

ASI Technology Summit Q4 2021

Technical Advancements of Intel's New 12th Generation Core Processor

0:04

Well, good morning, everybody. This is ... Kent Tibbils with the ASI.

0:06

I want to thank you all for joining us today for Day one of a of Q four technology summit. And this is a big day.

0:16

It's actually a big week until announced last week, the launch of their new 12th generation core processor.

0:24

So we're really excited today to have David Bradshaw joining us to talk about the Intel processor, what the new technology is behind this new CPU and be able to give us all information to help us move forward and be able to engage with our customers on the new processor.

0:43

So, this is a big day, and we're really very excited to be able to, to kick off our Q four event with Dave doing the lead off presentation.

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So, we're going to get going with his presentation here pretty quick.

0:58

There's a couple of things I wanted to announce before we did David's seminar session.

1:05

First, if any of you have questions, you can submit your questions through the questions chat box.

1:12

I'll see the questions and be able to ask David the questions as we go through the session, So if you have questions, go ahead and type those in. Don't wait all the way to the end, Be sure to get them in as soon as you're thinking about the question, then we'll, we'll be able to make sure we get that app.

1:30

Secondly, is that we do have prizes that we're giving away this week. Today, for this session, we're giving away a notebook.

1:38

So this is an Intel 15 got fixed nook notebook, so for those of you that joined us for the next session, which was about two weeks ago, where we did the, the build and the video kinda session that we had with Barry. We did that a couple of weeks ago. He talked about the X 15 Notebook and that for Notebook, that we'll be giving away.

2:00

So that's a gaming notebook and has an RTS 3000 series graphics card in an Intel processor.

2:07

A Really nice notebook, so we'll be giving that away today.

2:11

So, for those of you that join us and stay with us, until the end. You'll automatically be entered in, the drawing for a chance to win that notebook.

2:19

For the rest of the week, we have the other sessions we have tomorrow. We have micron. There'll be talking about DDR five Memory, which will be very important because that goes along with the 12th Gen Processor.

2:30

On Wednesday we have Toshiba joining us.

2:33

We're really excited to have for Toshiba. There are new hard drive partner.

2:38

So there'll be talking about their hard drives and what they have for enterprise and surveillance and all those things, and then on Thursday we have Supermicro joining us great prizes for each one of those sessions. So you'll be sure to want to attend to get entered into the raffle for those.

2:54

So, in just a second. I'm going to kick everything over to David, and let him start.

2:58

I do want to tell everybody, we've got a couple of videos, now that we're going to show that David is going to play. And there's a few things I wanted to let you know about the videos.

3:09

For those of you that are on Bluetooth headphones such as myself, we have discovered that the audio portion of the video, for some reason through the platform, does not play if you have a Bluetooth head set.

3:24

So, if you have Bluetooth, like I do, you'll be able to see the video.

3:27

You just won't be able to hear it if you have hard wired speakers.

3:32

Or you have speakers built into your monitor, and that's what you're using to listen to this event. You'll be able to hear the audio just fine. But for those of us on Bluetooth, unfortunately, we won't be able to hear, will just be able to enjoy the visual experience of the video that David's going to show.

3:48

So with that, with all the kind of logistics things done, I'm going to go ahead and kick everything off to David.

3:55

Everybody really came here to hear you, and not me. So, David, take it away.

4:09

We all think we can wear a lot of hats, that we can do it all all at once, but tasks pile up, and we lose focus on what matters most. We can't do at all until now, because we just made the biggest step and R X 86 architecture. Introducing 12 Intel Core processor Performance course. Less efficient course. Innovative performance, hybrid architecture, high performance, single thread, max burst of our scalable multi thread dedicated offload throughput efficiency. Directive Vector Technology intelligently assigns the right task to the right course. At the right time, to optimize real-world, everyday performance, performance, and deficient course divide and conquer. So background tasks stay in the background, and just focus never wavers. Welcome to next Gen Computing Power that works the way you deal with the process Dynamics.

