COVID-19 Market Impact on Cloud and Data Center:

Equipment, Software and Services

Evaluating the impact of social distancing measures and a global recession
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And along came Covid-19

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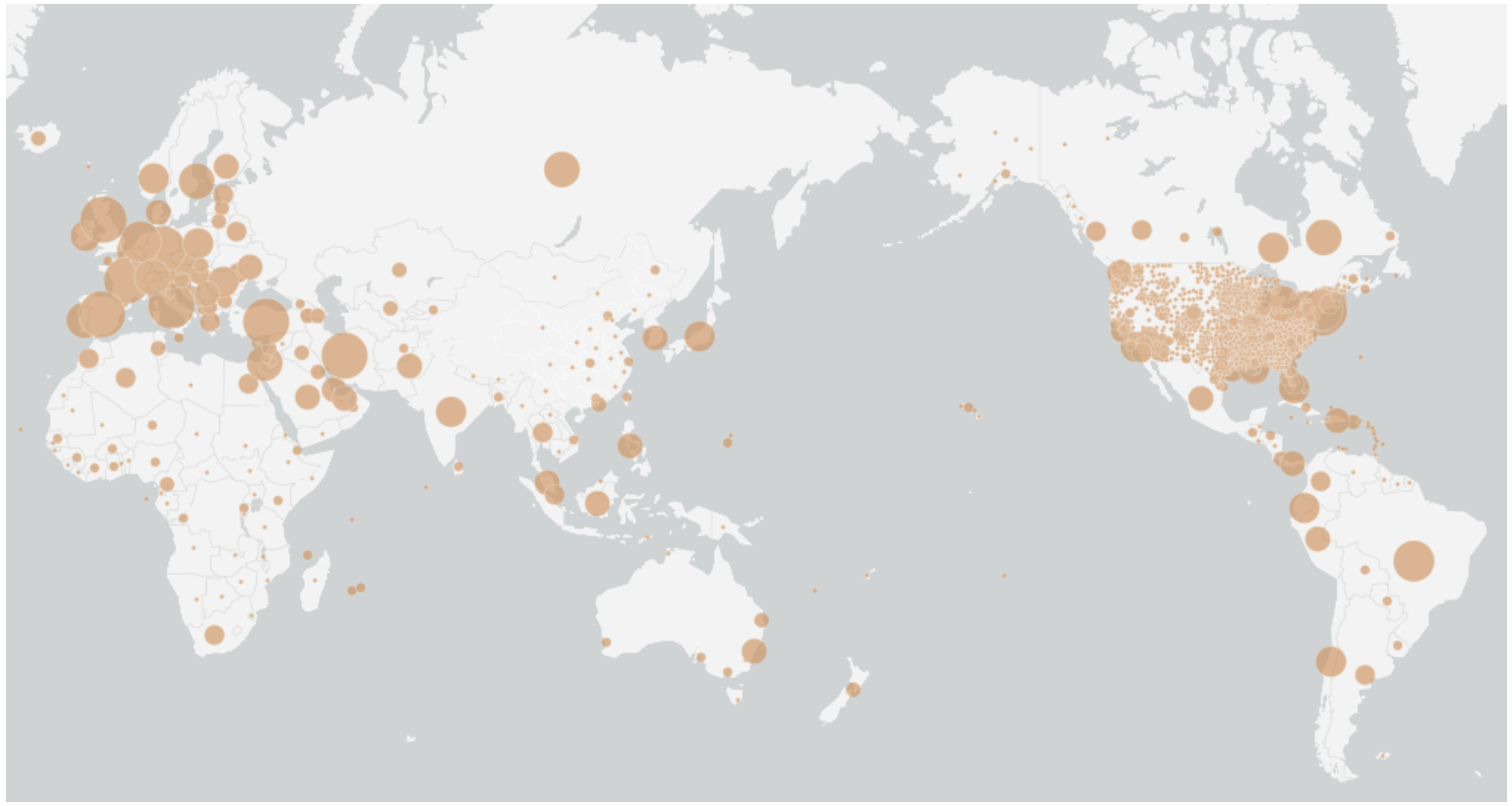
Global pandemic impacts growth

