

Microsoft Corporation (NASDAQ:[MSFT](#)) Q2 2023 Earnings Conference Call January 24, 2023 5:30 PM ET

Company Participants

Brett Iversen - Vice President, Investor Relations

Satya Nadella - Chairman and Chief Executive Officer

Amy Hood - Chief Financial Officer

Alice Jolla - Chief Accounting Officer

Keith Dolliver - Deputy General Counsel

Conference Call Participants

Keith Weiss - Morgan Stanley

Brent Thill - Jefferies

Mark Moerdler - Bernstein

Kash Rangan - Goldman Sachs

Karl Keirstead - UBS

Brad Zelnick - Deutsche Bank

Brad Reback - Stifel

Tyler Radke - Citi

Operator

Greetings and welcome to the Microsoft Fiscal Year 2023 Second Quarter Earnings Conference Call. [Operator Instructions] As a reminder, this conference is being recorded. I would now like to turn the conference over to your host, Brett Iversen, Vice President, Investor Relations.

Brett Iversen

Good afternoon and thank you for joining us today. On the call with me are Satya Nadella, Chairman and Chief Executive Officer; Amy Hood, Chief Financial Officer; Alice

Jolla, Chief Accounting Officer; and Keith Dolliver, Deputy General Counsel. On the Microsoft Investor Relations website, you can find our earnings press release and financial summary slide deck, which is intended to supplement our prepared remarks during today's call and provides the reconciliation of differences between GAAP and non-GAAP financial measures.

On this call, we will discuss certain non-GAAP items. The non-GAAP financial measures provided should not be considered as a substitute for or superior to the measures of financial performance prepared in accordance with GAAP. They are included as additional clarifying items to aid investors in further understanding the company's second quarter performance in addition to the impact these items and events have on the financial results. All growth comparisons we make on the call today relate to the corresponding period of last year unless otherwise noted.

We will also provide growth rates in constant currency when available as a framework for assessing how our underlying businesses performed, excluding the effect of foreign currency rate fluctuations. Where growth rates are the same in constant currency, we will refer to the growth rate only. We will post our prepared remarks to our website immediately following the call until the complete transcript is available. Today's call is being webcast live and recorded. If you ask a question, it will be included in our live transmission, in the transcript and in any future use of the recording. You can replay the call and view the transcript on the Microsoft Investor Relations website.

During this call, we will be making forward-looking statements, which are predictions, projections or other statements about future events. These statements are based on current expectations and assumptions that are subject to risks and uncertainties. Actual results could materially differ because of factors discussed in today's earnings press release, in the comments made during this conference call and in the Risk Factors section of our Form 10-K, Forms 10-Q and other reports and filings with the Securities and Exchange Commission. We do not undertake any duty to update any forward-looking statement.

And with that, I will turn the call over to Satya.

Satya Nadella

Thank you very much, Brett. I want to start with the context I shared with our employees last week on the changing environment and our priorities. As I meet with customers and partners, a few things are increasingly clear. Just as we saw customers accelerate their digital spend during the pandemic, we are now seeing them optimize that spend. Also,

organizations are exercising caution given the macroeconomic uncertainty. And the next major wave of computing is being born as we turn the world's most advanced AI models into a new computing platform.

In this environment, we remain convicted on three things. This is an important time for Microsoft to work with our customers, helping them realize more value from their tech spend and building long-term loyalty and share position while internally aligning our own cost structure with our revenue growth. This in turn sets us up to participate in the secular trend where digital spend as a percentage of GDP is only going to increase. And lastly, we are going to lead in the AI era, knowing that maximum enterprise value gets created during platform shifts. With that as the backdrop, the Microsoft Cloud exceeded \$27 billion in quarterly revenue, up 22% and 29% in constant currency.

Now, I will highlight examples of our innovation starting with Azure. Moving to the cloud is the best way for any customer in today's economy to mitigate demand uncertainty and energy costs while gaining efficiencies of cloud native development. Enterprises have moved millions of calls to Azure and run twice as many calls on our cloud today than they did 2 years ago. And yet, we are still in the early innings when it comes to long-term cloud opportunity. As an example, insurer AIA was able to save more than 20% by migrating to Azure and reduced IT provisioning time from multiple months to just an hour. We also continue to lead with hybrid computing with Azure Arc. We now have more than 12,000 Arc customers, double the number a year ago, including companies like Citrix, Northern Trust and PayPal.

Now on to data. Customers continue to choose and implement the Microsoft Intelligent Data Platform over the competition because of its comprehensiveness, integration and lower cost. Bayer, for example, used the data stack to evaluate results from clinical trials faster and more efficiently while meeting regulatory requirements and ASOS chose Cosmos DB to power real-time product recommendations and order processing for over 26 million global customers.

Now on to AI. The age of AI is upon us and Microsoft is powering it. We are witnessing non-linear improvements in capability of foundation models, which we are making available as platforms. And as customers select their cloud providers and invest in new workloads, we are well positioned to capture that opportunity as a leader in AI. We have the most powerful AI supercomputing infrastructure in the cloud. It's being used by customers and partners like OpenAI to train state-of-the-art models and services, including ChatGPT.

Just last week, we made our Azure OpenAI service broadly available and already over 200 customers from KPMG to Al Jazeera are using it. We will soon add support for ChatGPT, enabling customers to use it in their own applications for the first time. And yesterday, we announced the completion of the next phase of our agreement with OpenAI. We are pleased to be their exclusive cloud provider and we will deploy their models across our consumer and enterprise products as we continue to push the state-of-the-art in AI. All of this innovation is driving growth across our Azure AI services. Azure ML revenue alone has increased more than 100% for five quarters in a row with companies like AXA, FedEx and H&R Block choosing the service to deploy, manage and govern their models.

