoption of the hybrid cloud include Microsoft, Amazon.com, VMware, IBM (Red Hat) and Oracle. This faster shift to public cloud could lead to enterprises closing more internal data centers, which hurts the traditional IT-outsourcing business for companies such as IBM and DXC Technology.

Infrastructure-as-a-Service Market Share



Source: Company Filings, Bloomberg Intelligence

Remote Work, Digital Growth Tailwind for Security

Remote Work, Digital Growth Spur Boost in Cybersecurity Spending

The secular shift to the cloud, an increase in remote work and higher incidence of sophisticated breaches will aid the growth of cloud-based security providers. Segments such as software-defined wide-area networks (SD-WAN), endpoint detection and response (EDR), identity and access management (IAM) and cloud gateway are poised to benefit as enterprises embrace multicloud environments.

Topic Takeaways

- CrowdStrike, Okta, Zscaler Leaders in Cloud Security
- Increased Breaches Drive Security Spending
- Cloud Shift Poised to Accelerate
- M&A to Focus on Analytics, SD-WAN

CrowdStrike, Okta, Zscaler Leaders in Cloud Security

While digital-transformation initiatives are likely to aid overall security-software spending, we believe new leaders will emerge in this sector as workloads move to the cloud from on-premise data centers. Pure-play cloud companies such as CrowdStrike (corporate endpoint security), Okta (identity management) and Zscaler (cloud-security gateway) will likely benefit from the trend of remote work and will continue to grow at least 3-4x faster than the overall security market.

The shift to behavior-based AI and machine-learning security products from signature-based antivirus ones will hurt the prospects of NortonLifeLock (Broadcom bought Symantec's enterprise business), McAfee and Trend Micro. Among network-security providers, Palo Alto and Fortinet will grow much faster than peers such as Check Point and Juniper.

On-Premise, Hybrid, Pure Cloud Security Vendors

Legacy	Hybrid	Cloud
NortonLifeLock	Palo Alto Networks	Proofpoint
Trend Micro	Checkpoint	Mimecast
Juniper Networks	Fortinet	Qualys
Mcafee	Sailpoint Technologies	Zscaler
Cisco	Ping Identity	Crowdstrike
FireEye	Rapid7	Okta
Sophos	CyberArk	Tenable

