

Devices Benchmark

Third Calendar Quarter 2022



TECHNOLOGY BUSINESS RESEARCH, INC.

PC component availability improves, but elevated channel inventory levels drove aggressive price competition

Key 3Q22 Benchmark Takeaways

Results	Takeaways
<p>1</p> <p>PC channel inventory levels remain above pre-pandemic levels.</p>	<p>Channel inventory levels have remained elevated across the industry due to waning PC demand. Consumer PC demand began collapsing a couple quarters ago, mainly due to last year's pandemic-driven surge in device upgrades while commercial PC demand has followed suit more recently as organizations are largely focused on reducing and controlling capex spend given economic uncertainties centering around inflation and geopolitical tensions. All this has led to increased price competition in the industry, primarily in the form of product promotions, as PC vendors work to normalize channel inventory levels. The fourth quarter tends to see increased demand in both the consumer and commercial markets, as the holiday season and end of the year drive higher spending, which will help clear channel inventories. TBR believes PC channel inventory levels will return to pre-pandemic levels by the end of 1H23.</p>
<p>2</p> <p>The availability of many device components is improving.</p>	<p>Key device components, specifically those for PCs, are becoming easier to procure, and prices for certain components, like memory, are decreasing. This deflationary component environment will lead to cost savings in the near term as PC vendors exhaust their existing component inventories and reorder new components at lower prices. However, the realization of these cost savings is largely dependent on vendors' current component inventories relative to their sales momentum. As such, vendors with higher relative turns on inventory, like Dell Technologies, will realize cost savings from deflationary components more quickly than rivals whose turns on inventory are lower, including Lenovo and HP Inc.</p>
<p>3</p> <p>Device vendors will further invest in developing their services portfolios to combat negative hardware margin pressures.</p>	<p>PC services, including support and break/fix, has emerged as a major revenue stream and focal point for PC vendors as the market has matured. In general, hardware is a lower-margin business than its related services, so as negative margin pressures on PC hardware persist, vendors will look to pivot, increasing the PC services revenue mix relative to PC hardware revenue. This trend will also permeate other devices segments, like smartphone, tablet and wearables, where AppleCare and Samsung's Care+ already have solid footing, although this report does not cover services related to non-PC devices.</p>

Total benchmarked devices revenue contracted on a year-to-year basis as PC and tablet demand continued to weaken

3Q22 Revenue and Gross Profit Trends*



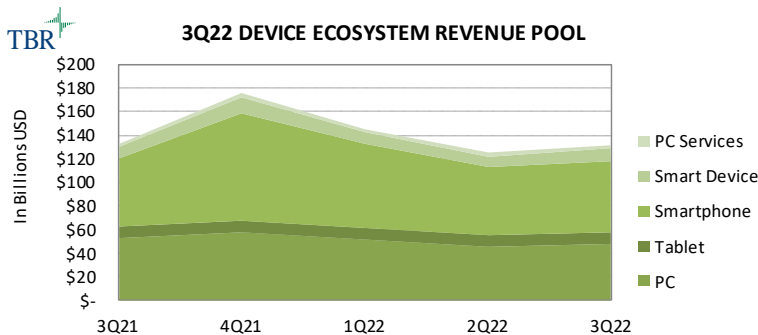
\$131.6 billion in revenue, -0.7% change year-to-year

- Total devices revenue contracted for the first time since the onset of the pandemic in 2Q20.
- Revenue growth in smartphone, PC services, and smart devices helped offset declining revenue in PC and tablet.
- Of the five benchmarked devices segments, performance in tablet was the weakest, with revenue decreasing at a double-digit rate year-to-year in 3Q22.
- On a year-to-year basis, total devices revenue mix shifted away from PC, with the segment’s contribution falling 300 basis points as a percentage of revenue. Much of this was picked up by the smartphone segment, which increased its revenue contribution by 260 basis points.



