Operator

Ladies and gentlemen, thank you for standing by and welcome to the fourth quarter 2019 Intel Corporation earnings conference call. At this time, all participants are in a listen-only mode. After the speaker's presentation, there will be a question-and-answer session. [Operator Instructions]. As a reminder, today's program is being recorded.

And now I would like to introduce your host for today's program, Trey Campbell, Head of Investor Relations. Please go ahead sir.

Trey Campbell

Operator. And welcome everyone to Intel's fourth quarter earnings conference call. By now, you should have received a copy of our earnings release and the earnings presentation. If you have not received both documents, they are available on our investor website, intc.com. The earnings presentation is also available in the webcast window for those joining us online.

I am joined today by our CEO, Bob Swan and our CFO, George Davis. In a moment, we will hear brief remarks from both of them, followed by Q&A.

Before we begin, let me remind everyone that today's discussion contains forward-looking statements based on the environment as we currently see it and as such does include risks and uncertainties. Please refer to our press release for more information on the specific risk factors that could cause actual results to differ materially.

A brief reminder, that this quarter we have provided both GAAP and non-GAAP financial measures. Today, we will be speaking to the non-GAAP financial measures when describing our consolidated results. The earnings presentation and earnings release available on intc.com include the full GAAP and non-GAAP reconciliations.

With that, let me hand it over to Bob.

Bob Swan

Thanks, Trey. We exceeded our expectations for Q4 2019, capping off a fourth consecutive record year. In Q4, we generated $20.2 billion in revenue and $1.52 in earnings per share, exceeding our guidance by $1 billion and $0.28, respectively. For the full year, we delivered $72 billion in revenue and $4.87 in EPS. The PC, data center, IoT, memory and Mobileye businesses each set all time annual revenue records.

Several years ago, we began a transformation to reposition the company to take advantage of the data revolution that is reshaping computing. Exiting this quarter, we now have greater than 50% of our revenue coming from our data centric collection of businesses. But our journey is just beginning.

To reach our multiyear goals, we will continuously focus on three key priorities, accelerating growth, improving execution and deploying our capital for attractive returns. I would like to share our progress against these priorities over the last 90 days.

We are accelerating growth by expanding the capabilities of our workload optimized platforms and playing a larger role in our customers' success. Demand for our Intel Xeon scalable processors is very strong as customers continue to make Xeon the foundation for their AI infused data center workloads. One of the reasons Cascade Lake is our fastest ramping Xeon CPU is its unrivaled AI performance.

Xeon's AI performance will take another step in the first half of 2020 when our third-generation Xeon scalable processor Cooper Lake debuts. Cooper Lake features new Intel DL boost extensions for built-in AI training acceleration providing up to a 60% increase in training performance over the previous family. Additionally, we have expanded beyond the CPU in the data center with products such as Optane persistent memory, custom ASICs, Ethernet and silicon photonics. In Q4, data center adjacent products grew more than 30% year-over-year.

In client computing, we are seeing excellent momentum for our first 10 nanometer mobile CPU, Ice Lake, with 44 system designs already shipping. In addition to our CPU capabilities, we continue to deliver leadership PC platform connectivity. With Wi-Fi 6, were delivering gig-plus speeds and for wired connectivity we just announced Thunderbolt 4 for platforms in 2020.

At CES, we also showed customer momentum for our Project Athena innovation program, including the first Project Athena verified Chromebooks. Project Athena verified laptops have been tuned, tested and verified to deliver fantastic system-level innovation and benefits spanning battery life, consistent responsiveness, instant wake, application compatibility and more. We have verified 26 Project Athena design to-date and expect 50 more devices across Windows and Chrome to be verified this year.

In addition to strengthening our largest businesses, we are investing to win key data-driven technology inflections. These inflections include the rise of artificial intelligence, the transformation of networks and emergence of the intelligence and autonomous edge. The market for AI-based silicon is growing and evolving quickly. New workloads are emerging and existing workloads like high performance computing are converging with AI.

In 2019, we generated $3.8 billion in AI-based revenue. The AI market opportunity is expected to be $25 billion by 2024 and we are investing to lead with a strong portfolio of products. In addition to integrating AI into all our leading products, we have introduced and acquired new capabilities that deepen an already unparalleled portfolio of AI assets. We announced the acquisition of Habana Labs, a leading developer of programmable deep learning accelerators for the data center. Habana, combined with Intel's existing AI ASICs and software expertise, will advance our AI offerings for the data center with high performance training and inference processors and a standards-based programming environment to address evolving AI workloads.

