



Farhan Ahmad, Senior Director, Investor Relations

Thank you, and welcome to Micron Technology's first fiscal quarter 2020 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. 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, along with a convertible debt and capped call dilution table. As a reminder, a webcast replay will be available on our website later today.

We encourage you to monitor our website at 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.

Good afternoon!

Micron is off to a solid start in our fiscal 2020. Despite a challenging industry environment, we delivered good profitability, maintained positive free cash flow, and strengthened our product portfolio.



Industry supply-demand balance continues to improve in both DRAM and NAND. Recent trends in our business give us optimism that our fiscal second quarter will mark the bottom for our financial performance, which we expect to start improving in our fiscal third quarter, with continued recovery in the second half of calendar 2020.

COST REDUCTIONS AND HIGH-VALUE SOLUTIONS

Our strategy to increase high-value solutions, enhance customer engagement, and improve our cost structure is producing results. We have materially improved our competitive position, structurally strengthened our profitability, and are poised to drive long term shareholder value as industry conditions improve.

High-value solutions in FY2019 accounted for approximately 50% of NAND bits. We expect this figure to grow to over two-thirds of our NAND bits sold for fiscal 2020, and we remain on track to drive 80% of our NAND bits into high-value solutions in FY2021. This mix improvement is an important tailwind for us as it improves our profitability and reduces the volatility in our margins.

At our Micron Insight event in October, we articulated a vision for Micron's transformation through greater vertical integration and differentiated products for the new data economy. I will highlight two of these and encourage you to view Sumit Sadana's Insight keynote, available on our website, for more detail: <https://www.micron.com/about/blog/2019/december/microns-innovation-and-product-announcements>.

First, we announced the acquisition of a small company called FWDNXT. The FWDNXT "Deep Learning Accelerator" hardware and software technology, when combined with advanced Micron memory, makes it possible to deploy neural network models from any framework into edge devices for inference. FWDNXT's unique technology is an important capability in our portfolio that will help us learn and better address customers' needs in the evolving AI ecosystem.

At Insight, we also launched our first 3D XPoint™ product, the X100, which is the world's fastest storage device. The Micron X100 SSD is dramatically faster than any other SSD — including those built with NAND or 3D XPoint technology, and we are proud that it was showcased at Microsoft's Ignite conference by their Azure team.

In October, we closed our acquisition of Intel's stake in the IMFT joint venture. We plan on relocating equipment and certain manufacturing employees to other Micron sites as we right-size the Lehi fab. Redeploying equipment will also help us optimize Micron's front-end equipment capex. As with any innovative technology, it will take time to scale up our 3D XPoint product portfolio, ramp revenues, and achieve healthy margins, and we are excited about the long-term potential of 3D XPoint for both memory and storage applications.



As the only company in the world with a portfolio of DRAM, NAND, and 3D XPoint technologies, we are in a unique position to develop differentiated products for our customers.

I will now turn to **technology and manufacturing operations**:

In DRAM, our industry-leading 1Z LP4 DRAM-based uMCP had the fastest revenue ramp of any product in the history of our mobile business. Our production mix on 1Z will increase throughout 2020, and DRAM cost reductions will be skewed toward the second half of FY2020. Our previously announced cleanroom expansion in Taiwan is on track, and we expect output in calendar 2021. This cleanroom expansion is EUV-capable. While we continue to evaluate EUV technology for deployment in DRAM production, our current assessment shows superior economics through 1 gamma node utilizing advanced immersion technology along with Micron's proprietary multi-patterning technologies. We are encouraged by recent industry progress on EUV productivity and will be prepared to deploy EUV when it becomes cost effective to do so.

In NAND, we are continuing to make progress on our replacement gate (RG) transition and expect to begin production on our 128-layer, first-generation RG node in the second half of FY2020. As a reminder, this node will be deployed for a limited set of products, and we expect minimal NAND cost reduction in FY2020. It will be followed by an introduction of a higher-layer-count, second-generation RG node in FY2021 targeted for a broader implementation, which will begin to provide more robust cost reduction as it ramps. This second-generation RG node will leverage our NAND technology leadership in CMOS under the array, as well as QLC.

