Fall 2021 National Virtual Case Competition

CLICK ON BLUE EVENT HYPERLINK FOR ZOOM LINK

Thursday November 4th

Case Competition Kick Off | 10 AM - 11 AM CENTRAL TIME (CT)
Part I Case Release | 11 AM CENTRAL TIME (CT)

Friday November 5th

Dell Q&A Session | 12 PM - 2 PM CENTRAL TIME (CT)
Part I Case Submission Deadline | 11:59 PM CENTRAL TIME (CT)

Saturday November 6th

Local Presentation Day | 10 AM - 1:30 PM CENTRAL TIME (CT)
Part II Case Release to Finalists | 2:59 PM CENTRAL TIME (CT)

Sunday November 7th

Part II Case Submission Deadline | 8:59 AM CENTRAL TIME (CT)
Finalist Presentation Day | 12 PM - 3 PM CENTRAL TIME (CT)

Rules:

- You are **allowed** to use textbooks, the internet, and any other readings from classes.
- You are **NOT** allowed to ask any professors, faculty, or students outside your team for help
- Your team's presentation materials for **Part I of the Case Study** must be turned in by **Friday November 5th at 11:59 PM CENTRAL TIME (CT)**. ONLY the finalists from each school will receive Part II of the Case Study on Saturday November 6th at 2:59 PM CENTRAL TIME (CT). FINALISTS' presentation materials for **Part II of the Case Study** must be submitted by **Sunday November 7th at 8:59 AM CENTRAL TIME (CT)**. **All documents should be sent to casecomp@asuscma.org.**
- If you feel the case is unclear, Dell will be conducting a **Q&A Session on November 5th** at **12 PM - 2 PM CT**, and all teams will have the opportunity to ask questions.
- Presentations are a **maximum of 15 minutes, with a 5-10 minute Q&A** and must be done **LIVE**.

If you should have any questions, please contact Claire Tanoue at: ***casecomp@asuscma.org***

Dell Technologies Case Study

2021 Fall Case Competition | *in partnership with ASU SCMA*

Sustainability and the **Future of the Reverse Supply Chain**

Arizona State University

FIU

UTEP

Welcome to the Dell, ASU SCEC 2021 Fall Case Competition!

This case has been developed to focus on real questions organizations across different industries are working to address: the intersection of an evolving reverse supply chain and the increasing emphasis on lessening the impact of consumption and waste on our environment.

NOW MORE THAN EVER, the world needs optimists dedicated to solving some of the greatest challenges facing humanity. Your thoughts and ideas could help plant a seed that brings us closer to our respective goals.

We look forward to reviewing and discussing your perspectives and innovative ideas and solutions.

Good Luck!

Case Structure | Table Of Contents

What will the Reverse Supply Chain look like in the next 5 to 10 years?

Generate a viewpoint of how **Dell's Reverse Supply Chain** should evolve in order to leverage technology and industry trends while preparing to meet the challenges of the next decade

What role will sustainability play in the Reverse Supply Chain of the future?

How can Dell incorporate sustainable solutions within its **Reverse Supply Chain** in the future?

1. **Dell Technologies Overview**

Dell Technologies is an American multinational computer technology company based in Round Rock, Texas, United States. Dell Technologies develops, sells, repairs, and supports computers and related products and services. Named after its founder, Michael Dell, the company is one of the largest technological corporations in the world, employing more than 158,000 people around the world.

Dell Technologies offers a comprehensive product and service portfolio across Client and Infrastructure solutions:

- Client: Desktops, Notebooks, Tablets, 2 in 1's, Thin Clients and Peripherals
- Infrastructure: Servers, Storage, Networking, Converged, Solutions, Software
- Services: Consulting, Deployment, Support, Managed and Training

The company is well known for its innovations in supply chain management and electronic commerce, particularly its direct-sales model and its "build-to-order" or "configure to order" approach to manufacturing—delivering individual PCs configured to customer specifications.