Delivering the optimal AI silicon architecture is critical but not sufficient to solve customers' problems. That's why we launched the oneAPI industry initiative to deliver a unified and simplified programming model for application development across heterogeneous processing architectures. OneAPI marks a game changing evolution from today's limiting proprietary program approaches to an open standards-based model for cross architecture developer engagement and innovation.

As expected, our networking business reached $5 billion in revenue in 2019. We have grown our business by helping our customers transform their networks by consolidating and virtualizing workloads on Intel architecture based servers. Now, as we advance into the 5G era, we see our momentum in design win pipeline accelerating as we are positioned to win significant share in base stations.

This quarter, we announced a strategic agreement with Alibaba to support both the Tokyo and Beijing Olympics building out 5G infrastructure utilizing Xeon scalable Optane persistent memory and Intel software. These data optimized 5G networks will support amazing experiences such as immersive 8K VR, cloud 3-D stadium simulations and cloud broadcasting.

We also delivered almost $5 billion in annual revenue from our IoT/edge portfolio of products. In November, we disclosed our next-gen Movidius vision processing unit Keem Bay. Keem Bay is highly optimized for edge inference with groundbreaking leaps forward in power efficient performance delivering up to 4X the performance or 6X the performance per watt over comparable competitive solutions.

It's been over two years since the acquisition of Mobileye and we couldn't be more excited about the team's progress. This quarter we announced several exciting new engagements. We established an agreement for REM data harvesting with SAIC Motor and embarked on a strategic partnership with NIO to deploy Mobileye's self-driving systems as the full stack solution for NIO's consumer AV. We also continue to accelerate the commercialization of driverless Mobility-as-a-Service with two new partnerships, RATP in Paris and Daegu City in South Korea.

In Q4, we were also excited to host analysts and investors at Mobileye's headquarters to discuss our strategy to win the more than $70 billion opportunity for ADAS, AV and data and to expand our aspirations to an even larger role in the $160 billion opportunity for Mobility-as-a-Service. Our guests had the chance to test drive our technology on the demanding road to Jerusalem as we demonstrated industry's leading AV solution stack navigating a wide variety of driving complexities and delivering unmatched agility and safety.

We have significant opportunities but realizing them requires improved execution, starting with delivering more supply for our customers. In response to continued strong demand, we invested record levels of CapEx in 2018 and 2019. That added capacity allowed us to increase our second half 2019 PC CPU supply by double digits relative to the first half. However, demand has continued to outpace PC supply and supply remains tight in our PC business. We are continuing to add capacity so are not constraining our customers' growth. Across our 14 and 10 nanometer nodes, we are adding 25% wafer capacity this year to deliver a high single digit increase in PC unit volume. This will enable us to meet market demand, deliver our 2020 financial plan and increase inventory to more normalized levels. Our near term challenge is working with our customers to support their desired product mix.

Our process technology execution continues to improve. In Q4, we ramped our 10 nanometer production and continue to see yields improve. We are planning nine new product releases on 10 nanometer this year, including our next-gen mobile CPU, a 5G base station SOC, an AI inference accelerator, our first discrete GPU and Xeon for server, storage and networking.

We are also on track to deliver 10 nanometer-plus this year, our first performance upgrade on 10 nanometer. Our 7 nanometer process remains on track to deliver our lead 7 nanometer product, Ponte Vecchio, at the end of 2021 with CPU products following shortly after in 2022. We are also driving innovation in the next generation of computing.

At CES, we provided a first look at our next-gen Intel Core mobile processor codenamed Tiger Lake, which is designed to offer groundbreaking advancements when it ships later this year. Tiger Lake, built on Intel's 10 nanometer-plus process, will deliver significant gains in computes, AI, graphics and interconnect over the prior generation. We will also deliver initial production shipments on our first 10 nanometer-based Xeon scalable product, Ice Lake in the latter part of 2020.

We are also investing to lead the next wave of technology breakthroughs such as quantum computing. Our investment in quantum computing covers the full hardware and software stack in pursuit of a practical commercially viable quantum system. For example, last month we unveiled a first of its kind cryogenic control chip, Horse Ridge, that will speed up development of full stack quantum computing systems.

We made good progress this quarter but we will continue to be laser focused on improving our execution. That means delivering the supply, leadership process technology and product innovations that allow us to play a larger role in our customers' success.

Our third priority is to thoughtfully deploy your capital to deliver attractive returns. That means, first investing in the R&D and CapEx necessary to drive our long-term business plan. Since 2015, we have grown revenue by more than $16 billion while reducing spending by $500 million. Spending as a percentage of revenue was down nine points while over the same period we have increased R&D spending by $1.2 billion.

