



**Farhan Ahmad, Vice President, Investor Relations**

Thank you, and welcome to Micron Technology's fiscal second quarter 2021 financial conference call. On the call with me today are Sanjay Mehrotra, President and CEO, and Dave Zinsner, Chief Financial Officer. Today's call will be approximately 60 minutes in length. This call, including the audio and slides is also being webcast from our Investor Relations website at [investors.micron.com](http://investors.micron.com). In addition, our website contains the earnings press release, and the prepared remarks filed a short while ago. Today's discussion of financial results will be presented on a non-GAAP financial basis unless otherwise specified. A reconciliation of GAAP to non-GAAP financial measures may be found on our website. As a reminder, a webcast replay will be available on our website later today. We encourage you to monitor our website at [micron.com](http://micron.com) throughout the quarter for the most current information on the company, including information on the various financial conferences that we will be attending. You can follow us on Twitter at MicronTech. As a reminder, the matters we will be discussing today include forward-looking statements. These forward-looking statements are subject to risks and uncertainties that may cause actual results to differ materially from statements made today. We refer you to the documents we file with the SEC, specifically our most recent Form 10-K and 10-Q, for a discussion of risks that may affect our future results. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance, or achievements. We are under no duty to update any of the forward-looking statements after today's date to conform these statements to actual results.

I'll now turn the call over to Sanjay.

**Sanjay Mehrotra, President and Chief Executive Officer**

Thank you, Farhan.

**Highlights**

Micron delivered strong FQ2 results above our original projections driven by solid execution and higher-than-expected demand across multiple end markets. The DRAM market is in severe shortage, and the NAND market is showing signs of stabilization in the near term. The execution from the Micron team and these strengthened conditions enabled us to set revenue records for Mobile MCPs and automotive products, and to reach normal levels of inventory ahead of schedule. Following last quarter's introduction of 176-layer NAND into volume production, in FQ2, we began volume production on our 1-alpha DRAM node, solidifying our technology leadership in both DRAM and NAND. We are in an excellent position to capitalize on the strong demand for memory and storage driven by artificial intelligence and 5G across the data center, the intelligent edge, and user devices.

**Operations**



I will start with an update on our operations. The Micron team is doing everything we can to meet customer demand despite the challenges of the pandemic, non-memory component shortages in the electronics-industry, and disruptions that occurred in our Taiwan fabs in December. We are confident that our COVID-19 safety protocols will allow us to continue at full production levels, and we are encouraged to see vaccines become increasingly available around the world. Micron has been able to mitigate the impact of broad electronics-industry shortages to our production output through our proactive supply chain and inventory management strategies. Investments made over the last several years in facilities infrastructure allowed us to minimize lost output caused by the power outage and earthquake at our Taiwan operations in December. Recently, due to the drought in central Taiwan, there has been a reduction in the water supply for one of our DRAM fab sites. To mitigate the water shortage, we are accelerating our water conservation efforts and have secured alternative sources of water. At this time, we do not see an impact to DRAM production output; however, this is a developing situation that we are monitoring closely for the next several months.

### **Technology & Product Leadership**

Now turning to technology and products:

We continue to make solid progress on our key goals: first, to deliver industry-leading technology and improve our cost structure; second, to bring differentiated products to market and improve our product mix; and third, to grow our share of industry profits while maintaining stable bit share.

I am proud to report that Micron was one of the top 20 U.S. patent registrants in 2020. This achievement attests to the brilliant innovation of our teams and is proof of the tenacious focus we have placed on technology and product leadership over the past several years.

Our industry-leading 1-alpha DRAM and 176-layer NAND nodes are in volume production and are ramping on plan. We expect these nodes to be our workhorse for FY22, fueling our bit growth and contributing to our long-term cost reduction goals. Across both DRAM and NAND, we target long term cost reductions that are in-line with the industry.