- COVID-19 pandemic continue to spread across USA, Europe and is affecting 185 countries and territories around the world
- Initial indicators point towards a global recession
- The global services PMI plummeted 10.1 points to a record low of 37.0
- IHS Markit now projects a 2.6% decline in global real GDP in 2020, with even sharper contractions in Europe and the Americas
- In the current scenario, a slow recovery is expected from 3Q20 extending to 2021



https://coronavirus.jhu.edu/map.html

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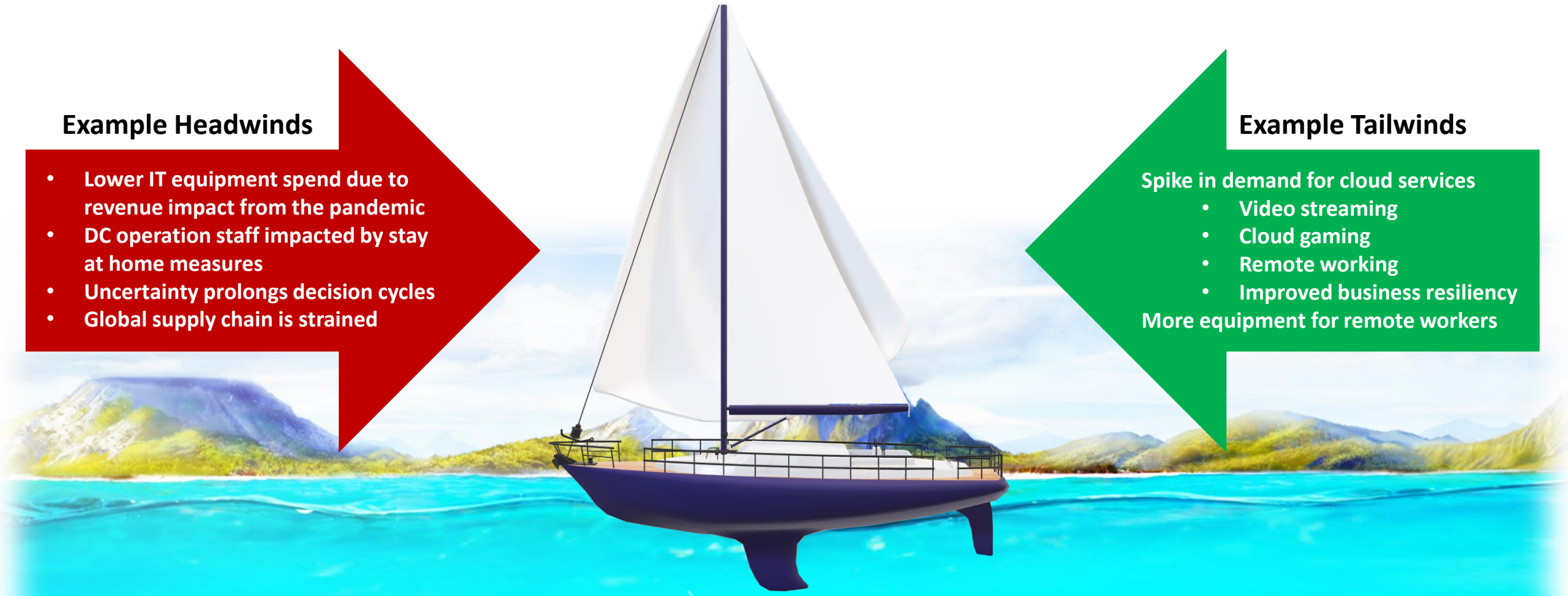
COVID-19 impact on the data center is mixed



Example Headwinds

- Lower IT equipment spend due to revenue impact from the pandemic
- DC operation staff impacted by stay at home measures
- Uncertainty prolongs decision cycles
- Global supply chain is strained

Example Tailwinds

Spike in demand for cloud services

- Video streaming
- Cloud gaming
- Remote working
- Improved business resiliency

More equipment for remote workers

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Recommendations for DC equipment vendors