2. IT Hardware market size and trajectory

After the traditional PC market grew an astonishing 12.9% in 2020 (the highest growth rate in a decade), one could be excused for expecting the tough comparison to ring in a steeply negative 2021.Yet the International Data Corporation (IDC), a premier provider of market intelligence, is not projecting such a correction. In fact, we expect the worldwide PC market to return an even better year, with 18.1% growth (the highest in more than 20 years) in 2021.

Demand remains far ahead of supply and continues to be driven by the effects of mass remote work and distance learning. As businesses and schools work feverishly to deploy notebooks to homebound users, we laid witness to explosive growth in PC density. Whereas computer labs strewn across the globe could efficiently support multiple, collocated users in the past — think students rotating in for different periods or call center agents sharing a desktop across different shifts — the COVID-19 pandemic forced these users with shared PCs to have their own individual PCs at home.

Consequently, excluding workstations, the 77.1 million desktops shipped (-15.5%) in 2020 represented the lowest shipment total since 1997, while the 219.9 million notebooks shipped (28.8%) beat the prior record set 10 years ago by 5.7%. And yet, we expect more hypergrowth for notebooks in 2021 (22.1% to 268.3 million) with some recovery of desktops (7.1% to 82.6 million) as more businesses start to welcome back employees to campus toward the back half of the year.

Demand is expected to remain strong throughout the year. Certain vendors are still carrying significant backlogs of unfulfilled orders, and supply constraints are projected to ease up materially any time soon. The main clog in the supply chain has remained driver integrated circuits (ICs) for panels, but the sheer dearth of that component's shortage has provided cover to some other components with now brewing concerns over supply tightening. Summarily, the main shortage will not substantially improve in the near term while other issues are starting to raise red flags along the PC supply chain. As such, 2021 like 2020 will be dictated not by demand but by supply. Current supply chain indicators lead us to believe that supply will intersect with demand this year at 357.1 million units (18.1% growth), a

figure that could be even higher if capacity allows. Some modest contractions are projected in the subsequent two years, before refresh of the current lot drives the market back into growth territory in the two outer years of our forecast period. The growth in outer years demonstrates IDC's belief that the raised PC density will ultimately prove to be more permanent result than temporary fix.

This IDC study presents the forecast data for the worldwide traditional PC market for 2021–2025.

"The worldwide traditional PC market drove its largest growth in a decade in 2020, and we believe it's headed for its largest growth in more than two decades in 2021. Such is the reality of billions of homebound users," states Linn Huang, research vice president, Devices & Displays at IDC. "In fact, should our forecast ring true, it would beat the previous record by 6.4% when excluding mini notebooks."