We acquired Habana Labs, a fantastic company that will accelerate our AI plans while also making thoughtful disinvestments. We closed both the 5G smartphone modem exit and the sale of IMFT in the quarter. We are confident in our future and consistent with that our Board has approved a 5% increase in our dividend to $1.32 per share. Last quarter, we announced a commitment to execute $20 billion in share repurchases over the next 15 to 18 months and three months into that window we have already repurchased $3.5 billion in shares.

Finally, our role goes beyond delivering strong results to being a great corporate citizen that has real impact on the world around us and in the communities where we work. I am proud of the many outside recognitions we have received for our responsible business practices. This reflects our culture and the efforts of our 100,000-plus employees around the world. Also, we continue to believe that a diverse workforce and inclusive culture are essential for executing our growth strategy, which is why we released detailed workforce representation data that raises the bar on ourselves and others for continued improvement.

And it's important to us to be a leader in environmental sustainability and we are investing to continue to increase the energy efficiency of our operations and our products. And we are also making significant progress on our goal of restoring 100% of our global water use by 2025.

Back at our May Analyst Day, we told you that the industry was at an inflection point where the exponential growth of data is fueling massive expansion in multi-cloud environments, transforming networks and catalyzing the intelligent edge. We believe we are well positioned to lead this data revolution and we expect to generate $85 billion in revenue and $6 in earnings per share in the next three to four years.

One year into that plan, we are tracking well ahead of our commitment. We have $3 billion more revenue and we have earned an additional $0.52 in earnings versus our May expectations. Our expectation is to continue to make deposits towards our multiyear goal every 90 days.

In summary, our priorities are to accelerate growth, improve execution and thoughtfully deploy our capital on behalf of our owners like you. I am excited about the opportunities in front of us and appreciate your continued support.

I will now hand the call over to George for details on our Q4 results and business outlook. George?

George Davis

Thanks Bob and good afternoon everyone. Q4 marked an outstanding finish to another record year with $20.2 billion in revenue, up 8% year-on-year and $1 billion higher than guide. We saw record data centric revenue of $10.2 billion, representing over 50% of our total revenue, an all-time high. DCG and Mobileye both achieved record revenue in the quarter. Q4 PC centric revenue was $10 billion, up 2% year-on-year capping CCG's fourth consecutive year of revenue growth. Q4 operating margin was approximately 36%, two points ahead of our guide on higher gross margin and spending leverage.

Gross margin for the quarter was 60.1%, beating expectations due to strong flow-through of higher DCG revenue. Q4 EPS was $1.52, $0.28 above our guide, primarily due to strong operational performance and further boosted by gains from our ICAP portfolio. These results demonstrate the strong demand for our leadership products and solid execution to achieve a record-breaking year. As a result, full year EPS of $4.87 was up 6% year-on-year. We generated $16.9 billion of free cash flow, up 19% and returned $19.2 billion to shareholders. We anticipate another record year in 2020 and are raising the dividend by 5%.

Moving to more details on Q4 performance. Operating margin of 36% in the quarter was up over half a point versus last year as higher volume and ASP strength in our data centric portfolio and lower spending were partly offset by the ramp of our 10 nanometer process and NAND pricing degradation. EPS was up 19% or $0.24 year-over-year on higher operating margin, equity gains driven by our ICAP portfolio and a lower share count, partially offset by a higher tax rate. Our non-GAAP tax rate in Q4 was 13.6%, in line with expectations and up five points year-over-year due to tax benefits from tax reform and discrete items in Q4 2018.

Let's move to segment performance. Our data center group had record revenue at $7.2 billion, up 19% from the prior year. These results beat our expectations with platform volumes up 12% and platform ASPs up 5% year-over-year on strong cloud demand and continued adoption of our highest performance second Gen Xeon scalable products. In Q4, cloud revenue was up 48% year-over-year as cloud service providers continue building capacity to serve customer demand. Enterprise and government revenue was down 7% while communication and service providers' revenue grew 14% as customers continue to adopt IA-based solutions to transform their networks and transition to the 5G era. All three segments exceeded our expectations for the quarter.

Our other data centric businesses were up 6% year-over-year in Q4. IOTG achieved another double digit growth quarter with revenue up 13% and operating income up 29% year-over-year as customers increasingly adopt Intel AI infused products to power the growing intelligent edge. And Mobileye revenue and operating income were up 31% and 54%, respectively, driven by the industry-leading EyeQ products, which offer unmatched computer vision and mapping capabilities and continue to win in a fast-growing ADAS market. EyeQ revenue was up 41% year-over-year.

NSG revenue grew 10% on continued bit growth, partially offset by year-over-year pricing declines. NSG reported an operating loss of $96 million as NAND cost improvements were more than offset by pricing declines.