Now turning to highlights by **products and markets**:

MARKETS: COMPUTE STORAGE

In SSDs, demand from data center customers was strong in FQ1. Attach rates and capacities for client and consumer SSDs have continued to increase across our customers. There are supply shortages for SSDs across the industry, and pricing trends are improving. We are making strong progress on our transition to NVMe. As of F2Q, we will have NVMe SSDs for all market segments, which positions us to gain share in FY2020. NVMe client SSD bit shipments represented almost three-quarters of our client SSD bits in F1Q, versus virtually none a year ago. In the data center market, sales of our previously announced high-performance NVMe SSD nearly tripled quarter-over-quarter, and we announced a 96-layer mainstream data center NVMe SSD.

While growing our presence in NVMe, we continue to maximize our value proposition for the SATA market by ramping 96-layer NAND products. We achieved qualifications with multiple OEMs on our 96-layer SATA data center SSD.



Our QLC technology continues to gain traction. We have QLC SSDs in volume production for SATA SSDs in the data center and consumer markets, as well as NVME SSDs for the consumer market. We became the first company to ship a 96-layer, second-generation QLC SATA consumer SSD.

MARKETS: MOBILE

In mobile, F1Q MCP DRAM and NAND bits grew approximately 50% quarter-over-quarter, and our MCP market share increased approximately 50% year-over-year. In F1Q, our leading-edge 1Z LP4 DRAM-based uMCP achieved qualification at multiple OEMs, driving the “fastest mobile product revenue ramp” I mentioned earlier. We are confident that 5G will be positive for both memory and storage content growth, as well as smartphone unit sales, and are encouraged to see the launch of affordable 5G phones with price points as low as \$300 that feature a minimum of 6GB of DRAM. The 5G phones launched to date average 8GB of DRAM and 200GB of NAND, significantly higher than the average content in smartphones today. Our leadership on DRAM power efficiency continues to drive customer preference for our products, and we remain well positioned in this market. We have the lowest-power and highest-bandwidth LP5 product that begins volume production this quarter, which we expect will become more important in 2021 as 5G adoption accelerates.

MARKETS: DATA CENTER AND GRAPHICS

In data center, strong server DRAM demand in the second half of calendar 2019 is creating an industry-wide shortage of high-quality/high-density modules, for which we are seeing incremental demand from our customers. New CPU architectures supporting higher-density chips and increased number of channels are driving strong DRAM content growth in servers. In F1Q we saw strong demand growth from enterprise and cloud customers.

In graphics, bit shipments remained stable with GDDR6 PC graphics cards showing strong growth, offset by seasonal weakness in gaming consoles. In F1Q, we began shipments of our new 14 gigabit per second GDDR6 and are well positioned to benefit from the launch of next-generation gaming consoles in calendar 2020. The launch of these new gaming consoles will drive robust multi-year demand in graphics memory, and these consoles will deploy SSDs in place of hard drives for the first time. This continues a trend of SSDs replacing hard drives across more high-volume applications.

MARKETS: PC

In the PC market, bit shipments in F1Q continued the growth trend from last quarter. Nevertheless, we are cautious on our near-term outlook for the PC segment due to reported CPU shortages, which seem likely to continue at least into early calendar 2020.



MARKETS: AUTO

In automotive, despite sluggish worldwide auto sales, we saw quarter-over-quarter revenue growth driven by secular memory and storage content growth. Our leadership in low-power DRAM is also driving growth for us in this market. In F1Q, we qualified and shipped the industry's first BGA NVMe SSD for automotive applications, which offers industry-leading performance and capacity in a small form factor and is well-suited to service the storage needs of increasing autonomous features.

OUTLOOK

Now turning to our market outlook. Our base-case assumption on which all our projections are based, assumes that there are no perturbations to the demand environment due to macroeconomic conditions or trade-related developments.