5:11

Our range for thin and light, Intel based laptops, the most advanced chip we've ever built. Device. So you can conquer this 12th Jen and so forth. Do something, wonderful.

5:45

Hi, and welcome, Thank you for, for joining.

5:48

Hopefully, you can all hear me OK, and we managed to make the transition from the, from the video back to the presentation here, and as smoothly as we can hear you. Great.

5:59

Good, OK, thank you. Just to show, this really is live, right?

6:03

So, but, yes, As Kent mentioned, my name is David Brett's, you're actually manage your PC business across across distribution and a very exciting week last week.

6:16

A lot of build-up in the press, and other places, of course, and some of our activities here with ASI Along the way as well.

6:23

But, you know, very excited to launch 12th gen core last week, and just from a timing perspective, in case you didn't know.

6:32

So the launch was last week during our Intel on innovation event, and if you have the chance to, had the chance to watch the keynote with with Pat and GB, and some of our executives during the launch, that was great defeat. If you want to go back and look at that, I would highly recommend that. It's, it's all available, online.

6:52

So our so-called ad embargo lifted as they spoke last week and the sales embargo for 12th gen core actually lifts November four flights of this week. So, it's November already, can you believe?

7:07

But, yeah, very excited about the launch site wants to spend today, talking about what 12th Gen is, perhaps in more detail than you may have heard before.

7:18

Given the fact that we, we were pre-launch, I also have literally hot off the press, our latest competitive information that shows how 12th gen is performing.

7:29

This is the very latest greatest that AMD has to offer dropped into our inboxes here internally, literally, this morning. So you're the first to see that.

7:38

So I'm very, very pleased to be able to show that today.

7:43

And of course, as we go here, want to take questions as you have them.

7:49

OK, so let's move in with onto the presentation then, and in case you didn't see it, you know, the headlines for 12th Gen core.

7:57

Now, we're reclaiming the title of World's Best Gaming Processor again, and just in case you hadn't heard this, but, we, for this launch right now.

8:10

Through the rest of the year, we're only shipping RK SKUs that saw over ..., both I five, I seven, and I nine K skews, and also, our K F. skews if you're familiar with the F series.

8:23

So, the rest of the Stack from Intel, around 12th Gen, on non case cues are going to actually launch at CES in January, which, you know, all of a sudden isn't very far away.

8:35

But this is very much a gaming, content creation, themed launch, if you will, give them that, we're only shipping case use, so far.

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And some of the incredible invent advancements we've been able to make in terms of the architecture design, which we'll look at in some detail today, really allow us to reclaim that best gaming CPU. Crown, again, which is, which is fantastic.

9:01

We also have improved dramatically, the over clocking experience, so We'll talk about what we did to, to tweak that, and this is, again, by far, the best of o'clock in the experience you can have in the market today.

9:15

And this, apart from gaming, is also a giant leap in terms of content creation.

9:22

And we'll talk more about our performance around content creation as well. Yeah.

9:28

So, I just wanted to remind everyone of that.

9:31

The Roadmap, really quick, because this has been a busy roadmap year, and we maintain that pace as we go into next year, as well.

9:38

So, on the top section of the roadmap, here, I don't know if you can see my, my arrow, my, my mouse moving around.

9:46

But our X series, which, if you recall, is our high-end desktop, the very best of the best, if you will. We've had Glacier falls in market for some time now, and we're going to update that line, the X Series line with Sapphire Rapids coming in Q three next year.

10:04

And then the series, which is what we're really talking about today.

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You can see we have an older Lake S, which is which is 12th Jain core, which just just launched.

10:15

Follow on to 12th Gen, which maybe 13th, Jim, we haven't decided yet, but.

10:21

Will be Rep to lake, which is going to ship in Q three next year.

10:25

And prior to 12th Gen, earlier this year, we launched Rocket Lake, which was the 11th genco, and so we have 11th Jam. We have 12th Jim product to market now, but we also have plenty of tense gen as well.