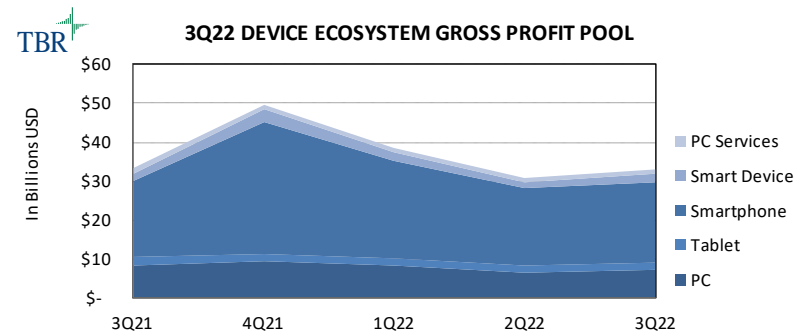
\$33.1 billion in gross profit, -0.5% change year-to-year

- Total devices gross margin grew 10 basis points year-to-year, driven mainly by smartphone gross margin expansion.
- Supply chain constraints forced many device vendors to increase their numbers of stock keeping units (SKUs) to offset the impact of component shortages, primarily those centered around integrated circuits. As such, vendors held more component inventory and experienced negative impacts to their gross margin profiles. However, as supply chain conditions improve, vendors are beginning to consolidate their SKUs and component inventories, which will benefit gross margins in the near term.



SOURCE: TBR AND VENDOR DATA






*Among benchmarked companies



SOURCE: TBR AND VENDOR DATA

The hybrid work solutions and wearables markets continue to expand, leading to double-digit revenue growth in the smart device segment

3Q22 Segment Performance and Trends*

 PC Segment Performance and Trends	 PC Services Segment Performance and Trends	 Smartphone Segment Performance and Trends
<p>\$48.4 billion in revenue, 8.2% decrease year-to-year</p>	<p>\$3.1 billion in revenue, 7.0% increase year-to-year</p>	<p>\$60.7 billion in revenue, 5.1% increase year-to-year</p>
<p>PC revenue contracted at a more pronounced rate in 3Q22, driven by weak demand in both the consumer and commercial sides of the market. Increased price competition among vendors also negatively impacted PC revenue and gross margin.</p>	<p>The duration of support and maintenance contracts and the growing popularity of Device as a Service (DaaS) led to PC services segment revenue growth, despite contractions in PC segment revenue. PC services revenue contribution to total devices revenue remain relatively static.</p>	<p>Smartphone revenue among covered vendors increased on a year-to-year basis, largely driven by an overall shift in focus toward the premium segment, as evidenced by a 9.2% year-to-year increase in smartphone average revenue per unit (ARPU).</p>
 Tablet Segment Performance and Trends	 Smart Device Segment Performance and Trends	
<p>\$9.0 billion in revenue, 11.4% decrease year-to-year</p>	<p>\$10.4 billion in revenue, 14.6% increase year-to-year</p>	
<p>Tablet revenue continued to tumble in 3Q22. However, this was driven in part by a strong year-ago compare, as Apple updated its iPad Pro series in the back half of 2Q21, resulting in a 3Q21 sales bump that was not replicated in 2022. Additionally, tablet gross margin contracted 120 basis points year-to-year, underscoring the downward trend in the tablet market overall.</p>	<p>Smart device segment revenue increased on a year-to-year basis, supported by strong demand for wearables on the consumer side of the market and hybrid work solutions on the commercial side of the market. Further supporting year-to-year segment revenue growth, Apple released the Watch Series 8 and Watch Ultra in September as successors to the Watch Series 7, which was released in 4Q21.</p>	

*Among benchmarked companies

Expanded availability and ramped-up advertising illustrate Apple's commitment to growing its services business

Scenario Discussion: Apple looks to maintain services growth



Strength: Apple's large install base and wide ecosystem of devices allow it to effectively market and monetize a range of services.



Weakness: Consumers may be unwilling to buy in to the Apple ecosystem to gain access to its range of services, especially considering rising prices and increased advertising.