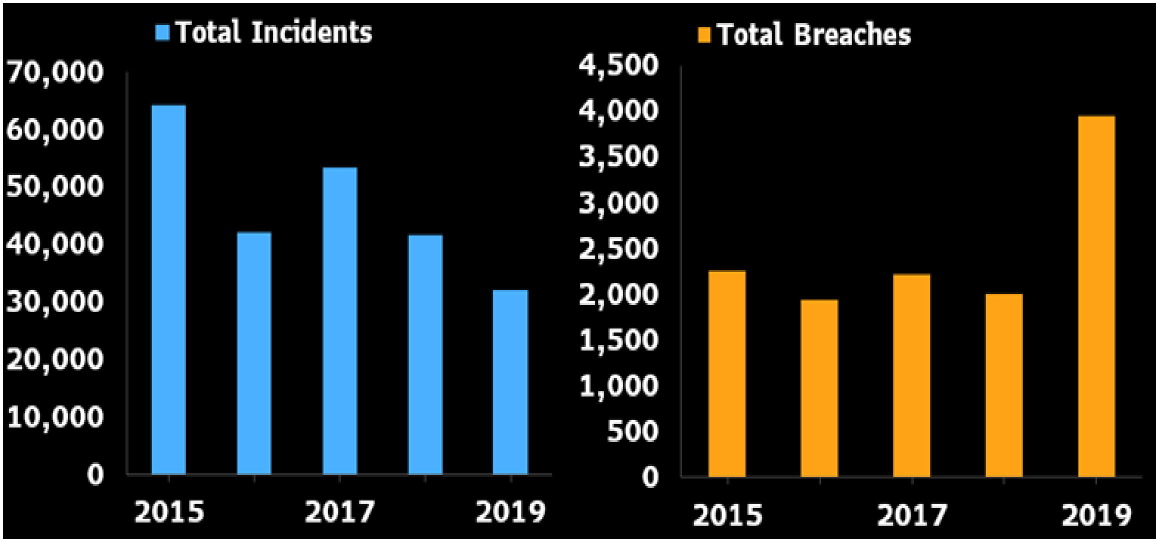
Source: Bloomberg Intelligence

Increased Breaches Drive Security Spending

Spending should increase for major security segments including network, endpoints and identity management as the amount of data grows with digital-transformation initiatives, while legacy security products prove inadequate to handle the spike in sophisticated breaches. The upcoming U.S. elections and a continued increase in the number of endpoint devices due to remote work should also provide near-term boosts to overall security spending.

Security is likely to be among the fastest-growing segments of the $220 billion infrastructure software market. While network-security companies have used M&A to expand their cloud capabilities, an expanding perimeter for enterprise data and applications will likely result in an accelerated share shift to cloud companies from legacy ones in endpoint security and identity management.

Security Incidents vs. Breaches



Source: Verizon, Bloomberg Intelligence

Cloud Shift Poised to Accelerate

The shift to the cloud is poised to accelerate in the cybersecurity market, as companies see the benefit of cloud security amid workplace disruptions due to Covid-19. Cloud-security gateway, or CASB, offerings should see increased adoption with the accelerated migration of IT infrastructure and workloads to the cloud due to more remote work. Growing preference for using cloud-based IAM platforms for various business-to-business and business-to-consumer applications bodes well for adoption of Okta's cloud product vs. incumbents such as Dell, IBM and CA (Broadcom).

The secular shift to behavior-based techniques built around AI and machine learning and away from signatures will help CrowdStrike, which continues to take share from legacy endpoint peers such as Symantec, McAfee and Trend Micro.

Cloud % of Security Segments

2018	Total Market	SaaS Penetration	On-Prem Penetration
Network	$15,565	17%	83%
Endpoint	$10,718	11%	89%
Web	$2,905	19%	81%
Other	$905	20%	80%
Identity & Access Management	$6,200	23%	77%
Security & Vulnerability Management	$6,702	25%	75%
Messaging	$1,633	54%	46%
Total Market	$44,628	19%	81%

Source: IDC, Bloomberg Intelligence

M&A to Focus on Analytics, SD-WAN

More consolidation is likely in security as both large, appliance-based firewall companies and other infrastructure providers make deals to add capabilities in cloud, EDR, SD-WAN, SIEM and container security. This trend was evident in VMware's purchase of Carbon Black and Palo Alto's multiple acquisitions, including CloudGenix, RedLock, Evident.io, Cyber Secdo, PureSec, Twistlock, Demisto and Zingbox.

Companies such as Splunk, Tenable, Qualys and Rapid7 could be possible targets, as both network-firewall peers including Cisco, Palo Alto Networks, Check Point and Fortinet and endpoint-security leaders such as CrowdStrike look to expand their analytics capabilities. SD-WAN is another high-growth area in security that could see more consolidation after Palo Alto's recent purchase of CloudGenix.

Recent Cybersecurity Deals

Company	Target	Year	Value	Acquisition Type
Broadcom	Symantec Enterprise	2019	$10.7	Endpoint Detection
Cisco	Duo Security	2018	$2.4	Identity Management
VMware	Carbon Black	2019	$2.1	Endpoint Detection
Vista Equity	Infoblox	2016	$1.6	Network Security
Blackberry	Cylance	2018	$1.4	Identity Management
Thoma Bravo	Veracode	2018	$1.0	Vulnerability Management
Carbonite	Webroot	2019	$0.6	Endpoint Detection
Palo Alto Networks	Demisto	2019	$0.6	Endpoint Detection
Palo Alto Networks	CloudGenix	2020	$0.4	SD-WAN
Palo Alto Networks	Twistlock	2019	$0.4	Vulnerability Management
Palo Alto Networks	Evident.io	2018	$0.3	Vulnerability Management

*Deal Values in Billions of USD

Source: Company Filings, Bloomberg Intelligence

Media Won't Recover From Covid-19 for Years

It Will Take Years for Media to Recover From Covid-19 Clobbering

Covid-19 battered the media industry by closing theaters and theme parks, derailing live sports and blunting ad spending, and we believe a recovery will span years, with some semblance of normalcy in 2022. A speedier shift to digital will weaken traditional-TV and ad-agency models and darken the outlook for cinemas and others in the experience economy.