In DRAM, there has been a strong recovery in the second half of calendar 2019, and our view of calendar 2019 industry bit demand growth has increased to approximately 20%. This stronger than expected demand has resulted in pockets of shortages for us. We continue to exercise price discipline and walk away from price requests that do not meet our objectives. While these actions may impact short-term revenue, improving our business mix will enhance our long-term profitability. We are encouraged by recent DRAM pricing trends and are optimistic about improving supply-demand balance throughout calendar 2020.

As we discussed on our last call, a portion of the strength in demand in the second half of calendar 2019 may be attributable to inventory builds in China, and we expect some of this customer inventory to normalize sometime in calendar 2020. As a result, we expect calendar 2020 industry DRAM bit demand growth to be in the mid-teens percent range year-over-year, which is somewhat lower than our prior outlook, due to stronger demand in calendar 2019.

We expect industry bit supply growth for calendar 2020 to be somewhat less than the demand as industry bit supply growth decelerates due to industry capex reductions. We continue to target our long-term bit supply growth CAGR to be close to the industry's long-term bit demand growth CAGR of mid to high teens. In calendar 2019, our bit supply growth will be less than the industry supply growth of mid-teens, and in 2020 our bit supply growth is expected to be slightly above industry bit supply growth.

Turning to NAND, our industry bit demand growth expectation is in the mid-40% range in calendar 2019, and high 20% to low 30% range in calendar 2020. We expect calendar 2020 industry bit supply to be lower than industry bit demand as a result of industry capex reductions, and consequently, we expect the industry environment to improve through calendar 2020. Micron's NAND bit supply growth in calendar 2019 is likely to be slightly below industry bit demand growth and in calendar 2020 will be meaningfully below that of the industry. However, we expect our NAND bit shipment growth in calendar 2020 to be close to industry



bit demand growth as we ship our inventory during the first generation of our RG transition. As we go through the transition to replacement gate, we expect our multi-year supply growth CAGR to be in line with the industry's demand CAGR of approximately 30%.

Before I turn it over to Dave, I wanted to provide an update on our business with Huawei.

As previously disclosed, we are continuing to ship some products to Huawei that are not subject to Export Administration Regulations and Entity List restrictions. We applied for, and recently received, all requested licenses that enable us to provide support for these products, as well as qualify new products for Huawei's mobile and server businesses. Additionally, these licenses allow us to ship previously restricted products that we manufacture in the United States, which represent a very small portion of our sales. However, there are still some products outside of the mobile and server markets that we are unable to sell to Huawei.

Receiving the licenses is a positive development, and we are thankful to the U.S. administration for approving these licenses.

Prior to receiving these licenses, Entity List restrictions severely limited our ability to qualify new products at Huawei. Although we are now able to qualify new products with Huawei's mobile and server businesses, it will take some time before the qualifications are completed and contribute to revenue. Consequently, we do not expect these licenses to have a material impact on our revenue in the next couple of quarters.

I'll now turn it over to Dave to provide our financial results and guidance.

Dave Zinsner, Senior Vice President and Chief Financial Officer

Thanks Sanjay.

OPENING

Micron's FQ1 results were largely consistent with our expectations as market conditions continued to stabilize. During the quarter, DRAM price declines decelerated from recent quarters, and we saw pricing improvements in NAND. Total company revenues grew sequentially, and our total inventory declined in absolute terms. We generated positive free cash flow during the quarter, made progress on our share repurchase program, and further strengthened our balance sheet.

The results on today's call reflect our previously announced changes in NAND depreciable life to 7 years from 5 years, and the change in reporting from our previous disclosures, which classified all MCP and SSD revenues as NAND revenue, to a view now that disaggregates these revenues into DRAM and NAND. The



following DRAM and NAND growth figures use restated historical revenues for an apples-to-apples comparison.

REVENUE

Total FQ1 revenue was approximately \$5.1 billion. Revenue was up 6% sequentially and down 35% year-over-year.