- **Build additional supply chain redundancy.** Early results indicate component supplier revenue and shipments remain strong and supply chains have been able to overcome 1Q20 challenges, but there is potential for further disruptions during remainder of 2020.
- **Adjust targets downward for enterprise sales.** Dampened confidence will mean enterprises delay projects, particularly those related to campus deployments, while this may be offset by short term purchasing to outfit employees for remote work the long term trend toward remote work will be accelerated as will shifting workloads to cloud for disaster recovery and automated operations
- **Expect Cloud SPs to increase capex spending**. The enterprise shutdown will accelerate the move to remote work, put a spotlight on the need to outsource critical workloads to highly automated operations, and need for additional redundancy capability. We expect this will accelerate the moving of workloads to CSP DCs and use of SaaS, which will require purchasing of additional equipment and investment to expand DC white space capacity.
- **Prepare for Telco IT spending to accelerate.** Additional remote workers and consumers demanding content will require Telcos to expand their transmission infrastructure, which is increasing dependent on IT equipment.
- **New edge computing use cases means opportunity.** The need for remote and unattended operations will accelerate the deployment of low latency use cases potentially accelerating the distribution of compute to edge locations.

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Recommendations for cloud services providers to enterprise

- **Prepare for less skilled clients with enhanced support.** Many enterprises that were slowly turning up the dial on cloud services and use cloud native application architectures, will now have to flip the switch. This will mean a rapid increase in demand for SaaS to support remote work, and workloads now being managed in the cloud by a less cloud skilled IT administrator.
- **Revisit compute demand curves and spending plans.** 3 Covid-19 use cases have driven change: remote working, disaster recovery, need to automated operations. We expect an acceleration of workloads moved to CSP DCs.
- **SaaS services supporting remote work on new permanent demand curve**. The barrier to remote work has been broken, with new methods of work and habits forming that will endure past the end of this pandemic.
- **Plan to increase connectivity quality to remote workers.** The need for uninterrupted connectivity to remote workers that are critical to business operations for their employers are a new reality and CSPs need to explore methods and technology such as SD-WAN that can help.
- **Invest in edge services for increased automation.** Organizations will need to invest in monitoring and remote operations capability for factories, hospitals and all other facilities that must keep running during Covid-19 and prepare for future pandemics. This is opportunity for CPSs to lead the way with services that accelerate this transformation.

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Recommendations for IT decision makers (Cloud SP)

- **Ensure additional redundancy in supply chain.** There will be increased demand for services that could exhaust existing IT infrastructure and trigger the need to rapidly expand capacity. Potential delays due to singe source strategies should be avoided.
- **Have minimal reliance on a single person.** Disruptions due to lose of staff at a location must be avoided, remote operations capabilities should be in place at all critical facilities.
- **Increase data storage capacity**. We can expect a jump in data being stored in CSP DCs to support remote work, especially file sharing and disaster recovery. As CSPs become more integrated with critical business processes of their clients, there will be additional need for cold storage due to compliance regulations.
- **Revisit PoP capacity for remote work.** We can expect an increase in bandwidth at points for presence due to remote work and connectivity to cloud services such as gaming as people not able to work search for leisure activities.
- **Prepare for demand surge for edge hardware.** As organizations lay in solutions for automation and remote operations they will have to deploy equipment and services that enable this new mode of operation. CSPs that offer edge related services should prepare for an increase in demand.

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Recommendations for IT decision makers (Telco)

- **Prepare for remote work influx with SD-WAN.** Business operations to support employees has changed for the long term, with an acceleration in adoption of remote working. There will be additional demands for services to connect and secure remote works in their home. This will be an opportunity to accelerate sales of SD-WAN.

- **Capitalize on increased cloud connectivity demand.** As organizations shift additional workloads to CSP DCs for increased automation, SaaS to support remote workers, or for disaster recovery connectivity capacity demands will increase. This is also opportunity to offer new services that enable cloud on-ramp and monitoring for customers that are building out their multi-clouds.

- **Increase partnerships with edge application providers.** Low latency demanding applications, such as gaming and home schooling, can benefit from computing placed at edge locations near the end user, such as telco run regional data centres and central offices. This is a good opportunity for collaboration between Telco and CSP to meet needs of end users connecting from home.

- **Plan to accelerate NVFi and CDN deployments.** The efficiency and automation brought by moving from an appliance-based to an IT infrastructure will be necessary to navigate the business challenges thrust upon telcos by the pandemic. We can expect significant demand increase to support people asked to shelter in place

- **Step up marketing and deploying edge services**. The ability to run factories and on-premises data centres unattended will become a priority during this pandemic and will remain a requirement long after Covid-19 is behind us. Edge services that allow additional sensor data to be collected and processed in real time will see additional demand.