Topic Takeaways

- Netflix, Facebook Lead Digital Charge
- Video Streaming Clicks Deep-Six Traditional TV
- Digital Audio Set to Gain Ground
- Ad Agencies: From Mad Men to Sad Men
- Theme-Park Roller Coaster, Live Experiences Shunned

Netflix, Facebook Lead Digital Charge

The digital revolution in media will likely continue to accelerate in the next few years. Legacy media owners' hesitation to diversify away from traditional businesses made them late to the game, and digital players capitalized on that by capturing significant market share. Netflix's subscriber base reached 60 million domestically, while cord-cutting trends caused the pay-TV ecosystem to lose more than 20% of its base.

In advertising, digital revenue topped traditional for the first time in 2018, as large players such as Facebook and Google captured ad dollars from legacy platforms.

Digital Transformation for Top Media Players

Digital	Traditional	Hybrid	Access
Netflix	Fox	Disney	Charter
Facebook	WPP	ViacomCBS	Comcast
Roku	Omnicom	Lionsgate	Altice USA
Spotify	Sinclair	Discovery	Verizon
Google	AMC Entertainment	AMC Networks	AT&T

Source: Bloomberg Intelligence

Video Streaming Clicks Deep-Six Traditional TV

The pandemic and its economic repercussions will expand the potential market for streaming, accelerating the shift of viewers from traditional-TV services to cheaper streaming options, in our view. Major streaming services have added at least 50 million subscribers since Jan. 1, as stay-at-home viewers have been starved for entertainment. Netflix was the biggest beneficiary in 1Q, adding almost 16 million customers. Traditional pay-TV operators lost about 2 million subscribers in 1Q. They're on track for a 9-10% decline in the 2020 subscriber base

Stay-at-home has been a boon for streaming, leading to what we believe are lasting changes in consumer behavior. Nielsen data show time spent on streaming more than doubled from a year ago. Netflix makes up 33% of all U.S. streaming minutes.

Streaming Gets Covid-19 Boost

(in Million)	2019 Year-End Subscribers	Latest No. of Subscribers	Yoy Virus Effect
SVOD			
Netflix	167.09	182.86	15.77
Disney+	26.50	54.50	28.00
Hulu	27.20	28.80	1.60
Starz OTT	8.60	10.60	2.00
CBS/Showtime OT	11.00	13.50	2.50
ESPN+	6.60	7.90	1.30
AMC	2.00	3.00 *	~1.00 *
Total User Gains			~52.00

AMC: Acorn, Shudder, UMC, Sundance
(*) Bloomberg Intelligence estimate, virus effect not isolated.

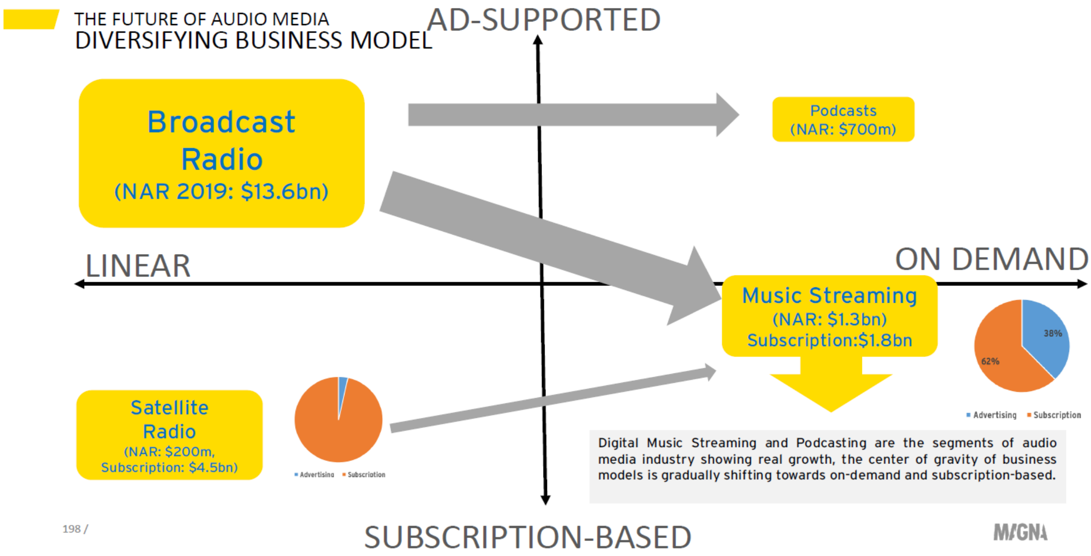
Source: Company Filings, Bloomberg Intelligence