In products, Micron is on track to support customers as they begin to introduce DDR5 in the fiscal second half of 2021. We are also driving an increased mix of QLC NAND, which helps to make SSDs more cost-effective and accelerates the replacement of HDDs with SSDs. QLC SSD adoption continues to grow, and we achieved a record high QLC bit mix in FQ2. Earlier this month, Micron took a decisive step to exit 3D XPoint development and manufacturing. As mentioned on our recent 3D XPoint update call, Micron is prioritizing investment toward other memory solutions that use the Compute Express Link, or CXL, and we are excited about addressing this market opportunity with differentiated products. Most of the R&D teams previously working on 3D XPoint have already been transitioned to other programs, including accelerating



introduction of CXL-enabled memory products. This change will allow Micron to better address future needs of our data center customers and also drive higher ROI and shareholder value.

We are running an open process to identify the best acquirer for the Lehi fab which provides an excellent location for advanced foundry, logic, and analog semiconductor manufacturing, and expect to finalize the sale within calendar 2021. We anticipate that the overwhelming majority of the highly skilled Lehi manufacturing team will find strong career opportunities with the buyer.

### **End Market Highlights**

Turning to end markets:

#### **Data Center**

In data center, AI and data-centric workloads will drive long-term growth, with memory and storage becoming an increasing portion of server BOM cost. Micron is positioned for success in this market, with a broad portfolio of high-quality and power-efficient products. Enterprise demand, which had been anemic for the last few quarters, is starting to improve as IT budgets increase in anticipation of economic recovery. Enterprise DRAM bit shipments grew sharply quarter-over-quarter but were still down year-over-year. Cloud DRAM bit shipments also grew quarter-over-quarter, and we anticipate robust demand from U.S. hyperscale customers, especially as we enter the second half of calendar 2021.

In data center SSDs, revenue declined sequentially as customers in certain segments reduced their higher-than-average inventory levels. We are continuing to expand our data center NVMe SSD portfolio with internally developed controllers and have new product introductions planned in the coming quarters.

#### **PC**

In PC, we continue to benefit from the remote work and learning trend that drove healthy notebook and Chromebook demand in FQ2. Micron delivered record PC DRAM bit shipments despite pockets of non-memory component shortages experienced in the PC OEM supply chain. We also began sampling 1-alpha-based DDR4 products.

In client SSDs, we are on track to begin customer qualification of our next-generation client SSDs using 176-layer NAND in the fiscal second half of 2021. By the end of calendar 2021, we expect to cover multiple segments of the market, including consumer, value OEM and premium OEM with our 176-layer-based client portfolio.



## Graphics

In graphics, revenue declined quarter over quarter from an exceptional FQ1, which benefited from the launch of new gaming consoles. Nevertheless, FQ2 revenue grew significantly year-over-year. Micron has an excellent position in this market, with a broad product portfolio and deep customer partnerships.

## Mobile

In mobile, revenue grew 21% sequentially, driven by strong execution coupled with better-than-seasonal demand due to continuing recovery in smartphone volumes. We achieved record MCP revenue, and nearly tripled our LP5 revenue sequentially. We have also begun sampling the industry's first 1-alpha LPDRAM and 176-layer NAND with mobile customers. Smartphone unit sales in China have been robust, and 5G momentum is continuing.

## Auto

In auto, we delivered a second consecutive record-revenue quarter as auto manufacturing recovers around the globe and as memory and storage content per vehicle continues to grow. We have more demand than we can supply, and we are working diligently with our customers to address their memory and storage needs. We are also advancing our product portfolio targeted for automotive applications. In FQ2, we completed qualification of our auto-grade LP5 and began sampling the industry's first automotive LP5 that is hardware-evaluated to meet the most stringent Automotive Safety Integrity Level, ASIL D.

## Industry Outlook

Turning to the market outlook, calendar 2021 is shaping up to be a solid year, and our overall outlook across DRAM and NAND has improved since our last earnings call, with broad strength across nearly all end markets. The pandemic has driven changes in our economy that we believe will not only benefit us this year, but also serve to accelerate the digital transformation of the economy and drive new opportunities for Micron. Recovery from the pandemic and pent-up demand are expected to drive strong demand growth in markets such as enterprise, cloud, desktop PCs, mobile, auto and industrial.