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Recommendations for IT decision makers (Enterprise)

- **Accelerate cloud services adoption plans.** The agility and rapid response needed to keep the business operational during times when employees must change work patterns can be significantly improved when essential services are delivered from the cloud. Key use cases are automation, remote operations, disaster recovery, and Virtual Desktop Services. Key connectivity technologies include SD-WAN for cloud on-ramp.

- **Invest in remote working for the long term.** The pendulum as swung far to acceptance for remote work, and the equipment spend to outfit remote workers at home. Budgets need to be revised for the long term as the new normal includes as accelerated remote workforce with increased equipment and services supplied in the home, and a potential to trim spend in offices**.** Key technologies for connectivity include SD-WAN and Application Delivery.

- **Invest in automation and disaster recovery.** The need for unattended running though automation software and remote mote monitoring has been made apparent by Covid-19 and will become a new norm for operating DCs for business continuity. Additional investments in DR should include testing of the DR plan and evaluation of cloud services focused on solving this problem. DR now includes the case where employees care sheltered in place and cannot travel to work locations.

- **Do not rule out delaying nonessential projects for 12 months**. The long term effects of Covid -19 in permanent shifts in business operations is still being assessed along with the potential for a global economic slow down that is likely to last 3 yrs: 1.5 yrs to vaccine and 1.5 yrs post vaccine for habits and new business birthed to replace those that could not survive.

- **Accelerate edge computing deployments.** New technologies will be needed to support remote workers and automated operations and could be candidates to benefit from low cost of capital. This will likely include additional edge located sensors collecting more data and compute capacity to process the data. It is easy to imaging an acceleration of edge computing deployments.

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COVID-19 impact by market and segment

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Impact: cloud services

Service segment	Revenue impact	What to expect	Expected duration*
Infrastructure-aaS	Positive	Increased online services demand (on- and off-premises) from cloud infrastructure equipment due to social distancing and stay at home mandates Potential revenue growth, yet reduced revenue from struggling SMBs may negate gains	2y 1y
SaaS (Security)	Positive	Increased work from home requirements puts more emphasis on securing company data via tools like VPN and anti-virus/ malware software Boosts in online sales escalates the need for businesses to ensure consumer data remains secure and data breaches are prevented	2y 6m
SaaS (Collaboration)	Very positive	Upsurge in app downloads and usage for voice and video-conferencing Rising demand for collaboration within various verticals including entertainment, social media and gaming due to social distancing	2y 1y
SaaS (VDI)	Very Positive	Intensified needs for virtual desktops as remote working mandates endure Critical apps must remain accessible to remote workers, regardless of location, putting more focus on improving virtual desktop capabilities	Continuous Continuous
SaaS (Business Analytics)	Neutral	Premium apps for business analytics may become lower priorities for businesses, especially SMBs, with reduced budgets and delayed expansion plans Large businesses seeing surges in app usage may expedite deployments of analytics software to help reduce manual tasks and improve service efficiency	1y 1y

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Impact: colocation services

Service segment	Revenue impact	What to expect	Expected duration*
Interconnect	Positive	Collaboration and content demand increase SDN Network connectivity options play bigger role Ongoing SaaS adoption to solve remote school/work issues	1y 1y 1y
Physical Facility	Neutral	Some enterprise deployments postponed Existing customer contracts remain intact Expansion of existing space temper	1y 2y 1y
Wholesale	Neutral	Overall new leasing will temper Cloud leasing expected to remain stable Price per kW to see mild compression	1y 2y 1y
DC Building	Positive	Construction in progress will continue Non-essential projects will be postponed New projects are well funded cloud related resulting from Covid-19 tailwinds	2y 1y 2y

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Impact: DC IT infrastructure decision makers (Cloud SP)