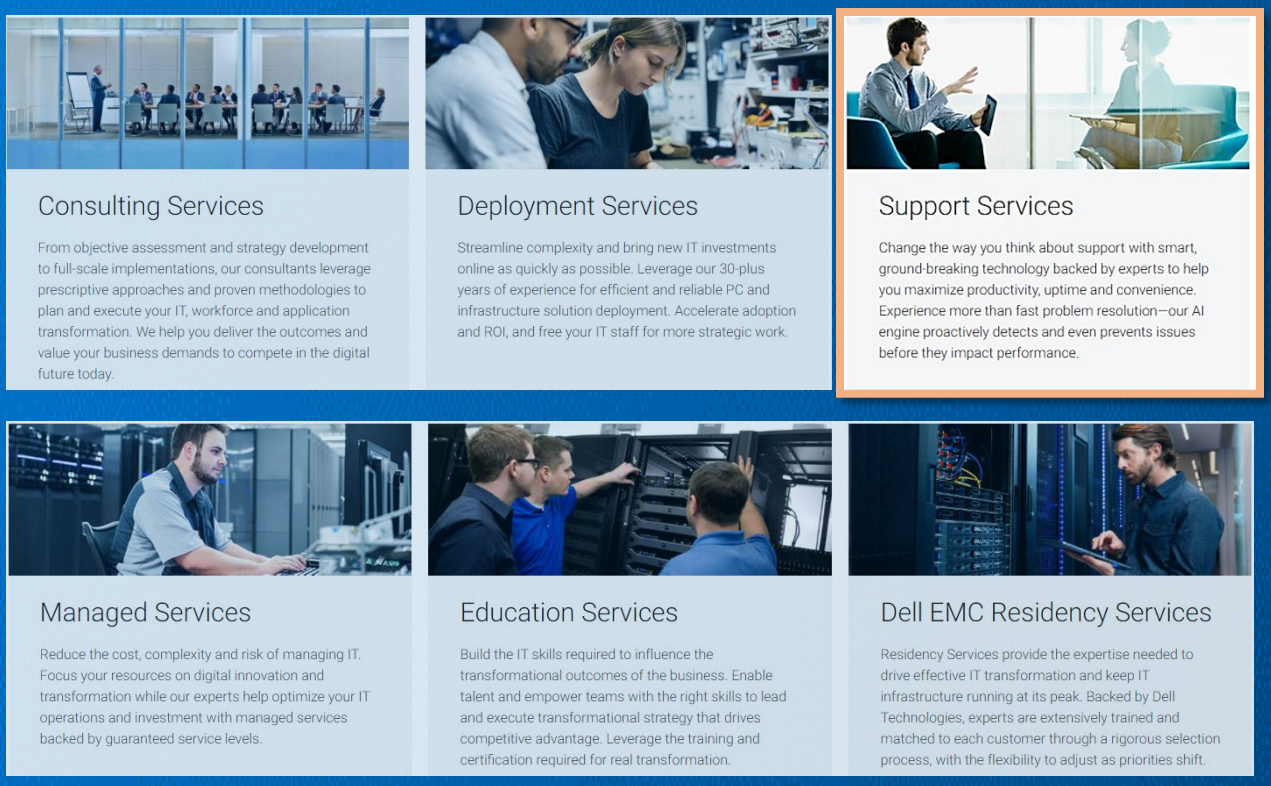
Figure 1: PC Industry Shipment Growth Rate

2. Dell Technologies Services

Dell Technologies Services helps customers and partners accelerate technology adoption and maximize productivity so they can achieve effective and efficient business outcomes. We deliver this through six primary avenues:

- **Consulting Services**: Strategic guidance and expert execution on technology, application and workforce transformations, delivered by industry-recognized experts
- **Support Services**: Fast response times and highly trained technicians & engineers quickly resolve issues with available 24x7 phone support and mission critical response options
- **Deployment Services**: Expert deployments from hardware installation through planning, configuration, and complex integrations
- **Managed Services**: Complete oversight of end-to-end IT solutions designed to meet the needs of businesses
- **Education Services**: Continuous learning and certification for IT organizations on their transformation journey
- **Dell EMC Residency Services**: On-site trained, certified expertise for day-to-day support, at customer sites

Figure 2: Dell Services Offerings



This case focuses on the Support element of Dell's Services portfolio

Dell Technologies Services | Support Services

The Dell Services Supply chain organization is a world class aftermarket supply chain that anticipates and delivers to our customers' need in all markets we service. Covering Client (Desktops, Notebooks) and Enterprise products (Server, Storage, Networking) with a variety of warranty offers to meet customers' need for resolution speed and flexibility, Support Services is responsible for ~14M part dispatches across 121M+ systems. That is supported by an extensive network of 60K+ Dell Technologies and partner professionals spread across the globe in 165 countries in 55 languages. This reach is enabled through 87 tech support sites, 6 global command centers, 800+ parts distribution centers, 2200 carry in service centers (depots) and 19 repair sites distributed across the globe. This extensive network, and the people and processes that power it, allow Dell Technologies to deliver a world class customer satisfaction and customer experience.