Opportunity: Apple can continue to expand purchasing options and capitalize on advertising opportunities to further grow its services business.





Threat: Apple's offerings face competition from companies dedicated to a single service such as Netflix, Peloton and Spotify.

- Over the past four years, Apple has nearly doubled the size of its services business, reaching the size of a Fortune 50 company in terms of revenue by early 2022. With the company's active install base and paid subscriptions continuing to balloon each quarter — the latter doubling over the past three years to reach 900 million in 3Q22 — Apple is looking to maintain this momentum with enhancements and updates across its portfolio.
- Apple continues to invest heavily in growing its services business, backed by the expansion of its product ecosystem. The company is also looking to widen the available market of one of its more heavily marketed services, Apple Fitness+, with an update in October allowing all iPhone users to purchase a subscription regardless of whether or not they own an Apple Watch.
- The company is also working to adjust its services prices to protect its margins, recently raising Apple Music's subscription rate to accommodate increased licensing costs. Apple also increased the subscription price for Apple TV+, which the company indicates is a way to represent the higher value of the service as its library of content expands.
- To further monetize its streaming business, Apple is reportedly developing a live television advertising network to pair with its recent Major League Soccer (MLS) broadcasting deal. The partnership, penned in June, grants Apple exclusive streaming rights to MLS games for 10 years, beginning with the 2023 season. Apple will run advertisements on all three tiers of the offering, including for paid subscribers to the dedicated MLS package.


CSG will rely on its improved supply chain and the comparatively resilient commercial PC market to combat the effects of softening demand

Scenario Discussion: Premium and commercial PCs remain central to Dell Technologies' GTM strategy

 **Strength:** CSG has the strongest commercial presence among all PC vendors and an improving supply chain.

 **Weakness:** While it is not falling as sharply as the consumer side, commercial PC demand continues to decline.

 **Opportunity:** CSG can continue to leverage the brand to increase its premium and commercial product mix to improve revenue and margins.

 **Threat:** High channel inventory throughout the PC industry will continue to exert pressure on Dell Technologies' pricing power.

- After grappling with supply chain issues and an elevated backlog spurred by the pandemic, Dell Technologies reported it managed to return its PC and peripheral backlog to pre-pandemic levels during 3Q22, which will position the company to more readily meet demand through the end of 2022 and into 2023. This has also freed up Dell Technologies to readjust its transportation networks to reduce costs, avoiding the costly expedited air freight that was harming the company's bottom line.
- Despite the encouraging supply chain environment, Client Solution Group (CSG) revenue fell 16.8% year-to-year during 3Q22 as demand continued to decline behind rising inflation and macroeconomic uncertainty. In line with a broader trend in the devices industry, declines were more pronounced on the consumer side, with consumer PC revenue falling 26.1% compared to a 18.8% decline in commercial PC revenue.
- Given the relative resilience of the commercial market during recent quarters, Dell Technologies will leverage its direct sales capabilities to drive growth in the SMB market and hedge against channel inventory saturation, which has become a headwind to margins by creating pricing competition. Dell Technologies' differentiation in direct sales to the commercial market has contributed to the company gaining global commercial PC share in 35 of the last 39 quarters, including 3Q22, when commercial units accounted for more than 70% of the company's PC revenue. Other areas of focus for CSG include higher-margin consumer offerings, such as premium notebooks, workstations and desktops, as well as Dell-branded peripherals and services with the potential for high attach rates.
- While Dell Technologies made good progress in normalizing its backlog during 3Q22, channel inventories in the industry remain, and the company will have to contend with an increasingly competitive pricing environment in the coming months. During Dell Technologies' 3Q22 earnings call, the company noted that pricing pressures worsened during the quarter. This ongoing dynamic will only increase Dell Technologies' reliance on its more premium offerings.

Hybrid work and gaming opportunities represent a twofold benefit by targeting ‘premium’ use cases and crossover usage

Scenario Discussion: Lenovo targeted the hybrid work and gaming markets with its IDG releases in 3Q22



Strength: Lenovo can leverage its existing Legion brand and portfolio of business PCs to grow share in the gaming and hybrid work markets.