PSG revenue declined 17% year-over-year on softness in the embedded segment primarily driven by lower last time buys versus Q4 2018, partially offset by strength in wireless. Operating income was down 48% on lower revenue and segment product mix.

DCG revenue was $10 billion in the fourth quarter, up 2% year-over-year driven by higher PC and modem volumes. PC unit volumes were up 1% on continued market strength and increased capacity. Adjacencies, which include modems and wireless and wired connectivity solutions, grew 13% year-over-year driven by strong demand for modems and a better mix of connectivity solutions. Operating margin was 41%, up four points year-on-year on higher revenue and lower spending driven by the 5G smartphone modem exit. As a result, CCG achieved record operating income in 2019.

In 2019, we generated $33.1 billion in operating cash flow and invested $16.2 billion in CapEx. We also returned 113% of free cash flow to shareholders through dividends and buybacks. During the quarter, we purchased 63 million shares at an average price of $55.32 per share. Total 2019 share repurchases were 272 million and in 2020, we expect return in excess of 100% of free cash flow to shareholders under the $20 billion buyback program announced last quarter and the increased dividend announced today.

Let's move to outlook. 2020 is expected to be another record year for the company. We are forecasting revenue of $73.5 billion and EPS of approximately $5. We expect our PC centric business to be down low single digits year-over-year on a slightly down PC TAM. Within 2020, we expect to see a strong first half and a moderating second half dynamic due to lower modem revenue and expected lower PC TAM in the second half of 2020 as the Windows 10 commercial refresh matures.

We expect revenue from our data centric businesses to be up high single digits for the full year as we capitalize on the secular trends that Bob outlined. We are expecting an exceptionally strong Q1 as cloud customers continue to build capacity and adopt our highest performing products. This will mark three quarters of strong cloud buildout and we expect more modest capacity expansion for the remainder of the year as CSPs move to a digestion phase. We are also planning for an increasingly competitive environment as we move through the year.

As a result of these dynamics, we expect total revenue to be more front-end loaded in the first half than we have seen historically. Gross margin is expected to be 59% for the year, down a point versus 2019 on both mix of products and the impact of 10 nanometer cost. Spending for the year is expected to be approximately $19 billion or 26% of revenue, down one point resulting in a flat operating margin of approximately 33%. We expect 2020 CapEx of approximately $17 billion, more than half of which is comprised of investments in fab space and 7 and 5 nanometer equipment. Free cash flow is expected to be approximately $16.5 billion as the flow-through from revenue growth and higher depreciation is offset by higher CapEx and rebuilding of critical product inventory back to more normal operating levels.

Let's turn to Q1. We anticipate a particularly strong start to another record year with Q1 revenue of $19 billion, up 18% year-over-year and well above normal seasonal patterns. This is being driven in particular by data centric revenue growth, expected to be above 25% year-over-year on continued cloud buildout and NAND bit growth. Our PC centric business is also contributing and is expected to be up more than 10% year-over-year on continued PC market strength, additional supply and higher modem revenue.

With strong top line growth and mix, we expect Q1 gross margin of approximately 61%, up three points year-over-year. Q1 operating margin is expected to be approximately 35%, up seven points versus last year on higher gross margin and spending leverage on higher revenue. Tax rate is expected to be 13% and EPS is expected to be $1.30, up 46% year-over-year. In summary, 2019 was Intel's best year ever and we expect a strong start to 2020 on the way to another record year.

With that, let me turn it back over to Trey.

Trey Campbell

All right. Thank you George. Moving on now to the Q&A. As is our normal practice, we would ask each participant to ask just one question. Operator, please go ahead and introduce our first caller.

Question-and-Answer Session

Operator

Certainly. Our first question comes from the line of Ross Seymore from Deutsche Bank. Your question, please.

Ross Seymore

Hi guys. Thanks for letting me ask a question and congrats on the strong end of last year and start to this year. George or Bob, whichever of you want to answer this, I want to go little bit into the trajectory of revenues. George, you gave some great color there on the two different segments, PC centric and data centric. But it appears, by the end of this year you could even be going negative in both of those segments year-over-year. So it seems like it's a pretty significant drop. I appreciate conservatism in the end-of-life on the Windows side of things. But how do you factor in the increased competition that you mentioned and the fact that shortages should go away so you could actually have some market share gains?

Bob Swan

Yes. Thanks Ross. Let me start, George. And you can chime in. First, thank you for the compliment on our fourth quarter results. When we look at 2020 demand cycles, we kind have three things going on that impact the first half to second half outlook. And George touched on a few of these.

But first, at the macro level, this insatiable appetite for data and the processing resources that need to go to make that data relevant, those trends continue. And we feel very good about how we are positioned to capitalize on this increased demand.