10:38

So I should stop for a moment and just talk about supply in general and with, as everyone knows on the call, he had come from a very difficult place in terms of our own supply over the last three years Now. This quarter, we're actually seeing that lift pretty dramatically.

10:55

So in Q four until Q Q four, where we, where we sit today, we're actually supplying 50% more supply desktop CPU supply to the channel, than we did in Q three.

11:09

And so we're very much passed the, our own supply issue from that perspective.

11:14

Of course, we're very aware of the fact that there's plenty of other bottlenecks in the food chain here, across the ecosystem. Whether you're looking at memory with GPUs or whatever it is you're looking at, there are shortages that. we know, that. That's an unfortunate reality of the world we live in at the moment. But from an Intel perspective, it's all systems go.

11:36

So, again, this quarter, we have plenty of 10th Jan 11th, Jen. And we have the 12th gen case cues that we have in market.

11:45

I'm just FYI for the first time in a long time.

11:50

I can remember, we've actually got allocation for what we call the Broad Channel.

11:54

So no longer just for the big guns, you know, the component Retailers like Amazon, a new egg, or the large integrators. But we actually have allocated supply now across the broad channel for, for all types of customer, which is, again, very good news.

12:13

OK, so let's jump into the detail on, on 12th gen core and what it is, and this is just a quick summary, and we will dig into each of these as we go here, but this is very much a single, scalable socket system on a chip. Architecture.

12:33

Built on the Intel seven process.

12:35

We'll talk more about the Node process in a moment, but this is the first product to be built on the Intel seven node process that we talked about in some detail earlier this year.

12:48

We will talk about the types of cores that we have in the CPU in a moment, but this is our first performance Hybrid CPU, where we've got 16 cores across up to 16 cores across a variety of different functions those cores actually provide.

13:09

And we have a product feature called the Intel thread director, which actually looks at each of our course, looks at the type of application that's running and decides how to direct traffic accordingly.

13:19

So, a very important advancement that we'll talk more about in a moment.

13:23

So as we look at these new performance costs, we were seeing a 19% performance lift as a result of the new architecture that we're bringing to market.

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And we have, as I mentioned, these new, efficient cause, that really do a lot to improve multi thread performance.

13:43

Up and down the stack. So, that, in its very nature, is what the Hybrid CPU is all about.

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And as I mentioned, this is a very scalable solution.

13:52

So, yes, today, we're launching last week, we launched 12th Gen for desktop, and which you can see here on the left hand side of the chart.

14:02

So, using the ...

14:04

1700 socket a new socket, by the way, for 12th Gen, and this also scales across different devices as well.

14:11

So, the same architecture is going to be used for mobile and also for ultra mobile as we roll those CPUs out over the next weeks or months.

14:24

So what's new, then, in, as far as 12th gen corps is concerned, as far as architecture improvements on the CPU itself, concern, again, the introduction of the Intel seven process technology.

14:36

We have these hybrid, this hybrid architecture, with what we call P, and E, causes, performance, and efficiency. Cause you have intel thread director that I mentioned a moment ago.

14:46

And we have a new, a completely redesigned core architecture to accommodate this.

14:51

This hybrid a CPU that we're talking about, and now we're up to 16 cores and 24 threads. So in the previous generation 11th shank or rocket, like, we were only up to eight cores.

15:02

So, this is a massive advancement in terms of the core count and we have some some new technology that we're introducing around Intel smart cash as well.

15:15

So, what about the platform improvements and again, some massive advances here and so not least of which is the introduction of support. For DDR five.

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You know, we're not confused. We understand the shortages that exist, around DDR five in the market today, which which will improve.

15:33

Good to hear that micron's coming in to talk about that DDOT five products later this week.

15:40

What I would say is that while most of the market in Q four is going to be focused on DDR for probably about 90% of the market non-zero percent of the market is going to be on DDR four still.

15:53

That 10% slither of DDR five is going to be growing as the quarter goes, and certainly as we go into Q one and Q two next year.

15:59

So, it's an important platform improvement will also first to market with support for PCIE, five dot O, and up to 16 lines.