Now on to developers. Modernizing applications is mission-critical to any company's operations today. And with GitHub, Visual Studio and Azure PaaS services, we have the most comprehensive portfolio of tools to help. GitHub is now home to 100 million developers and GitHub Copilot is the first at-scale AI product built for this era, fundamentally transforming developer productivity. More than 1 million people have used Copilot to-date. This quarter, we brought Copilot to businesses and we have seen strong interest and early adoption from companies, including Duolingo, Lemonade and Volkswagen Cariad Software Group.

Now on to Power Platform. Power Platform is becoming an essential digital transformation tool as every business looks to streamline their operations and drive productivity in today's environment. We are helping customers realize superior time to value with our end-to-end suite spanning low-code, no-code tools, automation, virtual agents and business intelligence. We are leading in robotic process automation. Power Automate has more than 45,000 customers from AT&T to Rabobank, up over 50% year-over-year. And we are making it easier for anyone to streamline repetitive tasks, introducing new AI-powered features to turn natural language prompts into complex workflows.

Now on to business applications. Dynamics 365 is taking share as we help businesses digitize their service, finance, customer experience and supply chain functions. For example, G&J Pepsi-Cola Bottlers is moving from reactive to predictive field service. FUJIFILM is optimizing its operations. Investec is closing deals faster with conversational intelligence. Baylor Scott & White in Texas is using our digital contact center to enhance patient communications. And this quarter, we introduced our new Supply Chain Platform, helping customers like iFit and Kraft Heinz apply AI to predict and mitigate disruptions.

Now on to Industry Solutions. Our industry and cross-industry clouds are driving pull-through for our entire tech stack. Our cloud for retail was front and center at NRF last week as we introduced new tools to help retailers manage their day-to-day operations and digitize their physical stores. Polish retailer Zabka has built the largest chain of autonomous stores in Europe with the help of our technology.

In Financial Services, our new partnership with London Stock Exchange Group will deliver next generation of data analytics and workspace solutions. And in healthcare, we are rapidly becoming the partner of choice for any provider looking to generate real value from AI. With Nuance DAX ambient intelligence solution, physicians can reduce documentation time by half, improving the quality of their patient interactions.

Now on to systems of work. Microsoft 365, Teams and Viva are essential for every organization to adapt to the new world of work. Microsoft 365 is rapidly evolving into an AI-first platform that enables every individual to amplify their creativity and productivity with both our established applications as well as new applications like Designer, Stream and Loop. We have more than 63 million consumer subscribers, up 12% year-over-year and we introduced Microsoft 365 Basic, bringing our premium offerings to more people.

Teams surpassed 280 million monthly active users this quarter, showing durable momentum since the pandemic and we continue to take share across every category from collaboration to chat to meetings to calling. Teams has emerged as a first-class platform. Apps from Adobe, Atlassian, Poly, ServiceNow and Workday have each surpassed 0.5 million active users and the number of third-party apps with more than 10,000 users increased nearly 40% year-over-year. There are more than 500,000 active Teams Rooms devices, up 70% year-over-year and the number of customers with more than 1,000 rooms doubled year-over-year.

Novo Nordisk will deploy Teams Rooms to 5,000 meeting rooms globally in our largest deal to-date. Teams Phone continues to take share and is the market leader in cloud calling. We have added more than 5 million PSTN seats over the last 12 months alone. With Teams Premium, we are meeting enterprise demand for advanced features like end-to-end encryption and AI-powered recaps. We have seen strong interest in preview and we will make it broadly available next month.

With Microsoft Viva, we have created a new market category for our employee experience and organizational productivity. U.S. Bank is using Viva to streamline employee communications and Carlsberg turned to Viva to centralize its digital employee experience for 29,000 employees. In today's environment, aligning the entire organization and the most important work is critical. Viva Goals brings objectives and

key results directly into the flow of daily work. Viva has also become an indispensable tool for business process. Viva Sales is the super app in Microsoft 365 for sellers. We have seen strong interest since making it generally available this quarter. All up, we continue to see organizations consolidate on Microsoft 365. 80% of our enterprise customers use 5 or more Microsoft 365 applications. And organizations across the private and public sector, including EY, IKEA, NTT Communications, Rio Tinto as well as the state government of Virginia are increasingly choosing our premium E5 offerings for advanced security, compliance, voice and analytics.

Now on to Windows. While the number of PCs shipped declined during the quarter, returning to pre-pandemic levels, usage intensity of Windows continues to be higher than pre-pandemic with time spent per PC up nearly 10%. Monthly active devices also reached an all-time high this quarter. And for commercial customers, Windows 11 adoption continues to grow because of its differentiated security and productivity value proposition. We are also seeing growth in cloud-delivered Windows with usage of Windows 365 and Azure Virtual Desktop up by over two-thirds year-over-year. Leaders in every industry from Campari and Grant Thornton UK to Nutrien and Woolworths are using cloud-delivered Windows, including more than 60% of the Fortune 500.