Digital Audio Set to Gain Ground

The traditional audio business will likely be increasingly pressured by digital players that are gaining ground because of the variety of content available across multiple platforms. That's also due to the surge in mobile usage, especially as new cars come with preinstalled Bluetooth technology and USB cords. In addition, digital audio has benefited from rising demand for podcasts, as Spotify and other competitors invest heavily in the medium. Podcasts could accelerate the shift to on-demand platforms from traditional audio.

Spotify snagged three podcast companies -- Parcast, Gimlet Media and Anchor FM -- for about $400 million. It bought The Ringer for about $200 million in February, and announced a multiyear licensing deal for "The Joe Rogan Experience" in May.

Future of Audio Media



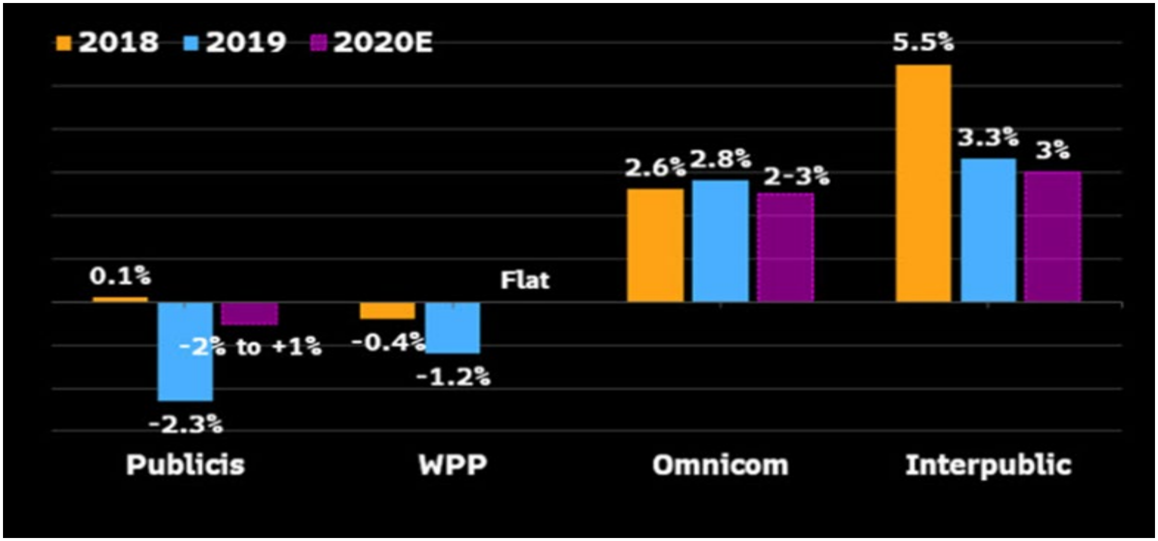
Source: Magna Global

Ad Agencies: From Mad Men to Sad Men

Covid-19 created a perfect storm for ad agencies, and we believe their recovery will be a lot more difficult than after the 2008-09 recession, when they didn't face such strong headwinds and had more leeway in cutting costs. The industry has been upended with campaigns pulled, and the pandemic will amplify the negative narrative because companies are shifting budgets in-house and competition from consultancies already has squeezed fees. Organic revenue growth, which slowed to about 1% in 2019, could slump by a mid-teens percentage in 2020.