Second, as you know from a cloud perspective, which now is bigger and bigger part of our overall DCG revenue, we expect them to continue to benefit from the trajectories that that I mentioned initially. At the same time, you will remember from last year, our ability to protect the CSPs purchasing and then kind of digestion patterns is relatively hard.

So we look at first half to second half, Q1 will be in essence the third quarter in a row of real strong consumption patterns from the cloud folks. So we know from history that at some point they go into digestion mode and the buying patterns begin to slow down. And it doesn't impact medium or long term trends but it does impact cyclical trends during the course of the year. And we have tried to, based on our past learnings, take that into account as much as we can. So hopefully we are wrong. Hopefully, we are conservative. But at this stage of the game, that's kind of how we looked at cloud purchases first half to the second half.

The second thing, PC TAM, we think is going to be flat to down a little bit this year. And the expectation is the first half will continue to be Windows 10 refresh that George flagged. And we expect that to slowdown in the second half.

And then the third item is modem. As we go into the second half of the year, we expect modem volume to be lower as we phase out of that business as smartphone modem moves to the 5G world.

So those three things have us looking at the full year of kind of 2% growth and inherent in that is we know we have got a much more competitive environment. And our intentions during the course of year is to compete vigorously to protect our position while continue to expand as compute moves further and further away from the cloud out to the network and to the edge.

George Davis

Yes. And I guess I would just add that we feel really good about the year overall. It's just going to be a little flatter in terms of the pattern and certainly than we saw last year and certainly different than our normal seasonal pattern. But good strength growth in all of the businesses really outside the PC, which is coming across some headwinds from TAM. But we still expect it to work on gaining back share in some areas where it's had difficulties in the past as we can start to provide more units.

Bob Swan

And one last comment, I apologize. But I think just on a year-over-year basis, the comps in the first half of 2020 are going to be easier. And then after a very strong second half of 2019, comps will get tougher in the second half of the year. But, net net, as George shaped it up, we are looking for another record year in 2020.

Thanks Ross.

Ross Seymore

Thank you.

Operator

Thank you. Our next question comes from the line of Vivek Arya from Bank of America. Your question, please.

Vivek Arya

Thanks for taking my question and congratulations on strong results and especially the buybacks, the nearly 10% of shares retired in the last two years. Question. Bob, on 10 nanometer. I was in the slide, you mentioned 10 nanometer yields ahead right off expectations and you mentioned nine product releases on 10. Can you help put that in context? What does it imply in terms of the range of desktop and server SKUs? I think there is some speculation that maybe 10 nanometer might be a small node rather than a regular node? Or I guess, asked in a different way, what percent data of your sale do you expect to be on 10 nanometer this year and maybe even next year? Thank you.

Bob Swan

Yes. Well, first, we continue to make real good progress on yields on 10 nanometer. And that's been, after all the challenges we have had, that's been kind of a consistent theme over last the four to six quarter just on yields for 10. So we feel very good exiting the year and coming into this year on where we are on yields.

Second, in terms of the product roadmap, we launched Ice Lake for client in the fourth quarter. We launched FPGAs, Agilex products on 10 nanometer in the fourth quarter. And then through the course of this year, we are going to have successive of products of AI inference accelerator, 5G SOC that we are really excited about for the 5G network, GPUs launched and then last but certainly not least, bringing out Ice Lake server product in the back end of the year. So we have launched. The yields are good.

Designs across our portfolio of products are good. And we will ramp them up during the course of the year. But primarily in terms of volume, we will still be, the client business is the one we are going to ramp the fastest. It will the ramp during the course of the year. It will be on our second Gen of 10 nanometer or what will call 10+ in the second half of the year, which introduces a whole new level of performance for that product.

But in the aggregate, we won't have a huge percentage of our overall company volume in the second half of the year. It will grow as we exit the year and become a much bigger part of our overall volume in 2021.

And then last, I would just say that our intention back in May and we reiterated again today is that we want to get back to a two to tow-and-a-half year cadence. And shortly after launching 10, our expectations is we will have our first 7 nanometer product launch in the latter part about 2021 with CPUs to closely follow. So 10 is ramping. We will go to 10+ for clients and we will 7 on a two year cadence in 2021.

Vivek Arya

Thank you.

Bob Swan

Thanks a lot.

Operator

Thank you. Our next question comes in line of Blayne Curtis from Barclays. Your question, please.

Blayne Curtis

Hi guys. Thanks for taking my question and I would like to give congrats on the great results. Bob, maybe just following on that, because I remember two quarters ago you talked about Ice Lake taping out for servers in the first half. And there is a lot of different milestones, it gets confusing. When you say second half, do you actually, is that a volume ramp? Or is that when you actually expect the 10 nanometer servers to be out?