Data center demand is expected to be strong in calendar 2021, particularly in the second half of the calendar year, due to a combination of factors: First, enterprise demand has started to come back as the economy recovers and is expected to further strengthen through the calendar year. Second, our opportunity at cloud service providers will continue to strengthen through calendar 2021, driven by robust demand for their solutions and offerings, as well as secular growth in AI and data-centric workloads. And finally, the introduction of new CPUs will support more memory channels and higher-density modules, contributing to increases in server memory content across both cloud and enterprise.



Forecasts for calendar 2021 PC unit sales have increased from three months ago and are expected to approach an average of one million units per day. There is robust demand in notebook PCs, especially Chromebooks. We also expect the desktop market to improve as workers gradually return to the office this year. Mobile unit sales are expected to show robust growth this year, and we also expect to benefit from higher content in 5G phones, which are forecast to double in calendar 2021 to more than 500 million units. Auto unit sales are expected to grow significantly from last year, while secular memory and storage content growth trends remain strong as EVs proliferate.

The strong demand across various end markets, combined with disruptions at certain logic and foundry semiconductor producers, has resulted in a shortage of these non-memory ICs for our customers, and we believe memory demand would have been even greater without these shortages.

In DRAM, due to the stronger demand, we now expect calendar 2021 bit growth at 20%, above our prior forecast of high teens. This growth builds on calendar 2020 bit growth, which was in the lower 20% range. As a result of disciplined CapEx investments since the start of the pandemic, we expect industry DRAM supply to be below demand. As a result of the strong demand and limited supply, the DRAM market is currently facing a severe undersupply, which is causing DRAM prices to increase rapidly. We see the DRAM market tightening further through the year.

In NAND, we now expect calendar 2021 bit growth in the low to mid-30% range, above our prior expectation of 30%. While we are seeing stabilization in near-term pricing, the elevated levels of industry CapEx are a cause for concern, and more CapEx cuts are needed to allow for healthy NAND industry profitability.

Long term, we expect a DRAM bit demand growth CAGR of mid- to high teens and a NAND bit demand growth CAGR of approximately 30%

### **Micron Outlook**

Turning to Micron supply, we target our long-term bit supply growth CAGR to be in line with the industry bit demand growth CAGR for both DRAM and NAND. However, there can be year-to-year variability caused by node-transition timing. In both DRAM and NAND, we expect our calendar 2021 bit supply growth to be below the industry demand growth, and we have used our inventory to add to our bit shipment growth this year. We are targeting fiscal 2021 CapEx to be approximately \$9 billion to support our long-term goal of maintaining a stable share of industry bit supply.

I will now turn it over to Dave.



**DAVE ZINSNER, SENIOR VICE PRESIDENT AND CHIEF FINANCIAL OFFICER**

Thanks Sanjay.

**OPENING**

Micron delivered very strong FQ2 results, with solid revenue growth, margin expansion, and positive free cash flow. Market conditions improved throughout the quarter, and DRAM and NAND volumes, as well as DRAM pricing, were above our original expectations.

**LEHI /3D XPoint**

Before discussing the details of our fiscal second quarter results, I want to discuss the financial impact of our decision to cease 3D XPoint development and manufacturing. As a result of this decision, we wrote-off \$49 million of 3D XPoint inventory in our FQ2 GAAP financial results. This inventory exceeded our needs to fulfill customer commitments. We remain committed to fulfilling our customer commitments to manufacture 3D XPoint wafers and currently expect modest revenues, consistent with recent history until the end of calendar 2021.

Our Lehi fab was recategorized at the end of FQ2 as "held for sale" on our balance sheet, and beginning in FQ3, depreciation expense for the building and related equipment will stop. As a result, FQ3 gross margins will benefit from approximately \$75 million of lower depreciation expense. The remaining costs will continue until the closing of the sale of our 3D XPoint fab in Lehi, Utah.

As we discussed on our 3D XPoint update call, Micron will continue to maintain our current R&D investment level and redeploy the 3D XPoint R&D teams to work on technologies and products that align with our vision for memory and storage. We have already made progress on this front since our update call.