Now on to security. Over the past 12 months, our security business surpassed \$20 billion in revenue as we help customers protect their digital estate across clouds and endpoint platforms. We are the only company with integrated end-to-end tools spanning identity, security, compliance, device management and privacy informed and trained on over 65 trillion signals each day. We are taking share across all major categories we serve. Customers are consolidating on our security stack in order to reduce risk, complexity and cost. The number of organizations with four or more workloads increased over 40% year-over-year. UK retailer Fraser Group, for example, consolidated from 10 security vendors to just Microsoft. Roku moved identity and access management to the cloud with Azure Active Directory. And Astellas Pharma, Ferrovial and University of Toronto all switched to Microsoft Sentinel because of our integrated XDR and SIM capabilities.

Now on to LinkedIn. People and companies continue to look to LinkedIn to connect, learn, sell and get hired. We once again saw record engagement among our more than 900 million members. Three members are signing up every second. Over 80% of these members are from outside the United States. And as the members come to the platform to find and share professional knowledge and expertise, newsletter creation was up 10x year-over-year. Skills are the new currency and people are increasingly investing in their skill-building to keep up with their changing roles in industries. We offer more than 20,000 courses in 11 languages and companies are also turning to a skills-based

approach in place of degree or pedigree to identify qualified talent, with more than 45% of the hires on LinkedIn explicitly using skills data to fill their roles. Finally, LinkedIn Marketing Solutions continues to be a leader in B2B digital advertising, helping companies deliver the right message to the right audience on a safe and trusted platform.

Now on to advertising. Despite headwinds in the ad market, we continue to innovate across our first and third-party portfolios. Our browser, Microsoft Edge gained share for the seventh consecutive quarter. Bing continues to gain share in the United States and daily users of our Start personalized content feed increased over 30% year-over-year. We are now empowering retailers and expanding our third-party inventory. With PromoteIQ, we are building a complete omnichannel media platform for companies like the Australian retailer, Endeavor, as well as Canada's Hudson's Bay and Global, the largest Brazilian TV broadcasters chose Xandr to launch a new media buying platform in that market.

Now on to gaming. In gaming, we continue to pursue our ambition to give players more choice to play great games wherever, whenever and however they want. We saw new highs for Game Pass subscriptions, game streaming hours and monthly active devices, and monthly active users surpassed a record 120 million during the quarter. We continue to invest to add value to Game Pass. This quarter, we partnered with Riot Games to make the company's PC and mobile games, along with premium content available to subscribers. And finally, we are energized by our upcoming lineup of AAA game launches, including exciting new titles from ZeniMax and Xbox Game Studios and we will be sharing details in Gameplay at our showcase tomorrow.

In closing, I want to extend my deepest gratitude to our employees for their continued dedication to our mission, customers and partners. We will continue to pursue our long-term opportunity and innovation agenda with urgency while also raising the bar on our operational excellence.

With that, I will hand it over to Amy.

Amy Hood

Thank you, Satya and good afternoon everyone. I'd like to start by reiterating Satya's thoughts on the changing environment and our priorities, which underpin the decisions communicated in last week's announcement. The resulting Q2 charge negatively impacted gross margin by \$152 million, operating income by \$1.2 billion, and earnings per share by \$0.12. Our second quarter revenue was \$52.7 billion, up 2% and 7% in

constant currency. When adjusted for the charge, gross margin dollars increased 2% and 8% in constant currency, operating income decreased 3% and increased 6% in constant currency, and earnings per share was \$2.32, which decreased 6% and increased 2% in constant currency.

In our consumer business, the PC market was in line with our expectations, but execution challenges impacted our Surface business. Advertising spend declined slightly more than expected, which impacted search and news advertising and LinkedIn Marketing Solutions. In our commercial business, we delivered strong growth in line with our expectations. However, as you heard from Satya, we are seeing customers exercise caution in this environment and we saw results weaken through December. We saw moderated consumption growth in Azure and lower-than-expected growth in new business across the standalone Office 365, EMS and Windows commercial products that are sold outside the Microsoft 365 suite.

From a geographic perspective, we saw strong execution in many regions around the world. However, performance in the U.S. was weaker than expected. Importantly, we continued to see share gains in areas such as data and AI, Dynamics, Teams, Security and Edge. Commercial bookings increased 7% and 4% in constant currency, lower than expected. Consistent execution across our renewal sales motions, including strong recapture rates and growth in Azure commitments on a high prior year comparable were partially offset by the slowdown in growth of new standalone business noted earlier.

Commercial remaining performance obligation increased 29% to 26% in constant currency to \$189 billion. Roughly 45% will be recognized in revenue in the next 12 months, up 24% year-over-year. The remaining portion, which will be recognized beyond the next 12 months, increased 32%. Our annuity mix increased 2 points year-over-year to 96%. FX decreased total company revenue by 5 points, in line with expectations. At a segment level, FX decreased Productivity and Business Processes revenue growth by 6 points, 1 point favorable to expectations. FX impact on Intelligent Cloud and More Personal Computing were both in line with expectations. Additionally, FX decreased both COGS and operating expense growth by 2 points, 1 point unfavorable to expectations.

Microsoft Cloud revenue was \$27.1 billion and grew 22% and 29% in constant currency, ahead of expectations. Microsoft Cloud gross margin percentage increased roughly 2 points year-over-year to 72%, a point better than expected, driven by lower energy costs. Excluding the impact of the change in accounting estimate for useful lives, Microsoft Cloud gross margin percentage decreased roughly 1 point, primarily driven by sales mix shift to Azure.