Bob Swan

Yes. It's a good question. And just a few things. I think first, in terms of how we deploy the technology. Today, our ecosystem partners have already received Ice Lake server samples. So that's kind the first step for us. And then what we indicated is, we will start production wafers in the first half of this year and that that will translate into production of shipments in the latter part of 2020. So that's a sequence of events. So production, we load wafers, we deliver samples, check. We load wafers first half. We deliver production output latter part of the year. So that's been pretty consistent with how we have been trying to ramp this over last the several quarters.

Blayne Curtis

Thanks for that. And then just a clarity on the client side. I am surprised by the seasonality but I guess I understand with Win 10, with that growth or the strong year-over-year you are seeing in Q1, are you still shorting the market, I guess?

Bob Swan

Yes. First, we came into 2019 looking at kind of a flat PC TAM and when all is said and done, we end the year with about 3% growth overall and even stronger in the fourth quarter. So it's had a real strong, the market has had a real strong year in 2019. At the end of the year, as we indicated, we were still constraining our PC customers. And I would say, we left some backlog on the table that we are quickly trying to fill as we come in to the first quarter. So that obviously a disappointment in terms of our serving customers at the end of the year but adds to volume in the first quarter, first half.

As we go through the course of the year, just from the macro level, we spent record capital in 2018, again record capital in 2019, as George laid out in his prepared remarks. We have record capital in 2020. And it's really geared to ensure that we never constrain our customers' growth. And our expectations in 2020 is it will have high single digit PC unit volume and against a market that we expect to be flat to down slightly. So we are going to be in good position and meet the market demand in 2020. We look to deliver on our full year outlook and to begin to build the inventory levels to more natural position so that the mix dynamics of what product we sell and when, we can manage the volatility in that much better than we have been able to in the fourth quarter. So supply constraints, we are maniacal about eliminating those so that we can meet customer demand and never have to worry about it.

George Davis

And we will expect to see more small core in the second half which may be part of the dynamic. We haven't really been in the serve that end of the market in the way that we would like to. So that maybe part of what you are looking at.

Blayne Curtis

Thanks.

Bob Swan

Thank you.

Operator

Thank you. [Operator Instructions]. Our next question comes from the line of John Pitzer from Credit Suisse. Your question, please.

John Pitzer

Yes. Good afternoon, Bob and George. Let me add my congratulations to the solid results. I guess I have got a similar question to Ross' first question on revenue but mine is going to be on gross margin. If you could just sort of look at the Q1 guide of 61% versus the full year of 59%, I am just trying to understand the puts and take that brings gross margin down throughout the year and exclusively how much of this is kind of you guys baking in some increased competition? Or how much of this is a pull-forward of 7 nanometer? Because 59% is pretty close to what you talked about at the Analyst Day, kind of flattish year-on-year but it is slightly lower and you were pretty explicit about gross margins going down in calendar year 2021. I am just kind of curious is to whether we are getting a pull-forward of the 7 here or what are the puts and takes as you think about gross margin throughout the year?

George Davis

So let me just start with the full year because I think that will be helpful. At the highest level, what you are really seeing is an impact largely related to 10 nanometer cost that are coming into the system during this year and increasing as we go into the second half for all the reasons that Bob laid out. We are actually getting some help that is moderating the impact of that from improving NAND pricing year-over-year, that's actually going to help us on gross margin and lower modem mix particularly in the second half of the year, but in the year overall. So those are the big drivers of modems and that nets out to about a 1% reduction. And in Q1, what you really seeing is lower modem and lower variable comp being the reason that we are moving up a point, say, from Q4. And so nothing unusual other than normally you would have expected to see a much bigger drop in Q1 gross margin because of the mix of products as it's obviously the seasonally down quarter for many of our businesses.

Bob Swan

George, the only thing that I would add is, inherent in our guide is our expectations for lower ASPs and it's a function of two things. One that George mentioned, which is we will eliminate the supply constraints and begin to get more volume on small core which, as you know, has lower ASPs and secondly we are anticipating a more competitive environment as we go to the course of the year. So to kind of bring it back, we are ramping 10 is great and we are ramping 10 in the second half of the year. And in parallel with that, we are investing in 7 in 2020 and in 2021. And those are the things that we flagged back in May at the Analyst Day. And I would say the one thing that's really changed since then, is that our yields on 10 are just a little bit better and they are contributor to slightly better gross margin in the second half of 2019 and we expect that to continue to be a contributor this year as [indiscernible].

John Pitzer

Perfect. Thanks guys.

Operator

Thank you. Our next question comes from the line of Harlan Sur from JPMorgan. Your question, please.