16:10

So, again, another first, in terms of, you know, being being able to address the market with, with these new technologies we're offering for the first time, new, integrated WI Fi Cixi support.

16:27

And so on and the bottom, the bottom of that list actually shouldn't, We shouldn't miss this one out but and we also include the Iris ... graphics, the Internal Graphics, Iris **** where you're using a non F skewed.

16:42

So, that, as we've been talking about all year, some very important advances in terms of performance around Intel ... integrated.

16:51

Later on, I will talk very briefly about Arc and our new discrete graphics solution as well.

16:58

So all in all vastly improved CPU that we're bringing to market here, that really puts us on very firms position in terms of where we sit in the market competitively.

17:14

This is another representation of the same type of information.

17:17

And I know a lot of folks like to see this this diagram that again, you can see in the blue areas, the parts that I call that already in the last slide as being as being new and enhanced and how we're supporting that.

17:31

Not only on the CPU itself, but also in the the new 600 series, chipset which the boards for which have have also started to ship in the market.

17:44

A much better supply story around 600 series bullets by the way.

17:49

As opposed to the DDR situation but. And just to make clear in case it wasn't to anybody.

17:55

But in terms of board support for DVR, there's a specific board.

18:03

For DDR five and a different board. For DDR for, you can't get a board to support either or both.

18:09

Sorry, come to the Board to support both, it's going to be either or so. I just wanted to make sure that was that was clear.

18:17

And as we started to launch here, we're very proud of the fact that we have a very broad ecosystem of support, you know, whether we're talking about vendors, that are out there.

18:29

Now distribute create distribution partners, such as ASI.

18:34

As well as, you know, board manufacturers. and the rest of the OEM community component retailers. Everyone is lined up already and ready to go, as far as support for, for 12th jank core.

18:48

I mentioned our no technology earlier, and if you go back a few weeks ago, a few months ago, maybe two on the Intel architecture day.

18:58

Earlier this year, we did announce these these new Node naming conventions and 11th Janko was based on 10 nanometer super sin.

19:13

And if you watched the video last week and the the Intel on innovation, you've been Pat went into some detail about these different node types. But as I mentioned earlier, 12th Jain cause the first product to take advantage of the until seven node.

19:30

So this was previously referred to as enhanced superfan and as we look out in time, some very exciting developments and in a very short period of time, in terms of how we're rolling out these, these new Intel nodes. So again, 12th Jain core is on the Intel seven node.

19:50

I mentioned earlier, these P cause an E cause.

19:55

So wanted to spend a moment here talking about what these are and why this is such an important advancement in terms of CPU technology.

20:04

The performance cause really, as the name suggests, focus that, you know, being being great, single threaded performance.

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So if you're playing a video game, for instance, the, the Intel technology looks at the game that's being, that's being played, decides which calls are going to be best for that game.

20:27

And dedicate those performance cause to, to that effort, Whether it's a game, or an application, or whatever, it might be.

20:34

The efficient cause, on the other hand, a really focusing in, on that kind of moment, mundane, day-to-day, background, task driven type things that the, the PC is doing.

20:47

So, that being the case.

20:48

Those E cause can focus on, on kind of the normal activity of the PC, and leave the peak caused to really be focused on the content creation or the, the, the gaming that may be going on, or other applications that may be maybe being run on that system.

21:06

So P cause, again, excellent in terms of their single threaded output.

21:12

And the cores are really focused in on some of that multi threaded background activity that is going on in the PC.

21:18

That's what makes this very unique architecture and a real shift in terms of this, this hybrid offering.

21:27

So let's talk about Intel thread director for a moment. I'm going to run a video here in a moment, because it doesn't much better job of explaining than I do. But, again, this, this is the technology that really looks at these cores in this hybrid environments and decides that given the application that's running, now, how should the traffic be directed.

21:47

So, I'm just going to pause for a moment, and hopefully you'll be able to, to see this, this video run.

21:55

So, just a reminder, everybody.