FQ1 DRAM revenue was \$3.5 billion, representing 67% of total revenue. DRAM revenue increased 2% sequentially and declined 41% year-on-year. Bit shipments grew approximately 10% sequentially and on a year-on-year basis were up in the mid-20% range. ASP declined in the upper-single-digit percent range sequentially. DRAM revenues included \$435 million of revenues from MCPs and SSDs.

FQ1 NAND revenue was approximately \$1.4 billion, or 28% of total revenue. Revenue was up 18% sequentially and declined 14% year-on-year. Bit shipments grew in the mid-teen percent range sequentially and in the mid-30% range year-on-year. ASPs increased in the low single digits sequentially.

BUSINESS UNIT RESULTS

Now turning to our revenue trends by business unit.

Revenue for the Compute and Networking Business Unit was approximately \$2.0 billion, an increase of 4% sequentially and down 45% year-over-year. The sequential increase was driven by higher volumes and moderating ASP declines.

Revenue for the Mobile Business Unit was \$1.5 billion, up 4% sequentially and down 34% year-over-year. MCP revenues grew strongly during the quarter driven by approximately 50% sequential growth in DRAM and NAND bits.

Revenue for the Storage Business Unit in FQ1 was \$968 million, an increase of 14% from FQ4 and down 15% year-over-year. Sequential revenue growth was driven by SSD volume growth and ASP increases.

Finally, revenue for the Embedded Business Unit was \$734 million, up 4% from FQ4 and down 21% from the prior year. Sequential revenue growth was mostly driven by the automotive market due to content growth.

GROSS MARGIN

The consolidated gross margin for FQ1 was 27.3%, slightly above the midpoint of our guidance. FQ1 gross margins included approximately a 240-basis point negative impact or approximately \$125 million due to



underutilization charges at the Lehi Fab. This came in slightly better than we guided to on last quarter's call, but underutilization charges are expected to ramp higher in FQ2 as production volumes decline. We still expect the underutilization charges to average \$150 million per quarter in the first half of fiscal 2020. We have taken action to reduce our spending in the Lehi Fab, which should begin to reduce underutilization charges in FY2021 as these actions are implemented. Ultimately, these charges will be mitigated as our own 3D XPoint products ramp into production over the coming years.

OPEX

Operating expenses were \$811 million as we incurred higher than usual R&D expenses to qualify new products. We expect to operate at higher levels of qualification expenses for the remainder of FY2020 as we continue to expand our product portfolio. As a result, we now expect operating expenses to be approximately \$3.3 billion for the fiscal year. We continue to prudently control all other operating expenses and remain flexible should business conditions warrant.

OPERATING INCOME

FQ1 operating income was \$594 million, representing 12% of revenue. Operating margin was down 38 percentage points year-over-year and down 3 percentage points from FQ4.

TAXES

Our FQ1 effective tax rate was 6.9%. We expect our tax rate to be approximately 5% for the remainder of the fiscal year.

EARNINGS PER SHARE

Non-GAAP earnings per share in FQ1 were \$0.48 down from \$0.56 in FQ4 and \$2.97 in the year-ago quarter.

OPERATING CASH FLOW

Turning to cash flows and capital spending, we generated \$2.0 billion in cash from operations in FQ1, representing 40% of revenue.

CAPEX

During the quarter, net capital spending was approximately \$1.9 billion, down from approximately \$2 billion in the prior quarter. We are continuing to target FY2020 capex in the range of \$7 to \$8 billion.



FREE CASH FLOW

We generated adjusted free cash flow of approximately \$80 million in FQ1 compared to \$260 million last quarter, and approximately \$2.3 billion in the year-ago quarter.

SHARE REPURCHASE

In FQ1, we repurchased 1.1 million shares for \$50 million. In addition, we deployed approximately \$200 million of cash to settle convertible note redemptions in the quarter removing approximately 3 million shares from our fully diluted share count.