Harlan Sur

Good afternoon and good job on the quarterly execution. On the full year guide for data centric up high single digits, I appreciate the first half, second half profile on DCG. But how are you guys thinking about growth of DCG within that framework for the full year? Is it in line with the sort of high single digits growth for data centric? And then, within that framework, how do you see the growth trends in other DCG segments, i.e., enterprise and comms service provider? Thank you.

George Davis

Yes. So the way we would look at DCG, I would say the growth rate will be modestly lower than the overall growth rate. You got some very high growers contributing to pulling that up a little bit. So a little below the average but still attractive growth in the year.

Operator

Thank you. Our next question comes from the line of Stacy Rasgon from Bernstein Research. Your question please.

Stacy Rasgon

Hi guys. Thanks for taking my I question. I wanted to ask a bit about the capacity additions. So I kind of get that adding 25% wafer capacity to support your own volumes going up high single digits in a market that you think is down. Does that imply that you are actually going to be overshipping the market this year as you sort of rebuilt those channel inventories? What does that imply if you are going forward into 2021, where the PC market itself may still be in decline and you will have higher capacity and ideally like die shrink at that point? Like how do we think about that?

George Davis

Yes. I hear your point. One of the things that we mentioned is, we are going to be producing in order to build inventory levels back up in the year. And so in the second half of the year, we would expect to be able to bring both our server products and most importantly, our PC products back to a more normalized inventory level. So we are being up in the high single digits is meant to allow us to not only satisfy our customers but also rebuild inventory. So your math is correct.

Stacy Rasgon

So that's your own inventory? Or inventory in the channel? You are going to be selling that to the customers or keeping it on your books?

George Davis

It will be our own inventory. And then will have to see, if you look at some of the channel information, you might the customers trying to build some inventory as well. But when we are talking about building inventory, it's our inventory levels.

Bob Swan

I would also say, the channel inventories exiting the year for PC, I would say, are relatively low. And that's on us. So I do expect during the course of the year, we will build our inventory levels to more deal with spikes in demand. But at the same time, we expect the channel to be at more healthy levels as we exit 2020 and then through 2021.

And then just the one other thing I would mention, as we think about the business overall and kind of the demand signals, we continue to make really good progress on the comms sector, particularly with the growth in the network and the role that we play and the transition to 5G. And we characterize as the intelligent edge, we delivered double digit growth with IoT for the last several years. And network and IoT are bigger and bigger parts of our business.

So we think we are very well positioned. So when you think about PC volume, up or down over time, we got this bigger growing aspect of our business that places demand on our manufacturing footprint. So that's the only other thing I would add, Stacy. Thanks.

Operator

Thank you. Our next question comes from the line of Joe Moore from Morgan Stanley. Your question please.

Joe Moore

Yes. Thank you. I guess going back to the PC constraints that you are seeing. So you would like to build your inventory back up in, I think you said, early in year. But it seems like we are just a few weeks from you going out to customers and telling them that you would be short. So at what point can they start to add inventory? Are you forecasting that would happen in the second half, in the first half? And then do you feel like when those constraints are eased, that you will be able to take back unit share on the client side?

Bob Swan

Yes. I think first, it was middle of November, I should say, that we went out and we want to be able to provide as much advance notice to our customer base as possible if supply is going to constrain their ability to grow to give them time to deal with it. And in November, with strong data center growth, PC demand continuing to grow and a factory excursion, combination of those things we felt it was very important to get out to our customers as soon as possible. I think as we close the year, one of the favorable things was we got more output from our factories and because of the capacity we put in place in 2018, 2019 and going into 2020, we are really beginning to build back the capacity to meet the demand. So our expectations are, we will have sufficient supply in the first quarter or I should say sufficient supply throughout the year. I think our challenge is really going to be on two things, particularly on Q2 with PCs and that is linearity, not just the supply in the quarter, but week-on-week supply as our customers are hoping for. And then second, particular SKUs or mix, making sure that we have the right product mix. So we will have enough capacity. I think Q2 will be a little challenging as we try to deal with product mix and linearity but overall we really plan to be out of the supply constrained environment in 2020.

Joe Moore

Okay. And then are the shortages anywhere other than client? Is it entirely client? Or are there anything in server or any other products?

Bob Swan

No, we are in pretty good shape on server. And I think that going with 19% growth in fourth quarter depleted our inventory levels. So when you have that kind of spike in demand, we are not perfect across all products or all SKUs. But server CPUs, we really prioritize that and try to put ourselves in a position where we are not constrained and we are in pretty good pretty good shape. Pretty great shape macro. Micro, a few challenges here and there. But server CPU supply is pretty good.