The long-term picture doesn't look rosy, either, as many chief marketing officers plan long-term budget cuts. Media-buying firms and creative agencies are likely the most vulnerable.

Organic Growth Was Challenged Even Before Virus



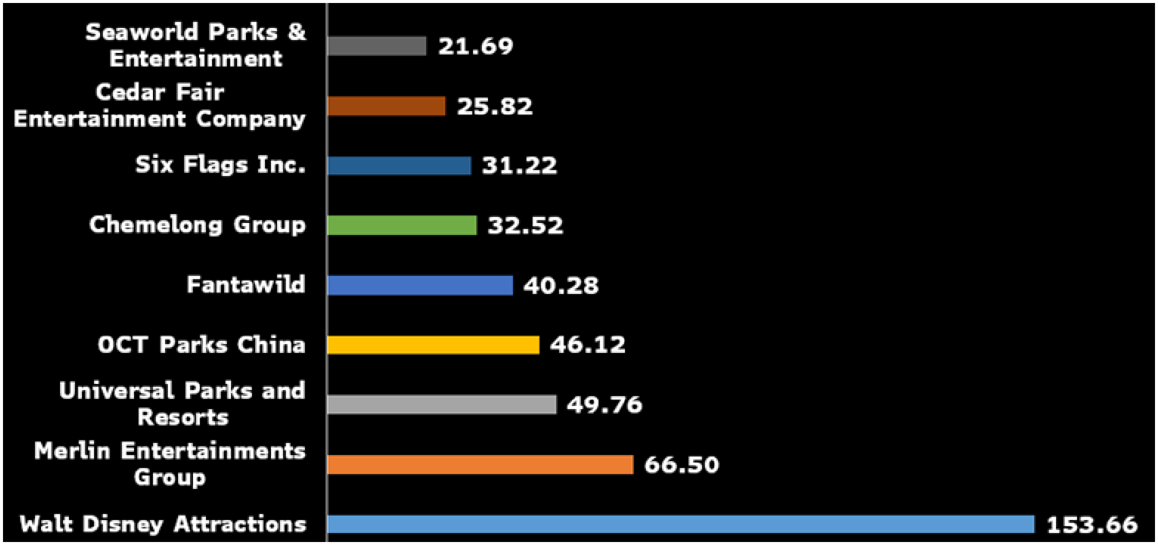
Source: Bloomberg Intelligence

Theme-Park Roller Coaster, Live Experiences Shunned

Theme parks have gone from the biggest profit driver to the biggest drag for media conglomerates such as Comcast and Disney. Social-distancing guidelines will limit theme-park capacity significantly, and attendance is unlikely to fully rebound until after a vaccine is widely available and the economy improves. With the impact on travel much more severe than in prior downturns, a multiyear slowdown is inevitable. We expect Disney's global theme-park attendance to slip 50% in fiscal 2020 and 2021. In 2019, Disney had more than 155 million global visits. The entire experiential sector, including live events, will face sustained pressure over an extended period of time.

Meanwhile, Covid-19 has accelerated the shift away from traditional gyms, creating a huge tailwind for Peloton, an at-home fitness company.

500 Million Yearly Visitors at Major Theme Parks



Source: TEA

Enterprise Hardware in Post-Covid World

Corporate Hardware Transformation Needs Accelerated by Covid-19

Corporations worldwide are under mounting pressure to quickly evaluate and invest in next-generation IT, like automation, artificial intelligence and disaggregation of software from hardware, in our view. The urgent need to transform enterprise IT network and hardware architectures was starkly illuminated by the sharp rise in working from home during this year's sweeping pandemic-driven office shutdowns.

Topic Takeaways

- Cisco, Arista, Dell Could Gain From IT Architecture Changes
- Increased Automation Coming to Networks
- Virus Likely Amplifies ODM Directs' Gains
- Open Compute Project Standards Driving Growth
- Wireless-Equipment Sales Get Boost on Digital Transformation, 5G

Cisco, Arista, Dell Could Gain From IT Architecture Changes

Investment in and evaluation of next-generation enterprise IT projects may accelerate, as the closings of corporate offices and the sudden and dramatic workplace changes put a spotlight on gaps and areas of under-investment in enterprise IT architectures. The pandemic-driven operational disruptions may accelerate the implementation of scale out and automation technologies for on- and off- premises cloud data centers and corporate IT architectures.