Company gross margin percentage was 67%. Excluding the impact of the change in accounting estimate, gross margin percentage decreased roughly 2 points, driven by a lower mix of Windows OEM revenue and sales mix shift from licensing to cloud. Operating expense when adjusted for the Q2 charge increased 11% and 13% in constant currency, about \$500 million lower than expected. Operating expense growth was driven by investments in cloud engineering, the Nuance acquisition and LinkedIn.

At a total company level, headcount ended December 19% higher than a year ago. Sequential headcount growth was less than 1%. Year-over-year growth included roughly 6 points from the Nuance and Xandr acquisitions, which closed last Q3 and Q4, respectively. Adjusted for the charge, operating margins decreased roughly 2 points year-over-year to 41%. Excluding the impact of the change in accounting estimate, operating margins declined roughly 4 points, primarily driven by unfavorable FX impact as well as a lower mix of OEM revenue.

Now to our segment results. Revenue from Productivity and Business Processes was \$17 billion and grew 7% and 13% in constant currency, in line with expectations when excluding the favorable FX impact noted earlier. Office Commercial revenue grew 7% and 14% in constant currency. Office 365 Commercial revenue increased 11% and 18% in constant currency, slightly better than expected with healthy renewal execution and ARPU growth as E5 momentum remains strong. Paid Office 365 Commercial seats grew 12% year-over-year with installed base expansion across all workloads and customer segments. Seat growth was driven by our small and medium business and frontline worker offerings, although we saw some impact from the slowdown in growth of new business noted earlier.

Office Consumer revenue declined 2% and increased 3% in constant currency, with continued momentum in Microsoft 365 subscriptions, which grew 12% to 63.2 million, partially offset by declines in our transactional business. LinkedIn revenue increased 10% and 14% in constant currency, driven by growth in Talent Solutions, partially offset by weakness in Marketing Solutions from the advertising trends noted earlier.

Dynamics revenue grew 13% and 20% in constant currency, driven by Dynamics 365, which grew 21% and 29% in constant currency. Segment gross margin dollars increased 8% and 16% in constant currency, and gross margin percentage increased roughly 1 point year-over-year. Excluding the impact of the change in accounting estimate, gross margin percentage decreased slightly, driven by sales mix shift to cloud offerings.

Operating expense increased 12% and 14% in constant currency, including roughly 5 points from the Q2 charge. Operating income increased 6% and 17% in constant

currency as the 3 points of favorable impact due to the change in accounting estimate were offset by 3 points of unfavorable impact from the Q2 charge noted earlier.

Next, the Intelligent Cloud segment. Revenue was \$21.5 billion, increasing 18% and 24% in constant currency, in line with expectations. Overall, server products and cloud services revenue increased 20% and 26% in constant currency. Azure and other cloud services revenue grew 31% and 38% in constant currency. As noted earlier, growth continued to moderate, particularly in December, and we exited the quarter with Azure constant currency growth in the mid-30s.

In our per user business, the Enterprise Mobility and Security installed base grew 16% to over 241 million seats with impact from the slowdown in growth of new business noted earlier. In our on-premises server business, revenue decreased 2% and increased 2% in constant currency, with continued hybrid demand offset by weakness in transactional licensing. Enterprise Services revenue grew 2% and 7% in constant currency. Segment gross margin dollars increased 17% and 23% in constant currency, and gross margin percentage decreased slightly. Excluding the impact of the change in accounting estimate, gross margin percentage declined roughly 3 points, driven by sales mix shift to Azure and higher energy costs.

Operating expenses increased 34% and 37% in constant currency, including roughly 13 points of impact from the Q2 charge noted earlier and roughly 7 points of impact from the Nuance acquisition. Operating income grew 7% and 15% in constant currency as roughly 7 points of favorable impact of the change in accounting estimate was offset by approximately 7 points of unfavorable impact from the Q2 charge.

Now to More Personal Computing. Revenue was \$14.2 billion, decreasing 19% and 16% in constant currency, below expectations driven by Surface, Windows Commercial and search. Windows OEM revenue decreased 39% year-over-year, in line with expectations. Excluding the impact from the Windows 11 deferral last year, revenue declined 36% on a strong prior year comparable. Devices revenue decreased 39% to 34% in constant currency, below expectations due to execution challenges on new product launches.

Windows Commercial products and cloud services revenue declined 3% and increased 3% in constant currency, lower than expected, primarily due to the slowdown in growth of new business and stand-alone offerings noted earlier. Search and news advertising revenue ex TAC increased 10% and 15% in constant currency, a bit lower than expected, as noted earlier. Our Edge browser gained more share than expected this quarter. The Xandr acquisition contributed roughly 6 points of benefit.

And in gaming, revenue declined 13% and 9% in constant currency, in line with expectations. Xbox hardware revenue declined 13% and 9% in constant currency. Xbox content and services revenue declined 12% and 8% in constant currency, given the strong first-party content last year. Segment gross margin dollars declined 29% and 24% in constant currency, and gross margin percentage decreased roughly 7 points year-over-year, driven by lower device gross margin and sales mix shift to lower-margin businesses. Operating expenses increased 6% and 9% in constant currency, including roughly 6 points of impact from the Q2 charge noted earlier and 3 points of impact from the Xandr acquisition. Operating income decreased 47% and 40% in constant currency, including roughly 6 points of unfavorable impact from the Q2 charge noted earlier.