Operator

Thank you. Our next question comes from the line of Christopher Rolland from Susquehanna. Your question please.

Christopher Rolland

Hi guys. Thanks for the question. On CapEx, specifically $17 billion, you mentioned some of the parts there. But how do we divide that up between 7 and 5 versus you know what you are doing with 10? And I don't know if you are still adding some 14 even. And as we think about CapEx moving forward and capacity here, how do you guys feel about outsourcing non-CPU products like for example, PSG? Could you outsource that to foundries? How are you thinking about CapEx going forward? Thanks guys.

George Davis

Sure, why not. Maybe I will take CapEx and Bob you can cover the outsourcing piece. So on CapEx, part of the reason we are expecting $17 billion this year is we are building more space. Some of the longer lead time items, one of things that's really impacted us in terms of closing the gap on customer demand and our ability to support it has been not enough space available to fill with equipment which you can do in a much shorter time frame if you already have a space in place.

So as we said, over half is going to be for space and then for 7 and 5 nanometer equipment. As you know, we have got all three nodes right on top of each other. And so we are going to be perhaps a little less capital efficient, when you combine that with the fact that we are trying to close the gap on meeting our customers' requirements. And I think all of those things add to the 417 billion. But also we are building for the future to make sure we have the kind of capacity shelf space in place where we can quickly add capacity to meet demand if necessary.

Bob Swan

Yes. And the one other thing is maybe with the exception of litho, the reuse from one node to the next is still relatively high. So what we put in place for a 10 or a 7, for the most part, we can continue to reuse those tools for next generation.

And the second part of your question, we have historically leveraged third-party foundries for a long time. And it's always been in the probably 20% to 25% of our overall supply we get from third-party foundries. And we continue to look at, particularly in the non-IA, non-CPU products, we continue to evaluate, in a capital-intense business, where is the best place to have these things manufactured. That's an ongoing process.

And I would say, all else equal, the breadth of our portfolio as we play a larger and larger role in our customers' success, we build more products. And with that, the evaluation of what we do inside and what we do outside is a full-time effort at our end. So we will continue to do it. We will continue to prioritize where we can get the best, the most efficient output and make those decisions over time.

Christopher Rolland

Great. Thanks guys.

Trey Campbell

Jonathan, I think we have time for one more question and then we will turn the call back over to Bob to wrap things up.

Operator

Certainly. Our final question then for the day, comes from the line of Timothy Arcuri from UBS. Your question please.

Timothy Arcuri

Thanks a lot. George, I wanted to go back to gross margin. I think last quarter, we were talking about 60% for this year and we are now 59% for the year on a little bit better revenue. And yes, it's only 100 basis points less but obviously people are concerned about the competitive environment. So can you just talk specifically to what changed? And maybe as you exit the year, it looks like that number has to be in the 57%, 57.5% range, which is about where you said next year would be, 2021. So is that still a number for next year too? Thanks.

George Davis

Tim, let me just kind of correct the history just a little bit. What we said over the last couple quarters was, when the question was, A, when we look at 58%, which is what we quoted for Q4, does that mean is that the number that we should be expecting for 2020? And also with 57% on the table for 2021, is that where we are? And I said, we will be closer to 60% than we will be to either of those numbers. And so 59% is very much in line with what we believe we were guiding.

So I don't really feel like we were down a point. But clearly the fact is that we talked about everything from product mix to 10 nanometer mix. Those are all things that are having an effect, particularly as the year plays out and also the shape of the year. BOB talked about some of things where we will be in, the mix in the first half is going be much richer than we would normally have seen and we may see a little less rich mix in the second half. So I think really nothing more than those type of movements which are very much in line with what we were thinking we would see this year.

Timothy Arcuri

Awesome George. Thanks very much.

George Davis

Yes. Thanks Tim.

Bob Swan

Trey, maybe just to wrap. First, thanks for joining us. We feel great about how we wrapped up the year. Our best quarter in the company's history, 2019 the best year in our company's history and our outlook for 2020 is, we will do it again. We expect it to be another record year. And you know, our ambitions have just never been greater. As you know, we are going after a larger TAM. We are expanding the role that we play in our customer's success. We are leveraging our CPU architecture but also evolving beyond the CPU to GPUs and visual processing units as workloads continue to evolve. And given the overall dynamics of the industry, we feel very good about where we stand and we realize it's an increasingly competitive world. We feel like we are well-positioned to deal with it. So thanks again for joining us. Our focus is on obsessing about how we serve our customers best and we expect to do that better and better and that will be what really drives the growth of the company. So thanks and we look forward to another deposit 90 days from now.

Trey Campbell

Thanks Bob and George and thank you all for joining us today. Operator, can you please go ahead and wrap up the call.