21:58

The video appear on Bluetooth. You might not be able to hear the video. So, there could be video issues with the, with the or audio issues, with the video. Just as a reminder.

22:23

Now, more than ever, people depend on their PCs to learn, work, create and have fun. And it's vital that PCs reflects the real-world, multi-use experiences people do every day in order to keep up with their busy lives. To stay ahead of the growing demand for compute performance, PCs must become not only faster, but more purposeful and adaptive, Introducing the all new 12 gen Intel core processors. Intel's most significant shift in X 86 architecture in more than a decade. These processors introduce Intel's first performance Hybrid Architecture, with to all new core micro architectures instead of one. The Performance Score or P Core is the highest performing CPU core Intel has ever built, maximizing single thread performance and responsiveness.

23:18

The efficient core core delivers scalable multi threaded performance plus edition, offload a background tasks for modern multitasking. In order for these cores to work seamlessly with the operating system, Intel has built new intelligence directly into the hardware called Intel Thread Director. By carefully monitoring and analyzing in real-time Threat Director guides the operating system to place the right application threads on the right core at the right time to deliver incredible performance and responsiveness. Based on the workload, background activities and tasks that can be run in parallel like image rendering may be efficiently offloaded to the course, unlocking the massive performance and responsiveness of the B Corps for Compute intensive workloads like four K gaming and three-d. design. 12th gen Intel Core processors are Intel's revolutionary. new approach to X 86 architecture. Dynamic, adaptive, and purpose built for real-world performance.

24:22

Unleash think human potential, like never before 12th gen intel core processors, delivering superior performance, where you need it most.

24:43

OK, her Flamed back, you can see that, OK, Go through the good records.

24:49

OK, thank you, hopefully the quality was, was reasonable, so, yeah, Intel thread director, very important.

24:55

New technology that we're making available with 12 chain core.

24:59

Um, and actually, can, I'll pause for a second? Are there any questions at this stage?

25:06

Hi, yeah, we've got some questions.

25:08

Um, the, uh, the Intel seven node that you talked about is that's still 10 nanometer or is that actually seven nanometer?

25:18

Yeah, it's a good question and you know, in the old way of how we used to define things and it's 10 nanometer.

25:27

So.

25:28

but one thing that was made very clear on the Intel architecture day when we introduced this, this new nickname Node Naming Convention, was that actually that not everybody's node is defined equally. right. So, we would suggest that our Intel 10 nanometer is actually more similar in nature and performance to others seven nanometer.

25:52

So that was the reason for kind of vacillating a little bit on in terms of the actual naming convention, but yes, in the in the old language, it was 10 nanometer, OK.

26:05

And we had some questions about DDR five and DDR four and you pretty much answered those, but I do want to ask are, Um, Ask those, again, just in case some people.

26:18

I didn't hear your earlier comment about that, but you said that the CPU, the 12 ... processor will support DDR or DDR five Memory.

26:31

You also mentioned that that was dependent on the motherboard.

26:34

So the motherboard manufacturer decides which memory is going to be supported.

26:40

Is this, is there a different version of the CPU?

26:44

So, or is the CPU it doesn't? It doesn't matter just hits the motherboard that matters.

26:49

Yeah, exactly. It's for the CPU. It does not matter.

26:52

It's, It's a It's a board support issue.

26:56

So, Yeah. And that's not too uncommon, right? We've seen that in previous generations at DDR as well. So.

27:04

But it does, yeah, we understand it does present more of a headache in terms of inventory, how we talk to the market, about what's available.

27:13

And for that reason, given that, you know, again, only we believe only 10% of the market, this course will be detail five, STTR four.

27:23

Um, Most of the collateral and we'll show some here today, particularly the competitive stuff. We're really focusing on the the advances, around DDR for not not really ..., because we realize that ... isn't really a plot, A play for the broad market until perhaps early next year.

27:43

So we have some other questions coming in about the about thread director, and I think you're going to answer those now. So, I'm going to hold off on those questions and let you go ahead and go through that part now. And if you don't answer those questions, we'll ask at the end. Why don't we go ahead.