Now back to total company results. Capital expenditures, including finance leases, were \$6.8 billion to support cloud demand. Cash paid for PP&E was \$6.3 billion. Cash flow from operations was \$11.2 billion, down 23% year-over-year as strong cloud billings and collections were more than offset by a tax payment related to the TCJA capitalization of R&D provision as well as higher employee and supplier payments. Free cash flow was \$4.9 billion, down 43% year-over-year. Excluding the impact of this tax payment, cash flow from operations declined 7% and free cash flow declined 16%. This quarter, other income and expense was negative \$60 million, lower than anticipated, driven by a mark-to-market loss on a forward share purchase agreement. Our effective tax rate was approximately 19%. And finally, we returned \$9.7 billion to shareholders through share repurchases and dividends.

Now moving to our Q3 outlook, which unless specifically noted otherwise, is on a U.S. dollar basis. My commentary for both the full year and next quarter does not include any impact from Activision, which we continue to work towards closing in fiscal year 2023, subject to obtaining required regulatory approvals.

First, FX. Based on current rates, we now expect FX to decrease total revenue growth by approximately 3 points, COGS growth by 1 point and operating expense growth by 2 points. Within the segments, we anticipate roughly 4 points of negative impact on revenue growth in Productivity and Business Processes, 3 points in Intelligent Cloud and 2 points in More Personal Computing. In our Consumer business, Windows OEM and devices will see continued declines as the PC market returns to pre-pandemic levels. And LinkedIn and search will be impacted as ad market spending remains a bit cautious.

In our Commercial business, we expect business trends that we saw at the end of December to continue into Q3. While customers are more cautious in their spend, we also have the opportunity to improve our execution, given our strong position in global

growth markets. In commercial bookings, with a declining expiry base and the strong prior year comparable in terms of large Azure contracts, we expect growth to be relatively flat over year. We expect consistent execution across our core and sales motions and continued commitments to our platform will be offset by impact from the slowdown of new business noted earlier and 3 points of unfavorable impact from the inclusion of Nuance in the prior year.

Microsoft Cloud gross margin percentage should be up roughly 1 point year-over-year, driven by the accounting estimate change noted earlier. Excluding that impact, Q3 cloud gross margin percentage will decrease roughly 1 point, driven by Azure. In capital expenditures, we expect a sequential increase on a dollar basis with normal quarterly spend variability in the timing of our cloud infrastructure build-out. Our data center investments continue to be based on a near-term and longer-term customer demand, including AI opportunities.

Next, segment guidance. In Productivity and Business Processes, we expect revenue to grow between 11% and 13% in constant currency or \$16.9 billion to \$17.2 billion. In Office Commercial, revenue growth will again be driven by Office 365 with seat growth across customer segments and ARPU growth through E5. We expect Office 365 revenue growth to be sequentially lower by roughly 1 point on a constant currency basis. In our on-premises business, we expect revenue to decline in the mid-20s.

In Office Consumer, we expect revenue growth in the low single digits, driven by Microsoft 365 subscriptions. For LinkedIn, we expect mid-single-digit revenue growth with continued strong engagement on the platform, although impacted by the advertising trends noted earlier and the slowdown in hiring, particularly in the technology industry, where we have significant exposure.

And in Dynamics, we expect revenue growth to be in the low to mid-teens, driven by continued growth in Dynamics 365, which is now over 80% of total Dynamics revenue. For Intelligent Cloud, we expect revenue to grow between 17% and 19% in constant currency or \$21.7 billion to \$22 billion. Revenue will continue to be driven by Azure which, as a reminder, can have quarterly variability primarily from our per user business and from in-period revenue recognition depending on the mix of contracts.

In Azure, our per-user business should continue to benefit from Microsoft 365 suite momentum, though we expect continued moderation in growth rate given the size of the installed base. As I noted earlier, we exited Q2 with Azure growth in the mid-30s in constant currency. And from that, we expect Q3 growth to decelerate roughly 4 to 5 points in constant currency. FX impact in Azure is about 1 point more than at the

segment level. In our on-premises server business, we expect revenue to decline low single digits as demand for our hybrid solutions will be more than offset by unfavorable FX impact. And in Enterprise Services, revenue should decline low to mid-single digits, driven by Microsoft Consulting Services.

In More Personal Computing, we expect revenue of \$11.9 billion to \$12.3 billion. Windows OEM revenue should decline in the mid to high 30s, in line with the PC market. We expect Q3 PC units to be similar to pre-pandemic levels. In devices, revenues should decline in the mid-40s as we work through the execution challenges noted earlier. In Windows Commercial products and cloud services on a strong prior year comparable, revenue should be relatively flat as customer demand for Microsoft 365 and our advanced security solutions will be partially offset by the slowdown in new business noted earlier.

Search and news advertising ex-TAC should grow high single digits, roughly 7 points faster than overall search and news advertising revenue, driven by continued volume strength supported by Edge browser share gains and the inclusion of Xandr. And in gaming, on a prior year comparable that benefited from increased console supply, we expect revenue to decline in the high single digits. We expect Xbox content and services revenue to decline in the low single digits as growth in Xbox Game Pass subscriptions will be more than offset by lower monetization per hour and third-party and first-party content.

Now back to company guidance. We expect COGS to grow between 1% and 2% in constant currency or to be between \$15.65 billion and \$15.85 billion and operating expense to grow between 11% and 12% at constant currency or be \$14.7 billion to \$14.8 billion. Other income and expense should be roughly \$200 million as interest income is expected to more than offset interest expense. As a reminder, we are required to recognize mark-to-market gains and losses on our equity portfolio, which can increase quarterly volatility. We expect our Q3 effective tax rate to be between 19% and 20%. And finally, as a reminder, for Q3 cash flow, we expect to make a \$1.2 billion cash tax payment related to the TCJA capitalization of R&D provision.