Traditional hardware vendors have moved down the digital transformation path by incorporating more software. Cisco, Arista and Extreme Juniper are among networking vendors aiming to bring more automation to the enterprise. Nutanix's hyper-convergence leadership could extend gains, while Dell and Hewlett Packard aim to keep their server footing with enterprise customers.

Hardware Digital Transformation Enablers

Consumer Networks	Campus Automation	Data Center Infrastructure	5G Network Infrastructure
Netgear	Cisco Systems	Dell	Ericsson
Google Wi-Fi	Juniper Networks	Hewlett Packard Enterprise	Nokia
Amazon eero	Extreme Networks	Cisco	Samsung
TP-Link	Arista Networks	Nutanix	Cisco Systems
	Pluribus	Arista Networks	Mavenir

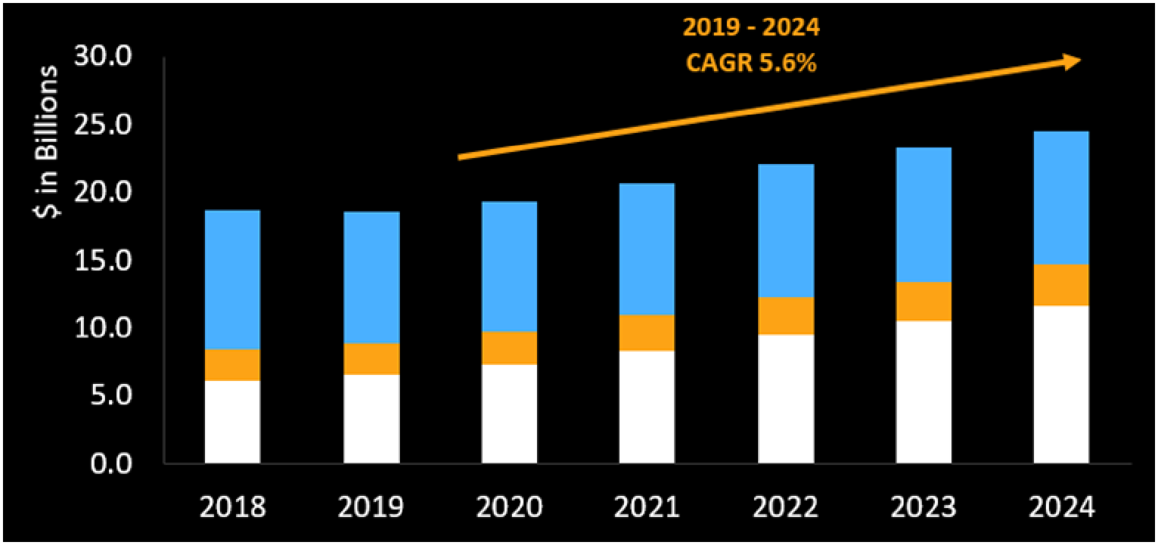
Source: Bloomberg Intelligence

Increased Automation Coming to Networks

The pandemic disruptions have revealed the operational limitations of traditional corporate networks. Relative to public cloud providers, enterprises have been slow to adopt automation and monitoring technologies in their own data centers and corporate networks. Networking vendors, like Cisco, Arista, Juniper Networks and Extreme Networks, have moved to add more automation, artificial intelligence and monitoring functions. Data-center switching and routing have made greater progress, as leading gear makers have introduced or supported network automation applications and virtualization technologies.

Automation of corporate campus networks are in the early stages, as gear makers software-enable their campus switching and routing equipment. Uptake may not be immediate given there's been heightened investment in data centers.