28:00

Yeah, and I honestly don't have too much more to say about thread director.

28:03

But, you know, you saw the video, you can see the screen here, and some of the, the key benefits around around thread director, and how important the feature it is actually in this brave new world of the hybrid CPU.

28:21

OK, let's, let's move on then.

28:24

So some improvements around cache, as well.

28:27

And so our core cache architecture was changed and improved for this generation of products as well.

28:35

Again, it really had to be given that we now have these, this hybrid CPU and performance cause efficient cause.

28:43

And it, really, what it's about is delivering this increased level of memory capacity and reducing latency, particularly around where this application is being run that need, you know, high frame rates like particular games that might be being run.

29:03

So given this is really an over clocking launch, we added new features, new capabilities around the overcooking capability of the CPU.

29:15

So we are adding the same over clock and capabilities to the efficient cause, not just the performance cost. So it's available, for example, up to 16 cores on all, cause not just the the performance cause memory over clocking, so supports around video five o'clock in addition to ...

29:33

for the clocking, support for ex MP three dot O on video five and dynamic memory boost as well.

29:42

So so all of these things together collectively, vastly improved the other cooking experience and of course the types of speeds that can be achieved.

29:53

So I just wanted to quickly list the all of the SKUs for 12th Jain core that are available today.

30:01

And if you're not familiar with with how Intel sets up skews the the eff.

30:09

On the end of some of these offerings simply means that CPU does not ship with Intel integrated graphics on the CPU.

30:16

The non SKUs, for example, this one at the top the 12 900 K, does include the Iris acce integrated graphics.

30:25

You can see here we have 12 900 K 12 700 K and 12 600 K and their associated SQ variants being offered today in market.

30:38

OK, let's just briefly pause and spoke about Arc then, and for a long time now it seems people have been talking about the introduction of Intel discrete graphics.

30:51

A year ago we launched the first iteration of that technology with the integrated graphics that came part of Tense Gen Core for Mobile and particularly the the Evo offerings.

31:05

A few weeks ago again, at Architecture Day we announced the brand name for Intel discrete Graphics, which is until arc.

31:15

Again, this is going to be launched at the beginning of Q one.

31:19

We're going to make a large announcement around arc, um, at CES and the plan right now is to actually start shipping products mid Q one. So, we're very excited about the, this discrete graphics card offering.

31:36

We are going to, in terms of go to market, follow others in the, the discrete GPU market today.

31:44

So, that will have a very small amounts of Intel box product for that and so on, But the vast majority will be supplied by the GPU odeon that are out there, the usual suspects.

31:58

And just to give you an idea of the roadmap for for arc, and, again, this plays very firmly into the into the gaming space, right?

32:05

But the DG two, which was the code name we were using for the last year, for discrete graphic shipping early next year, has been given the codename alchemist.

32:19

So, obviously, the overriding brand name associated with Intel discrete graphics, the version of ..., the shipping beginning of next year, is Alchemist.

32:29

And the, the, the next version of our committee is going to be codenamed back from age. four interjection in 20 23.

32:39

So, yeah, Very excited about this.

32:42

And given a lot of the shortness in supply around GPUs today, I think most people would agree that, you know, the sooner we can get these in the marketplace, the better.

32:53

OK, let's talk about competitive positioning, then, for a moment, and this is the, that, the hot off the press information that I talked about earlier, here in the presentation, and, um, what we want to illustrate here, we'll do some compares, you know, Gen Z gen, then, we'll compare ourselves with the very best that AMD has to offer as well. So, the message here is that Moore's Law is very much alive and well.

33:21

Now, as you look at how we, we measure how we benchmark, in, this case using cross mark is the is the benchmark software, 11th, Jan and 12 jan, across the product families.

33:31

Some significant gains here, in terms of the gentoo gem performance that we were very pleased to see.

33:38

And we wouldn't expect anything less, but these are, these, these are vastly different games, so for example, if you look at 11 600 K on Rocky Lake as the baseline 12, 900 K, and there's a 33% improvement, in terms of overall performance, in CPU will, those are, those are highly significant gains.