Now, moving on to our results for FQ2.

**REVENUE**

Total FQ2 revenue was approximately \$6.24 billion, up 8% quarter –over quarter and up 30% year-over-year. We saw solid growth in most of our end markets, notably in the data center, mobile, PC, auto and industrial markets.

**DRAM**



FQ2 DRAM revenue was \$4.4 billion, representing 71% of total revenue. DRAM revenue increased 10% sequentially and was up 44% year-over-year. Bit shipments grew in the high single-digit percentage range sequentially, and ASPs were up slightly quarter-over-quarter.

## **NAND**

FQ2 NAND revenue was approximately \$1.7 billion, representing 26% of total revenue. NAND revenue increased 5% sequentially and was up 9% year-over-year. Bit shipments increased in the high single-digit percentage range sequentially, while ASPs declined in the low single-digit percentage range quarter-over-quarter, showing an improvement in trajectory in the NAND pricing environment.

## **REVENUE BY BUSINESS UNIT**

Now turning to our revenue trends by business unit.

Revenue for the Compute and Networking Business Unit was approximately \$2.6 billion, up approximately 4% sequentially and up 34% year-over-year. Revenue growth was broad-based and driven by a combination of volume and pricing across data center, networking and client.

Revenue for the Mobile Business Unit was \$1.8 billion, up 21% sequentially and up 44% year-over-year. Mobile demand remains strong as 5G momentum increases and the mobile market continues to recover from the impact of the pandemic.

Revenue for the Storage Business Unit was \$850 million, down approximately 7% from the prior quarter and down 2% year over year. Both SSD revenue and component revenue declined sequentially. We expect our storage revenue to increase as we introduce our 176-layer client SSDs into volume production.

Finally, the Embedded Business Unit generated record revenue of \$935 million, which was up 16% sequentially and 34% year-over-year, driven by strong industrial demand and record auto revenue as demand recovered from pandemic-related shutdowns.

## **OPERATING RESULTS**

### **GROSS MARGIN**

The consolidated gross margin for FQ2 was 32.9%, up 200 basis points from the prior quarter. DRAM price increases and cost declines drove the margin expansion in FQ2. For fiscal 2021, due to product mix changes, we now expect that our DRAM cost reductions will be somewhat higher than our prior expectations of mid-single digits, while our NAND cost reductions will be somewhat lower than our prior expectation of low to mid-teens.



## **OPEX**

Operating expenses were \$797 million in FQ2. Operating expenses were slightly lower than our expectation as prequal expenses were less than we had anticipated. We continue to expect operating expenses to increase in the second half of the fiscal year as we incur increased prequalification and labor expenses. As always, we remain committed to tightly managing expenses.

## **OPERATING INCOME**

FQ2 operating income was \$1.3 billion, resulting in an operating margin of 20%, compared to 17% in the prior quarter and 11% in the prior year's quarter.

FQ2 EBITDA was \$2.8 billion, resulting in an EBITDA margin of 45%, compared to 43% in the prior quarter and 40% in the prior year.

## **NET INTEREST EXPENSE**

Net interest expense improved to \$24 million, and we expect it to be approximately \$25 million in FQ3.

## **TAXES**

Our FQ2 effective tax rate was 10.1%. We expect our tax rate to be in the high single digits for fiscal 2021.

## **EARNINGS PER SHARE**

Non-GAAP earnings per share in FQ2 were \$0.98, up from \$0.78 in FQ1 and up from \$0.45 in the year-ago quarter. EPS included one cent of nonoperating income related to gains from investments in our venture arm, Micron Ventures.

## **OPERATING CASH FLOW**

Turning to cash flows and capital spending, we generated approximately \$3.1 billion in cash from operations in FQ2, representing 49% of revenue.

## **CAPITAL ALLOCATION**

Net capital spending was approximately \$2.9 billion during the quarter. Through the first six months of the fiscal year, we have deployed approximately \$5.7 billion or slightly less than two-thirds of our expected annual capital spending. As we look ahead to the second half of the fiscal year, we expect capital spending to decline from the first half and continue to target approximately \$9 billion in total for FY21.