We will continue to target deploying at least 50% of our annual free cash flow towards repurchases.

INVENTORY

Days of inventory was 121, down from 131 days in FQ4. Inventory ended the quarter at \$4.9 billion, down slightly from \$5.1 billion at the end of FQ4. Over the last two quarters our inventory days have declined by approximately 15%. We expect inventory days to increase in FQ2 due to seasonality and then begin to reduce again for the remainder of the year.

TOTAL CASH/DEBT

We ended the quarter with total cash of \$8.3 billion and total liquidity of nearly \$11 billion. We deployed approximately \$1.3 billion of liquidity in FQ1 to fund the closing of our acquisition of Intel's stake in the IMFT joint venture.

FQ1 ending total debt was \$5.7 billion, down slightly from the prior quarter. In addition to the retirement of IMFT's member debt, we used cash on hand to retire approximately \$520 million in principal of high-yield debt. This was partially offset by the draw-down of our term loan facility to fund the IMFT acquisition.

Our balance sheet is very strong with net cash of \$2.7 billion, and we remain committed to maintaining a net cash position. Last month, S&P upgraded Micron's credit rating to investment grade, and now all three rating agencies rate Micron's credit as investment grade.

OUTLOOK

Now turning to our financial outlook. As Sanjay mentioned, our outlook throughout our earnings commentary assumes that the macroeconomic environment and trade-related issues will not impact demand. Micron's FQ2 is the seasonally weakest quarter for the industry. We continue to exercise pricing discipline and reduce business at customers where pricing does not meet our objectives, and this limits our



business opportunity within the quarter. Additionally, in FQ2 pockets of supply tightness are limiting our bit shipments, Lehi underutilization costs are going to step up, and our cost reductions are likely to remain modest. However, we are encouraged by recent market trends and expect that FQ2 will be the bottom of our gross margins, as pricing, increasing mix of high-value solutions, and cost reductions drive better gross margins throughout the rest of fiscal and calendar 2020. We expect a gradual recovery to start in FQ3, and to continue into the seasonally stronger second half of calendar year.

GUIDANCE

With that in mind, our non-GAAP guidance for FQ2 is as follows. We expect revenue to be in the range of \$4.5 to \$4.8 billion, gross margin to be in the range of 27% plus or minus 150 basis points, and operating expenses to be approximately \$825 million, plus or minus \$25 million. Interest and other income is expected to be approximately zero. Based on a share count of approximately 1.14 billion fully diluted shares, we expect EPS to be \$0.35, plus or minus \$0.06.

CLOSING

As we approach the trough in this cycle, at the midpoint of our guidance, FQ2 revenue will be 60% higher and gross margins 9 percentage points higher than in the prior trough, which occurred in the fiscal third quarter of 2016. Micron's solid financial performance and investment-grade balance sheet demonstrate that the New Micron is indeed structurally stronger, with higher lows and better cross-cycle revenue growth and profitability.

I'll now turn the call over to Sanjay for closing remarks.

Sanjay Mehrotra, President and Chief Executive Officer

Thank you, Dave.

Micron is entering 2020 as a fundamentally stronger company, in an industry that is structurally transformed. Supply growth is moderating due to rising capital intensity and the slowing of Moore's Law. Demand drivers are more diversified than ever before — both in end markets and in the variety of memory and storage solutions. This change in industry dynamics creates new opportunities for Micron to innovate and provide differentiated value to customers. Nascent applications promise to further accelerate this diversification: cloud growth continues at a brisk pace, driven by new use cases; and 5G networks are just beginning to proliferate and will usher in an age of true machine-to-machine communication with billions of connected devices. And just a little further over the horizon, AI, machine learning, and autonomous technologies will expand this potential even more.



These trends are transforming every aspect of human life and driving secular growth in memory and storage. Micron's enhanced product portfolio, improved cost structure, and talented team put us in an outstanding position to capitalize on the wealth of opportunities ahead and create long-term shareholder value.

We will now open for questions.