34:01

Then if you look at the same setup, and in this case using sis mark is the benchmark software a very, very similar story in terms of the Gen two gen improvements in the end performance.

34:16

OK, so let's, let's start, then, looking at the comparison across vendors.

34:23

And what you can see, here is a platform comparison that allows you to look at features and offerings for the AMD 5000 Series, which is their very latest and 12th gen from Intel.

34:36

So, if you look at the core count and the thread count, a very similar story here, performance wise. Intel certainly has the edge.

34:44

eight AMD on 5000 is still stuck at DDR for, Again, we are offering DDL five on 12th gen.

34:53

AMD is offering Thunderbolt four as we are, but we're also adding USB for two to the product lineup.

35:01

As far as connectivity's current concern, AMD has their own variety of Wi-Fi six E.

35:07

We're offering an Intel killer, WI fi Succe, which is really not just a larger spectrum, but also gaming traffic prioritization across the Wi-Fi network.

35:20

Using that killer technology that AMD does not have today.

35:25

And if you look at the AMD 5000 Series, of course, they don't have any integrated graphics and we're offering until iOS XE graphics for 12th Jain. Cool.

35:37

So then if you look at how the brands, steck, Brian, and, you know, I think you may have heard me talk before, about the fact that AMD tries to align 5, 7, and nine.

35:50

Excuse me, With an Intel Core, I 5 I 799, and we all know that's simply not the case.

35:56

We looked at 12 gen core performance.

35:59

The way the brands lineup at the core I five is above rise and seven, in terms of performance, Intel Core, I seven is above rise and nine, as is the core I nine performance.

36:12

What do we mean by, by all of that? Let's jump into the Performance analysis for, for a minute here.

36:20

So if we look at, how 12 Genco lines up against Rise 9, 59, 50 X, and also against previous generation, Intel Quran 911900 K.

36:37

The light blue line is 12th Gen, cool.

36:40

And we, as you look across the different types of benchmarking software that is out there, The good news is that in every case, whether you're looking at productivity, your web browsing, or whatever it is you're doing content creation, 12th Gen offers them significant improvements from a benchmarking perspective versus the very best AMD has to offer.

37:03

In this case, we're showing up to 32% better, and if you're using cross mark, for example.

37:11

So, you, if you've been following some of the performance debate between us and AMD, you'll know that AMD always uses Cinna Bench. We always tend to use smart because we feel that will represent to representative of what happens in the real world in terms of how we all use our applications on a day-to-day basis.

37:31

But we thought just for kicks would go back and look at and see if we did benchmark ourselves and 12th Jain core on Senate bench. What would happen?

37:39

And as you can see here, we're very pleased to show that, And I'm in these both single threaded and multi threaded testing that happened.

37:47

The 12th chain core was head and shoulders above the very best, again, that the AMD it has to offer. So, again, a very, very good news story, here.

37:58

And you're really starting to see the benefit of this kind of hybrid architecture, right? Of these performance cause an efficient cause.

38:08

So, let's look, at essence. We're only talking about K skews here. Let's look at gaming performance, since that's going to be very much the flavor of the day, here through, through the rest of the year, as far as 12th gen is concerned.

38:20

And, again, you know, we're claiming that we have the world's very best scanning processor, and this is very much a game on statement here, right?

38:28

So, if you have gaming customers, if your game is yourselves, you want the very best, the very latest, greatest, then 12 gen core, it's definitely going to be for you.

38:38

And in this case, we, we measured on the 10 ATP, high setting, and we're comparing ourself directly with the 1950 X CPU from AMD versus the 12 900 K.

38:53

And you can see across this wide range of gaming titles here that that Intel, with the exception of two where we were on a par, is significantly better in terms of frame rate per second average, FPS, for these games, which is very, very pleasing to see.

39:10

These next couple of slides provide us with some very similar information as well. Right?