Data Center Networks Market Forecast

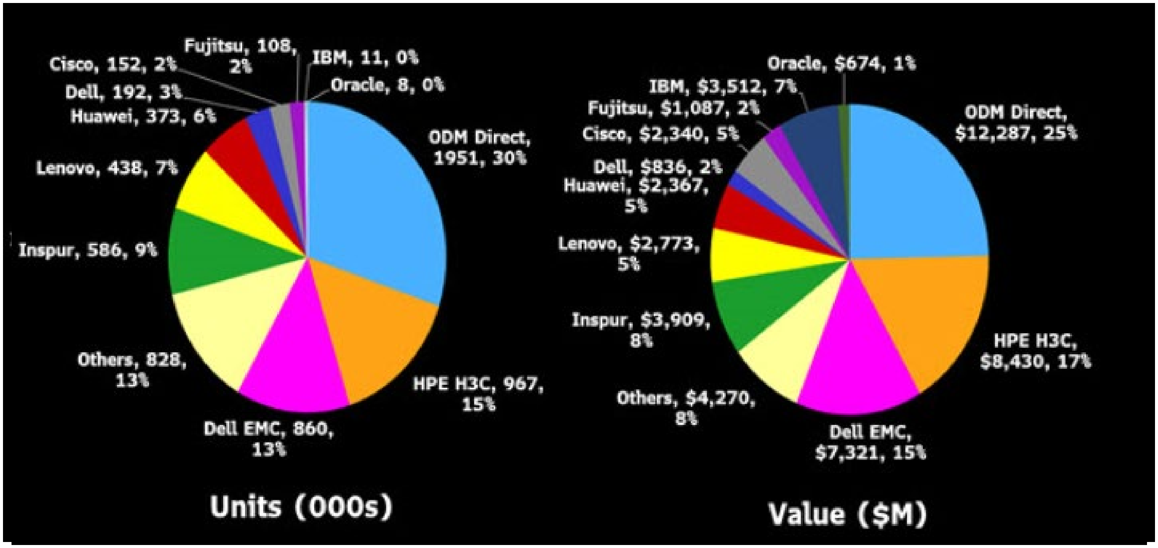


Source: IDC

Virus Likely Amplifies ODM Directs' Gains

Original design manufacturer (ODM) direct providers remain dominant among server makers as the shift to the public cloud continues, and this is likely to intensify in 2020 across both compute-intensive and storage-heavy platforms. OEMs such as HPE and Dell are likely to keep losing unit and revenue share as they have the past few years. The OEM category made up 70% of server units as of 4Q19 but ODMs will steadily take away their market share and potentilly even accelerate amid continued work-from-home growth after Covid-19. The customer base is also extremely concentrated, with the top seven cloud-service providers now accounting for 89% of ODM server shipments, most of which are in the U.S.

Total Server Share (2H19)