Market	Revenue impact	What to expect	Expected duration*
Servers	Very Positive	Increased demand for consumer cloud services (video, gaming, etc.) Boom of remote working SaaS services Demand by enterprises for cloud services	2y 6m 1y
DC Network	Neutral	As cloud and DC service usage bursts, consistently so does DC switch demands DC switch components sourced from hard-hit regions like APAC will constrain supply	1y 6m
Storage	Very Positive	Increased demand from video related services (YouTube, SM, gaming) Storage migrating more quickly to off-premises for sharing Increased use of collaborative tools with file share	2y 1y 2y
Multi-tenant Server Software	Positive	Increased need to build out server farms increases use of MTS software Initially enterprises are doing lift and shift migrations Eventually demand shifts to additional cloud native architectures	1y 6m 1y
Application Delivery	Very Positive	Increased use of ADaaS due to accelerated cloud migration Move to cloud native architectures accelerate need for ADaaS Software only ADCs in higher demand as web apps shifted to cloud	6m 2y 6m
SD-WAN	Positive	Cloud on-ramp becomes more important with remote work Connectivity for edge services accelerates for automated operations	2y 2y

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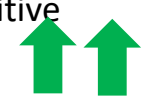
Impact: DC IT infrastructure decision makers (Telco)

Market	Revenue impact	What to expect	Expected duration*
Servers	Positive	Demand for CDN (content delivery networks) expansion Increased demand on mobile networks (voice and data) requires IT investment to maintain service level	1y 6m
DC Network	Neutral	As home Wi-Fi and mobile demands surge with rising collaboration/ communication app usage, correspondingly so does DC switch deployments DC switch components sourced from hard-hit regions like APAC will constrain supply	1y 6m
Storage	Positive	Increased demand on CDN drives storage Increased surveillance and remote operations drive data ingest volumes Increased back-end data to handle remote workers	2y 1y 6m
Multi-tenant Server Software	Positive	Increased remote work and home consumption hastens NFVi deployments UVFs shift from lift and shift VMs for cloud native architectures Edge related services increase deployments of virtualized infrastructure	6m 1y 2y
Application Delivery	Neutral	ADC demand increases to support remote work Less economic activity lowers overall demand curve Increased software ADC deployments with expanded Telco NFV investment	6m 2y 2y
SD-WAN	Very positive 	Increased need for SD-WAN as a managed services for automated operations Increased deployments to support remote work	2y 6m

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Impact: DC IT infrastructure decision makers (Enterprise)

Market	Revenue impact	What to expect	Expected duration*
Servers	Negative	Retail, transportation and energy industries impacted significantly by COVID-19 lockdown; cancelling/pausing investment Governments directing budget towards bailouts & healthcare	2y 1y
DC Network	Negative	As company workloads shift off-premises, expansions in DC switch deployments will decrease DC switch components sourced from hard-hit regions like APAC will constrain supply	1y 6m
Storage	Negative	Decreased demand with campus shutdown and partial operations Increased demand for on-line learning fed from on-premise systems Capital budget delays accelerates use of cloud storage services	1y 1y 6m
Multi-tenant Server Software	Negative	Non-essential projects will be delayed Remote work will move workloads into CSP DCs Automation and unattended operations projects become priority	1y 6m 2y
Application Delivery	Neutral	Increased ADC consumption to equip remote workers Reduced demand due to accelerated shifting workloads to cloud	6m 2y
SD-WAN	Neutral	Increased consumption to equip remote workers Campus and branch office expansion projects delayed wherever possible Economic slow down means reduced demand	6m 1y 2y

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Impact: DC physical infrastructure decision makers (Cloud SP)

Market	Revenue impact	What to expect	Expected duration*
UPS	Positive	Increased demand for three-phase UPS >500 kVA Cloud and wholesale colocation capacity expansion Increased prefabricated power module adoption	1y 1y 2y
Rack	Positive	Adding additional capacity Increasing rack dimensions for cable and cooling management AI applications driving up rack density	1y 1y 2y
rPDU	Positive	Both basic and networked rPDU adoption Increasing rPDU power requirements 10 kW and above Pre-integration with racks	1y 2y 2y

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Impact: DC physical infrastructure decision makers (Telco)

Market	Revenue impact	What to expect	Expected duration*
UPS, Rack, rPDU	Neutral	Increased demand to support networking applications Continued investment to support content distribution Delayed edge computing and 5G deployments	6m 1y 1y

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Impact: DC physical infrastructure decision makers (Enterprise)