Dell Technologies Services | Support Services Process Overview

The support process starts with a customer going online or calling Dell Technical Support. An agent validates the customer's system entitlement (the type of service contract attached to the system) and then assists the customer in trouble shooting the problem. If it is a software issue and can be resolved remotely, the agent resolves it and case is closed. If it requires a part replacement or further diagnosis, based on the entitlement, the agent may schedule an onsite visit or ask the customer to ship the system to a 'depot' or carry in service center location.

- In case of 'onsite', the agent schedules a technician to visit the customer site and messages part distribution center to ship a part to the customer. The technician diagnoses the system, validates the issue and replaces the required part. The malfunctioning part is shipped back to a hub for repair/disposition
- In case of 'depot or carry in service', customer ships/brings in the system, and the hub ships the part to the depot/carry in center. The technician diagnoses the system, validates the issue and replaces the required part. The malfunctioning part is shipped back to a hub for repair/disposition

Through this support journey from case creation to part delivery and installation, each customer request is closely monitored through the Dell Technologies Global Command Center to ensure that we meet and exceed our customer Service Level Agreement (SLA). The command center monitors and proactively intervenes when there is:

- Risk of missing case SLA
- Escalation management
- Situation management – Natural disaster, bad weather, political unrest, etc.

The command center works collaboratively with our partners onsite and remote in real time to resolve the situation and ensure that Dell meets its customer commitments.

3. **Dell Services Reverse Supply Chain**

The Reverse Supply chain includes all operations and activities involved in the return and disposition of a product after it leaves a customer's site. This process path exists at the intersection of several critical functions within the Services Organization:

- **Planning** is responsible for forecasting parts by location across the globe based on the install base and relevant parameters. Planning also manages parts supply as new platforms are launched and old platforms go end of life. In addition to typical inputs that a Supply Chain Planning function would use (like demand, parts failure rates and lead times), the team also considers factors from the Reverse Supply Chain, like product returns, on-hand inventory, parts in repair and part substitutes to provide the Service Supply Chain a picture of what parts, how many parts, and where parts are needed to support customer need.

- **Procurement** is responsible for sourcing parts from the vendors through the warranty life of the product. Procurement ensures good Dell-supplier relationships and manages contracts between Dell and the suppliers. Procurement also monitors supplier performance and is responsible for mitigating supply risk, through strategic initiatives with the supplier. When it comes to the Reverse Supply Chain, Procurement ensures that warranty terms are honored, quality levels are maintained and that value is recovered when parts reach the end of their service lifecycle.

- The **Logistics/Operations** team manages the hub providers who stock the parts and pick, pack and ship the part to the required location primarily upon the receipt of a notification from the tech support team. The Logistics and Operations team also plays a significant role in the Reverse Supply Chain, as this is the team that tracks, receives, and reconciles returns from the customer. This team touches various aspects of the pathway like packaging, screening and restocking, and is responsible for ensuring that returned parts are routed to the proper channels for repair, replacement, refurbishment or recycling.

- The **Repair** team ensures systems are repaired per Dell Engineering specification. They are responsible for repairing parts, thereby minimizing environmental impact by reusing parts, where feasible. In recent years, the Repair team has been working to increase repair yields while expanding its ability to harvest parts from non-repairable systems. These harvested parts form a critical secondary supply source for components that are hard to come by in the open market and help further Dell's commitment to Reduce, Reuse and Recycle.

- In a world where the pace of technology obsolescence is ever increasing, Dell has a world class Asset Recovery and Management program that ensures that value is not lost at the end of a system's lifecycle. Dell's **Asset Recovery Board (ARB)** works with customers who are ready to trade up or get rid of their old systems by buying back older (Dell and non-Dell) systems and replacing these with newer systems. **Dell Financial Services (DFS)** operates a similar trade-up program with customers that lease systems from Dell. This ensures that Dell customers have the best possible technology solutions, from the Edge to the Cloud at their fingertips, while protecting the environment through responsible End-of-Life solutions for older and obsolete systems. Systems that come back to Dell are refurbished, torn down for critical or supply-constrained parts or recycled in line with Dell's stringent safety, quality and data security standards.