Weakness: While many of Lenovo’s offerings are marketed to business consumers, they are still subject to recent downturns in PC demand.



Opportunity: The new Gaming Chromebook gives Lenovo an entry-level gaming PC that the company can leverage to gain market share.







Threat: Lenovo faces competition from other PC vendors with gaming and hybrid work portfolios, such as Dell Technologies and HP Inc.

- Through product releases across its Intelligent Device Group (IDG) segments, including PCs, peripherals and smart devices, Lenovo is targeting SMBs with hybrid and remote work needs. Releases from 3Q22 include the updated ThinkPad X1 Fold notebook, with a thinner chassis and additional viewing modes for greater portability and versatility, and the Glasses T1 wearable display, which is marketed for mobile work, gaming and video streaming.
- Lenovo is also focused on maintaining its momentum in its rapidly expanding gaming PC segment, which saw a 34% year-to-year increase in sales in 3Q22. This has led to the development of products with features designed for both gaming and hybrid work in an attempt to capture consumer interest at the intersection of the two markets. An example of such a product release from 3Q22 is the Legion Y32p-30 Gaming Monitor, which combines sharp, responsive visuals with multitasking and features such as USB-C docking and picture-in-picture functionality.
- Lenovo also rolled out its first cloud gaming laptop, the IdeaPad Gaming Chromebook. This new offering is meant to appeal to users looking for a more accessible and versatile gaming machine, with cloud connectivity streamlining game installs, downloads, updates and patches. This offering gives Lenovo an entry-level gaming PC that can be used to gain market share. The cloud streaming technology enables Lenovo to produce lower-spec PCs without high-end GPUs and storage while still providing gaming-level performance. The computer also includes features that improve productivity and a portable form factor to support remote and hybrid work and learning.

HP Inc. continues to invest and innovate to capitalize on the popularity of hybrid work, propelled by its recent acquisition of Poly

Scenario Discussion: HP Inc. doubles down on portfolio strategy centered on hybrid work solutions