Now some thoughts on H2 and the full year. First, in our Commercial business, revenue grew 20% on a constant currency basis in H1. However, we now expect to see a deceleration in H2, given how we exited December. Next, higher energy costs for the full year are now expected to be \$500 million compared to our previous estimate of \$800 million. Third, as we continue to prioritize our investments and anniversary the Nuance and Xandr acquisitions, our Q4 operating expense growth should be in the low single digits in constant currency.

Finally, we remain committed to operational excellence, aligning cost and growth, investing in our customer success and leading the AI platform wave. As a result, when excluding the Q2 charge and favorable impact from the change in accounting estimate, we expect full year operating margins to be down roughly 1 point in constant currency and roughly 2 points in USD, even with the headwinds from materially lower OEM revenue and higher energy costs.

In the first half of the year, over 70% of our revenue came from our Commercial business and over 70% of that from Microsoft Cloud. We have a resilient foundation and durable growth markets where we are gaining share. I'm confident in the ability of our Microsoft team to manage the near-term by continuing to position ourselves for the future.

With that, let's go to Q&A. Brett?

Brett Iversen

Thanks, Amy. We will now move over to the Q&A. [Operator Instructions] Joe, can you please repeat your instructions?

Question-and-Answer Session

Operator

[Operator Instructions] Our first question comes from the line of Keith Weiss with Morgan Stanley. Please proceed.

Keith Weiss

Excellent. Thank you, guys for taking the question. I was hoping we could delve into the expansion of the investment into OpenAI. Satya, I was hoping you could talk to us about, is there any expansion in the scope of what you guys are doing with OpenAI and the commitment that you guys are making in terms of sort of the compute capacity you're going to be giving to them? And then maybe as from an investor's perspective, how should we think about when this functionality is going to become – expand beyond just sort of the Azure OpenAI services? And where are we' going to start to see some of the positive impacts to perhaps Bing or the productivity suite or more broadly across the solution portfolio?

Satya Nadella

Thank you so much, Keith, for the question. So as you know, we started the OpenAI partnership now in 3 years, 3.5 years ago. And we've been actually working very hard on a lot of elements of this partnership over the last 3 years. And so I think the way for our investors to see this is we fundamentally believe that the next big platform wave, as I said, is going to be AI and we strongly also believe a lot of the enterprise value gets created by just being able to catch these waves and then have those waves impact every part of our tech stack and also create new solutions and new opportunities. So whenever we think about platform opportunities and platform shift opportunities, that's how we come at it. How can we essentially ride the wave for everything that we have today and make it more expansive and then what new can be created. So, if you take that lens, the core of Azure or what is considered cloud computing fundamentally changes in its nature and how compute storage and network come together. That's, in some sense, under the radar, if you will, for the last 3.5 years, 4 years, we have been working very, very hard to build both the training supercomputers and now, of course, the inference infrastructure because once you use AI inside of your applications, it goes from just being training-heavy to inference. So, that's sort of, I think core Azure itself is being transformed for the core infrastructure business, it's being transformed. And so you can see us with data beyond Azure OpenAI services even, think about what Synapse plus OpenAI APIs can do. We already have in Power Platform incorporated capability. You could prompt - I mean one of the reasons why we are the leaders in robotic process automation and workflow automation today is because of some of the AI capabilities that we have in there. GitHub Copilot is in fact, you would say, the most at-scale LLM based product out there in the marketplace today. And so, we fully expect us to sort of incorporate AI in every layer of the stack, whether it's in productivity, whether it's in our consumer services. And so we are excited about it. But I think that we are also excited about OpenAI zone innovation, right. So, they commercialize their products. We are excited about the Chat GPT being built on Azure and having the traction it has. So, we look to both, there is an investment part to it and there is a commercial partnership. But fundamentally, it's going to be something that's going to drive, I think innovation and competitive differentiation in every one of the Microsoft solutions by leading in AI.

Keith Weiss

Outstanding. Thank you.

Brett Iversen

Thanks Steve. Joe, next question please.

Operator

Our next question comes from the line of Brent Thill with Jefferies. Please proceed.

Brent Thill

Thanks. Satya, can you give us your overall macro view? There were some comments you had made that concerned, I think many about the state of the U.S. spending environment. I am just curious if you could comment and follow-up on what you are seeing there just from a spend environment throughout the year. I think many came away with that perceiving that you were saying it's getting worse, not better. Can you just give us a little more color on that? Thank you.

Satya Nadella

Thank you, Brent. And first of all, I was making a comment which was sort of a global comment, not just a specific U.S. comment. I mean there is only – I always sort of subscribe to that there is only one law of gravity that I think all of us are subject to, which is inflation-adjusted economic growth in the world. And then how many times that do we grow, because as I have said in my comments, Brent, I fundamentally believe tech as a percentage of GDP is going to be much higher and on a secular basis. So, the question is how many times is it given the overall inflation-adjusted economic growth. So, that's kind of how I look at it. Given that, I think the two things that we see, we commented on that even in the last quarter, and it's even in the outlook, which is the thing that customers are doing is what they accelerated during the pandemic. They are making sure that they are getting most value out of it or optimizing it and then also being a bit more cautious on given the macroeconomic headwinds out there in the market. So, given those two things, the point is at some point, the optimizations will end. In fact, the money that they save in any optimization of any workload is what [Indiscernible] into workloads. And those workloads will start ramping up. And so one of the key things we are watching for, Brent, is to make sure that we are gaining share in this space through our value propositions, so and even build loyalty with our customers so that long-term, we are well positioned for share gains. So, that's sort of fundamentally how we view it.