As a result of our strong cash flow from operations of \$3.1 billion, we generated positive free cash flow of \$174 million despite the relatively high level of capital spending in the quarter. The increased cash flow was driven by strong revenue growth and efficient working capital management. We expect free cash flow to continue to improve in the second half of the fiscal year, driven by continued revenue growth, higher margins and lower capital spending. While we did not have share repurchases in FQ2, we will begin repurchasing shares in the third quarter and remain committed to returning at least 50% of annual free cash flow to shareholders in FY21.

### **INVENTORY**

Ending FQ2 inventory was \$4.7 billion or 99 days, which reflects the inventory reporting changes we announced on last quarter's earnings call.

### **TOTAL CASH/DEBT**

We ended the quarter with total cash of \$8.6 billion and total liquidity of approximately \$11.1 billion. FQ2 ending total debt was \$6.6 billion.

### **OUTLOOK**

Now turning to our outlook. DRAM prices have started to strengthen, and we expect the market to remain undersupplied this calendar year. In addition, NAND conditions are stabilizing. These improving market conditions, combined with our significantly stronger competitive position, set us up to generate stellar financial results in the second half of the fiscal and calendar year.

While demand is strong across both the DRAM and NAND markets, our supply is now constrained as our inventories are very lean, particularly in DRAM. This restricts our ability to serve potential upside to demand. On the cost side, we are facing additional headwinds due to foreign exchange rates and drought mitigation impacting our Taiwan operations, and as result our FQ3 DRAM costs could be sequentially up. We are also assuming that there is no impact to our production output due to the Taiwan drought.

### **NON-GAAP GUIDANCE**

With all these factors in mind, our non-GAAP guidance for FQ3 is as follows. We expect revenue to be \$7.1 billion, plus or minus \$200 million; gross margin to be in the range of 41.5% plus or minus 100 basis points; and operating expenses to be approximately \$875 million, plus or minus \$25 million. Finally, based on a share count of approximately 1.16 billion fully diluted shares, we expect EPS to be \$1.62, plus or minus \$0.07.

### **CLOSING**



In closing, as we reflect on our financial performance for FY20, which was a trough year for Micron in this cycle, and compare it to the prior trough in FY16, I am amazed by how far we have come. From FY16 to FY20, we substantially improved our EBITDA margin and our revenue grew by more than 70%. During this time, we delivered average gross margins of 40%, EBITDA margins of 50% and return on invested capital of 20%. We believe Micron's strong performance will continue cross-cycle and outperform the broader semiconductor industry.

I will now turn it back to Sanjay.

**Sanjay Mehrotra, President and Chief Executive Officer**

Thank you, Dave.

None of our achievements are possible without the great work of our world-class Micron team. We seek to recognize and reward team member performance and to do so fairly. Last week, we announced that we achieved comprehensive global pay equity in total employee compensation across base pay, bonuses and stock rewards for women and all underrepresented groups at Micron. Pay equity is a key pillar of our diversity, equality, and inclusion strategy and core to creating an environment that attracts and retains the best talent. We continue to strengthen Micron's inclusive, values-driven culture, which is an integral part of our broader transformation.

We have come a long way since Micron's founding as a startup in Boise, Idaho more than 40 years ago, and today we are a global technology and product leader. As the United States' only remaining memory and storage manufacturer, we welcome the U.S. government's commitments to enhance America's long-term technology leadership and competitiveness in semiconductor manufacturing. This emphasis on our industry – which is reflected by governments globally – is a recognition of the critical role we play in today's digital economy.

Memory and storage represent approximately 30% of semiconductor industry revenue today, up from 10% in the early 2000s, and DRAM and NAND are growing in importance as a critical enabler of the most advanced technologies driving economic growth and well-being. Micron's innovation over the decades has created a strong foundation, and we look forward to delivering value for all our stakeholders as the data economy accelerates.

Thank you for joining and for your support of Micron. We will now move to Q&A.