3. **Market Issues and Considerations**

For this case, you are asked to think about current and anticipated market conditions and disruptions and how they may affect and/or influence, positively or negatively , the evolution of the Reverse Supply Chain. Some areas you might consider/explore are:

- Right To Repair Legislation
- Anti Dumping Legislation
- RFID tagging on Retunable Assets
- Recyclable/ Multi Use Packaging
- 3D Printing
- Increased demand
- Higher labor costs
- Supply constraints
- Rapid technology transitions
- Increased commodity pricing
- Global trade and tariff uncertainty
- Labor shortages
- Supplier consolidation
- Shifts in customer behavior, business operations, ecosystems and workforce

"It's not good enough to follow closely behind or alongside the market. We need to be ahead of where the market is going, or better yet, influence its trajectory"

Tom Maher, SVP Dell Technologies Service Parts

4. Dell's 2030 Sustainability Goals | ADVANCING SUSTAINABILITY MOONSHOT GOALS

By 2030, for every product a customer buys, we will reuse or recycle an equivalent product. 100% of our packaging will be made from recycled or renewable material. More than half of our product content will be made from recycled or renewable material.

Sustainable production is critical in the modern economy. With the current population growth and ecosystem pressures, our society's longtime approach of discarding materials as "waste" is unsustainable.

Our moonshot goal calls for taking back what we produce and significantly scaling our adoption of recycled and renewable materials. These two actions, along with Dell Technologies' design methodology to optimize product reusability and recyclability, support the future of the circular economy. We continue to assess sustainability tradeoffs when identifying alternative material sources for the least impact on our planet, that also meet our performance requirements.

Understanding the challenges to sustainable materials use, recycling and reuse is key to this goal. Dell engages customers through social media and other content to share about the relevance of a circular economy in everyone's lives. We conduct research to determine how consumers are motivated or challenged to recycle. We continuously enhance our recycling offerings, including our new optional service to move customers' data from their old to new systems and wipe their old systems before recycling.

- We will reach net zero greenhouse gas (GHG) emissions across Scopes 1, 2, and 3 by 2050
- We will reduce Scopes 1 and 2 greenhouse gas (GHG) emissions by 50%
- We will source 75% of electricity from renewable sources across all Dell Technologies facilities by 2030 and 100% by 2040
- We will reduce the energy intensity of our entire product porfolio by 80% (FY12- FY21)
- We will partner with our direct material suppliers to meet a science-based greenhouse gas (GHG) emissions reduction target of 60% per unit revenue by 2030
- We will drive sustainability improvements in our global workplaces through 2030
- Each year through 2030, we will show continued commitments to provide healthy work environments where people can thrive
- Each year through 2030, we will deliver future ready skill development for workers in our supply chain
- Each year through 2030, we will continue engagement with the people who make our products

5. Summary

Dell Technologies Services helps customers and partners accelerate technology adoption to be ready for the digital future today. We position ourselves as a leading Technology company with the mission to "create technologies that drive human progress".

At Dell Technologies, we are more than ever conscious of the impact rapidly evolving technology and industry trends have on the environment. Because we understand the stakes, we are already at the forefront of ensuring, through our 2030 sustainability goals, that our reverse supply chain is not only competitive but more importantly sustainable and eco-friendly.

The endeavor of remaining competitive while keeping the environment a priority is one that requires strong innovative mindset, and a comprehension of the future reverse supply chain and sustainability standards. That is where you come in.

As you know, the problems stated here are real issues and questions many companies have to face today. We are privileged to have your fresh perspective, so we value your contributions to this case study. As you develop your solutions, keep in mind the 5 values that unite us as one Dell Technologies: Customer, Winning Together, Innovation, Results and Integrity. Remember to develop solutions that are feasible and aligned with our values and mission.