And then the other aspect I would also say is simultaneously investing in this new AI trend, because I don't think any application start that happens next is going to look like the application starts of 2019 or 2020. They are all going to have considerations around how is my AI inference performance, cost, model is going to look like, and that's where we are well positioned again. So, that's how I view it. The market, you all are better readers of, quite frankly, what's happening out there. We can tell you what we see. What we see is optimization and some cautious approach to new workloads and that will

cycle through, but we do fundamentally believe on a long-term basis, as a percentage of GDP, tech spend is going to go up.

Brent Thill

Thank you.

Brett Iversen

Thanks Brent. Joe, next question please.

Operator

Our next question comes from the line of Mark Moerdler with Bernstein. Please proceed.

Mark Moerdler

Thank you very much. I would like to follow-up a little bit on this question relating to optimization. I know we saw some slowing this quarter. You are guiding to some slowing next quarter in Cloud and Azure. How much of that is – do you believe at this point is truly people optimizing what they have already bought and stepping that before that versus how much of that is due to macro factors themselves specifically impacting demand?

Satya Nadella

I would say two things, and then Amy, please feel free to add. One is, it absolutely is, starts with workloads that they have at scale just because of the visibility one has on what's driving essentially the consumption meters. And there is real guidance that we ourselves [Indiscernible] the product to say, here are the things that you could do optimize your billing. And so – so, that's sort of what is the fundamental thing, when we say do more with less and how can we help, that's sort of the first place customers go to.

And then the next piece, really, I think is going to be about how they take the optimization that they get and the savings they get along workload and what new project starts. And that's where I think there is a reprioritization, when should we start the new project. And those are the two things that are happening simultaneously. They don't perfectly match, but one of the things is they are looking to back some savings on some workloads and then start. So, that's where I think a little bit of what has to happen is the cycle time where the optimization cycle finishes, the projects start and then the

projects ramp. And I think that, that's what at least on the cloud consumption side you are seeing. And on the per user side, it's slightly different, which is in per user also, there was real acceleration when it comes to purchases of per user licenses, whether it is for knowledge workers or frontline workers. And again, they are all now making sure that they are all getting used and the usage is going up. Like when we look at our Office 365 usage, all those numbers are pretty up year-over-year in a substantial way. Like I gave you some of the Teams numbers, in fact, one of the things was what will happen to the Teams usage after the pandemic, guess what, they're up. And so those are the good news. And now once we cycle through that again, the seats will get added and premium, like I am very, very excited about Teams Pro coming out in a couple of weeks. And those are all the things that people will be able to sort of use to ensure that the ARPUs are also going up with value.

Amy Hood

And Mark, because I do think it's actually quite hard to separate from a driver perspective how much is optimization versus macro. It's all related when you start to say what's the best ROI I can get on every budget dollar I spend in our job as a partner to so many of these customers is to help them do that. So, Satya has talked a bit about Azure. Let me talk a little bit about the per user where the way it showed itself is we had very high renewal rates and very good suite performance at renewal, meaning what we tend to call internally recapture. While we had some more challenges on maybe a standalone sale of a new product where the cycle is going to be a little longer, right, and you are going to have to show that cost savings. But the suite sale, the value in that showed itself in terms of strong E5. You can see the ARPU growth and you can see the consistency potentially in both renewal rate and in, frankly, the Microsoft 365 performance.

Mark Moerdler

Perfect. Thank you very much.

Brett Iversen

Yes. Thanks Mark. Joe, next question please.

Operator

Our next question comes from the line of Kash Rangan with Goldman Sachs. Please proceed.

Kash Rangan

Thank you very much. Satya, I am curious if you could talk about how long the cycle time for optimization lasts. Are we talking a couple of quarters, few quarters or multiple years, because I do take your comment about tech spending as a percentage of global GDP going higher? So, if that were to happen, this – how do you frame the duration of this optimization that's happening in the industry? Thank you so much.

Satya Nadella

I mean I think that you can – you have a workload, you optimize the workload and you start a new workload. So, the thing that I would say is when you are done with optimizing a workload is when you are done with the cycle. So, I think if you sort of say, when did we enter this, we accelerated existing [ph] workloads during the pandemic over a period of 2 years. So, we are optimizing. I don't think we are going to take 2 years to optimize, but we are going to take this year to optimize. And then as we optimize the new projects start and the new project starts don't start instantly at their peak usage. They start and then they scale. And so those are the two cycles that will happen where there will be a time lag.

Kash Rangan

Got it. So, it's a temporary adjustment before we start to get the full effect of the next set of workloads. Good to get that.

Satya Nadella

That's correct.

Kash Rangan

Thank you.

Brett Iversen

Thanks Kash. Joe, next question please.

Operator

The next question comes from the line of Karl Keirstead with UBS. Please proceed.

Karl Keirstead

Thank you. This one for Amy. Amy, given the obviously tough environment, it sounds like reaching that full fiscal year 20% constant currency commercial revs guide would be tough. Is that also true for the soft guidance for 10%-plus total revenue growth for the year? And if I could just sneak in a clarification, Amy, just because it's an important metric. When you talk about a 4-point to 5-point decel in Azure, that's off of the 38% reported for December, right, not off the 35% exit rate? Thank you.