Market	Revenue impact	What to expect	Expected duration*
UPS	Negative	Initial increase in demand to support remote working and digital applications Supply chain disruptions inhibit supply from meeting demand Reduced adoption of lithium-ion batteries	6m 6m 1y
Rack	Negative	Limited ability to pre-integrate IT and physical infrastructure Utilization of existing rack U space Transformative technology projects delayed	6m 1y 1y
rPDU	Negative	Utilization of remote monitoring and management Supply chain disruptions inhibit supply from meeting demand Increased adoption of networked rPDUs	6m 6m 1y

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Covid-19 cloud and DC impact dashboard

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COVID-19 Impact on the Cloud & DC Markets (Revenue)

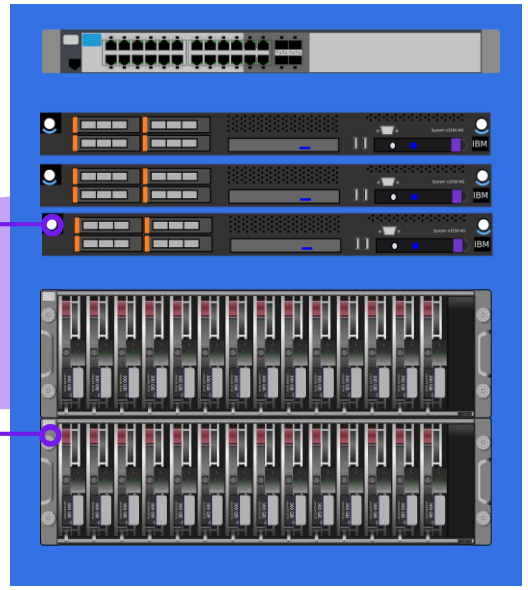
Cloud and Colocation Services

Cloud

CY20 Growth	CY21 Growth	Risk Meter
22% → 23% ($291B)	16% → 17% ($338B)	LOW – HIGH

Colocation

CY20 Growth	CY21 Growth	Risk Meter
9% → 5%	9% → 4%	LOW – HIGH



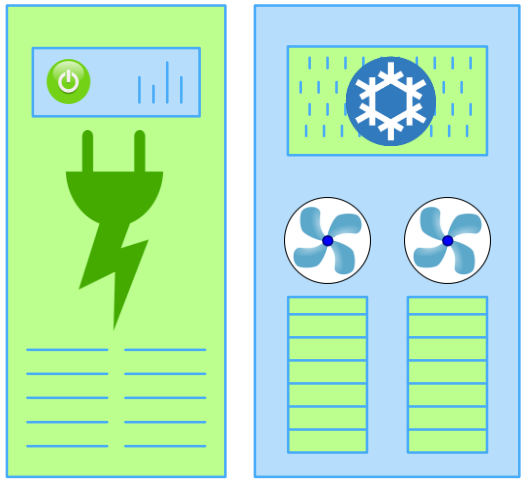
Data Center Physical Infrastructure

UPS

CY20 Growth	CY21 Growth	Risk Meter
4% → -3%	4% → 5%	LOW – HIGH

rPDU

CY20 Growth	CY21 Growth	Risk Meter
3% → -2%	4% → 4%	LOW – HIGH



Data Center IT Infrastructure

Switches

CY20 Growth	CY21 Growth	Risk Meter
5.8% → 5.3% ($13B)	7% → 7% ($14B)	LOW – HIGH

2020: 1st half risk, rebound expected in 2nd half

2021: Back to normal next year

Servers

CY20 Growth	CY21 Growth	Risk Meter
1% → -1% ($79B → $78B)	7% → 5% ($85B → $82B)	LOW – HIGH

Little further risk to the current Fcst.

Opportunity if CSP demand persists.

Storage

CY20 Growth	CY21 Growth	Risk Meter
9% → 2% ($49B → $46B)	11% → 8% ($55B → $50B)	LOW – HIGH

Muted CSP demand will persist

In 2021 Enterprise must switch back out of cloud

Multi-tenant Server Software

CY20 Growth	CY21 Growth	Risk Meter
14% → 6% ($6.0B → $5.5B)	9% → 8% ($6.7B → $5.9B)	LOW – HIGH

Enterprises, majority of revenue; investment delay impacts growth

Vendors ramping up commercial software on public cloud

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