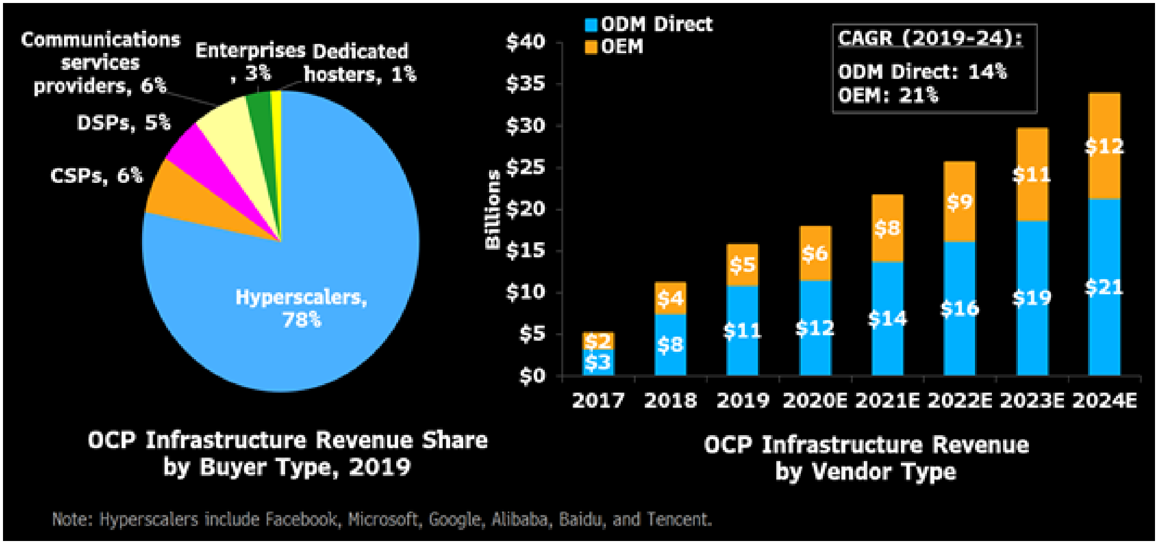
Source: IDC

Open Compute Project Standards Driving Growth

OEM server makers such as HPE and Dell could benefit from standards derived from the Open Compute Project (OCP) first championed by Facebook. OCP-inspired hardware standards have gained wide adoption and many smaller member companies, for a variety of reasons, may prefer OCP-branded servers and storage solutions. IDC suggests that this branded segment, while 30% of total OCP (compute and storage) market revenue, could see a 21% CAGR from 2019-24 -- above that of the 14% of the ODM direct providers that mostly service the hyperscale cloud buyers. Hyperscale customers account for 78% of OCP's total revenue.

Alibaba, Amazon, Apple, Baidu, Facebook, Google, Microsoft and Tencent are the top server customers. The OCP may account for only a portion of the overall server and storage market, and even less of ODMs' revenue.

OCP (Compute and Storage) Infrastructure Revenue

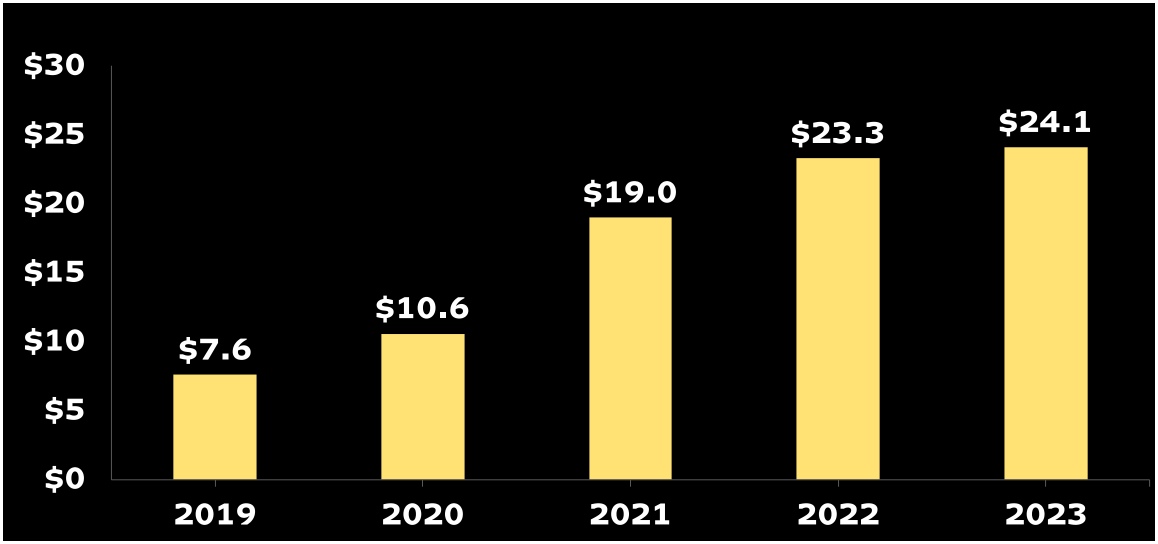


Source: IDC

Wireless-Equipment Sales Get Boost on Digital Transformation, 5G

An acceleration in the pace of digital transformation across industries should provide a lift to wireless-equipment providers' sales as carriers increase network capacity by upgrading their networks to 5G. A proliferation in devices that require internet connectivity as a result of the shift is boosting growth in wireless-data traffic, helping to drive a move to 5G from 4G and boosting wireless-equipment sales. Carrier spending on 5G gear is forecast to rise to $24.1 billion in 2023 from $7.6 billion in 2019, according to IHS.

5G Equipment Sales (Billions)



SourceL IHS

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