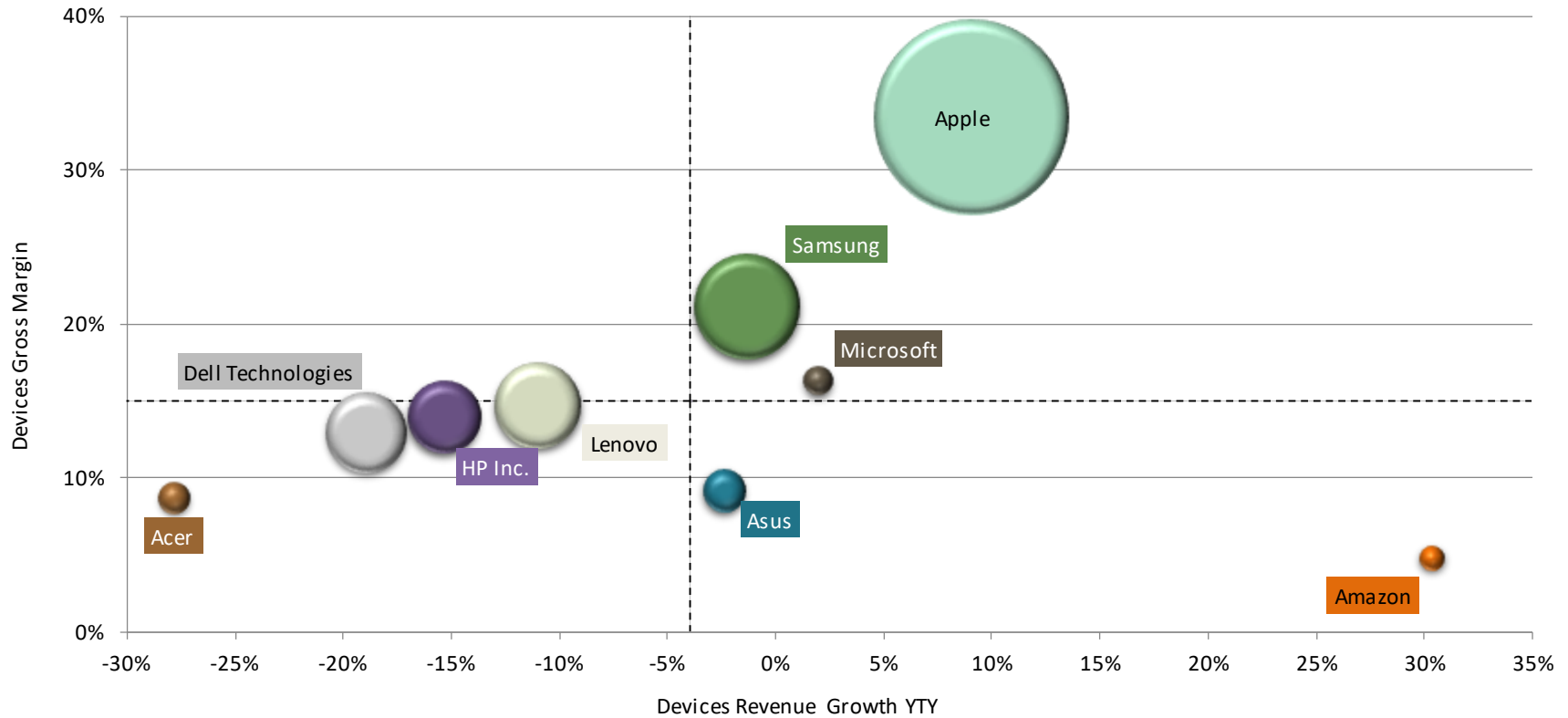
-  **Strength:** HP Inc. is investing heavily in R&D and acquisitions to strengthen its hybrid work portfolio.
-  **Weakness:** The recent downturn in commercial demand will threaten performance in the hybrid work space.
-  **Opportunity:** The recently acquired Poly brand will allow HP Inc. to expand its workplace collaboration portfolio.
-  **Threat:** Other major PC vendors such as Lenovo and Dell Technologies are also building out their hybrid work portfolios.

- With PC demand on both the consumer and commercial sides continuing to fall following the surge triggered by the COVID-19 pandemic, HP Inc. is looking for other opportunities to grow revenue and profitability. One trend sparked by the pandemic that has remained more resilient is the hybrid working model, with many companies opting to make it permanent. HP Inc. hopes to capitalize on this paradigm shift, centering many of its recent portfolio expansions and investments, as well as its acquisition of Poly, on establishing a foothold in the market for hybrid work solutions.
- To reap the greatest benefit from the shift to hybrid work, HP Inc. is developing portfolio offerings to fill the needs of employees both in the office and at home. For the office, HP Inc. recently announced a Zoom-compatible conference room bundle incorporating HP Inc. — and Poly-branded technology — the first offering released following HP Inc.'s acquisition of the company. In October HP Inc. also launched HP DaaS+ Hybrid, which is designed to outfit home offices by delivering preconfigured devices directly to employees' doors.
- HP Inc. will continue to make its push into the hybrid work solutions market in coming quarters with further releases under the Poly brand, as well as building a dedicated research and development facility to study hybrid work solutions that is expected to open in Washington state in 2026. While the size of this facility has been reduced by about 25% from HP Inc.'s original proposal in 2019, as of October 2022 the project will involve the construction of 235,000 square feet of lab space and offices across two buildings.

Apple continues to lead among benchmarked vendors in total revenue and gross margin



3Q22 DEVICES REVENUE GROWTH VS. 3Q22 DEVICES GROSS MARGIN



Note: Sphere size depicts volume of revenue. Dotted line represents the average of the axis to which it corresponds.

SOURCE: TBR AND COMPANY DATA

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