Amy Hood

It's all – Karl, let me just – the first half of your question, give me a second. On the second half of your question, which is the guide of the exit rate – it's off the exit rate on Azure of four points to five points, just to make sure that is clear. In terms of thinking about total year revenue, right, I did not comment on full year revenue as we continue, I think really just to watch the Windows PC market as it returns to pre-pandemic levels. Outside of that, as you can see, the trends are relatively consistent. So, in some points, it's important because if you look at the operating income margin guidance that I talked about, the fact that we are guiding to really only one point of margin deceleration for the year on a constant currency basis with probably over \$2 billion of headwind from the OEM business from what we had anticipated heading into the year, the focus on margins, the focus on prioritization, the focus on putting our investments into where we know they have high return, I actually feel quite good about the place that puts us in as we exit the year in terms of – and the right energy, right, or leaving the year in Q4 on leverage.

Karl Keirstead

Got it. Super helpful. Thanks Amy.

Brett Iversen

Thanks Karl. Joe, next question please.

Operator

Our next question comes from the line of Brad Zelnick with Deutsche Bank. Please proceed.

Brad Zelnick

Great. Thanks very much. Amy, I wanted to ask about the expense actions that you announced last week, obviously, not a decision that you would take lightly. How are you thinking about headcount for the remainder of the year and the possibility for further

expense actions, if necessary? And what criteria do you consider in making these decisions? Thanks.

Amy Hood

Brad, listen, thanks for that question. Obviously, as we think about the Q4 guidance around low-single digit operating expense growth, we start to, as you know, sort of lap certain real acceleration points that we had last year. And we lapped the acquisitions both of Nuance and of Xandr. So, by the time that we get to the end of Q4, you will see very moderated headcount growth on a year-over-year basis in addition to some of the prioritization decisions we have made. And you are right. We take decisions like the one we had to make to get our cost structure more in line with revenue just incredibly seriously because we have lots of very talented people who were impacted by that. And so I do think that we feel confident in that exit rate. And as I have said, it will certainly imply that year-over-year growth as we lap some of the investments that we have made will be quite small.

Brad Zelnick

Thanks for the color.

Brett Iversen

Thanks Brad. Joe, next question please.

Operator

Our next question comes from the line of Brad Reback with Stifel. Please proceed.

Brad Reback

Great. Thanks very much. On Office 365 Commercial, with you guys approaching 400 million seats and the E5 business really starting to accelerate here on that consolidated sort of expense ROI that you are putting forth, should we think about the growth there more evenly balanced between seats and ARPU going forward or still to continue to favor seats? Thanks.

Amy Hood

Yes. That's a good question, especially because this quarter you started to see a little bit more of that ARPU influence. And as you might have gathered from your question and I will just reinforce it, as we see some of this moderating seat growth, whether that's

some of the new SKU weakness that we had talked about, some of the standalone stuff, you are starting to also see E5 ARPU happen at the same time. So, it does create some stability in that Office 365 Commercial revenue number. So, we are seeing still good seat growth, still growth across all workloads. And as you are pointing out, we are getting further into the E5 health, where we have seen, I want to say, four or four really good quarters of E5 adoption. The value there is just very high for customers in this environment between analytics, security, and I think we have given some, I think good security data points in terms of adoption. And voice, this is a place where customers can save money by moving to this suite. And I do think you are starting to see some of that ARPU help.

Satya Nadella

And we are also investing in outside of Microsoft 365 in other per user workloads. We were being a new suite, Power Platform on its own and even standalone offers like even Teams Pro and what have you. So, there is a significant amount of work we want to do besides sort of the suites that we all sort of have at scale.

Brad Reback

Great. Thank you very much.

Brett Iversen

Thanks Brad. Joe, we have time for one last question.

Operator

Our next question comes from the line of Tyler Radke with Citi. Please proceed.

Tyler Radke

Yes. Thanks for taking the question. I wanted to ask just about how your visibility has changed in terms of some of the larger Azure customer ramps. Could you just comment on, to the extent those large customer ramps or if any of those projects are getting put on pause? And then is there any way to just kind of quantify the AI potential contribution or maybe GPU-powered contribution that Azure that you are expecting over the coming quarters? Thank you.

Satya Nadella

And on the second piece, I think it's too early to sort of start somehow separating out AI from the rest of the workload. I mean even the workloads themselves, AI is just going to be a core part of a workload in Azure versus just AI alone. So, in other words, if you have an application that's using a bunch of inference, let's say, it's also going to have a bunch of storage and it's going to have a bunch of other compute beyond GPU inferencing, if you will. So, I think over time, obviously, I think every app is going to be an AI app. That's I think the best way to think about this transformation. On your characterization of the large customers, whether there is any changes in their trajectory, I would say I would point back to, I think some of the commentary around every large customer is looking to optimize the workloads that they have at scale today and plowed some of that money back that they save into new project stock. So, that's sort of what the classic pattern of large customers is. Sometimes you have ISVs who are different, right. So, if an ISV is optimizing, they are optimizing and say, what is the [Technical Difficulty]

Amy Hood

Hello. Do you want me to move? Hello. Do you want me to use the backup? Hello.

Operator

Ladies and gentlemen, please standby. Please resume.

Brett Iversen

That wraps up the Q&A portion of today's earnings call. Thank you for joining us today and we look forward to speaking with all of you soon.

Operator

Ladies and gentlemen, this concludes today's conference. You may disconnect your lines at this time. Thank you for your participation.