39:15

As we look at these, these different games, across a similar set of benchmarking, in this case, we're using the 10 ATP, high setting, and measuring average frame rate per second.

39:26

And we're looking at DDS, for, specifically, we're not even showing DVF five for the reasons that we already mentioned earlier in the presentation, But again, with the exception of one game where we want par, significant performance gains gains over the 1950 X.

39:42

Final slide here shows another set of games as well.

39:46

Again, where we're measuring framerate per second.

39:50

Again, we're using 10 ATP high and with the exception of just one game, grand theft, auto, five.

39:57

And, again, when we saw significant improvements over the the AMD offering.

40:05

So, very, Very good. Very. We're very pleased. We know that a lot of benchmarks by third parties was starting to be released just prior to the launch and some very positive press out there. That's that's only gaining momentum now as people start to see the the real performance of 12th gen core in the, in the real-world examples. That we're talking about here.

40:28

So, how about the rest of the K series that we're starting to ship, side of 12, 900 K? So, this 1 compares 12 700 K, Core i seven K skew with the rise, 6800 X.

40:41

You can see, again, in every case frame rate per second, 10, ATP, hi, we are outperforming the the AMD offering here across the selection of games.

40:55

Similar story, then, on the i5, 12, 600 K, comparing ourselves with the rise in 6500 X.

41:05

Again, measuring framerate per second and, in, almost every case, a better performance story with the exception of grid versus versus the AMD offerings.

41:20

So, in this brave new world, where there's so many people out there not just playing games, or watching games, and playing games, and broadcasting those games at the same time, how does 1900 K really stack up in those? those kind of scenarios.

41:36

So, in this case, we're calling it mega tasking performance.

41:41

Good quote here from Andy Warhol in the future as well, who will famous 15 minutes?

41:46

Well, 12, 900 K gets you there, or close to it, if you have a mind to do so.

41:52

Again, measuring framerate, the second versus rise to 6850 X, playing, in this case, the game banner load, 22% higher frame rate per second using a 12 900 K versus the 1950 X.

42:08

So, again, a very positive story here for, for some of the games out here, who are gaming plus broadcasting.

42:18

How about content creation, how or how are we measuring up, versus the content versus the competition here.

42:25

And, again, across a variety of different applications, using a variety of different benchmarks here, but comparing ourselves to the 1950 X, photo editing, 27% better, video editing, 38% better, model creation, 36, CAD 24, multi frame rendering, 24% better.

42:51

So, again, hands down, the very best offering, not just in the gaming world, but also in the content creation world and And, by the way, as we look at some of this, this data, um, comparing DDR four, with DDR five.

43:09

In the gaming world, we're seeing slight improvements depending on the game.

43:14

Depending on the system for ...

43:17

for, but the real advances, where DDR five really starts to pull away, and you notice significant differences, is here in the content creation world.

43:30

So, let's just wrap up the performance part of the presentation here.

43:35

So, overall, Performance 12th Gen Core, versus the rise of 6850 X, 20%, 21% improvements in overall performance, web, browsing your lips and better.

43:48

Content creation up to 38% faster.

43:51

The Rule of Gaming says 2% better frame rate per second, and in the world of mega testing, again, an improvement of 20% over the that what the competition has to offer.

44:02

So hands down across the board, regardless of what you're using 12th gen for CFS, the improved set of performance indicators with 12th Jain core versus anything else that's out there in the market today.

44:19

And as we started off the presentation earlier, again, reclaiming the world's best scanning process to cram once more, We have the very best over clocking experience there is to be had out there, and, again, a huge leap in terms of performance around around content creation.

44:37

And that is the material I have today at that point.

44:42

Ken, let's go back and see if there's any other questions.

44:46

Yeah, Great, Thank you so much, David. And, as a reminder to everybody, if you have questions, you can go ahead and submit the questions through the question chat box.

44:55

I'll be able to see them, and ask David.

44:57

We'll try to get as many questions asked and answered as we possibly can here before we have to wrap up, but do submit the questions, because we can feel those after the fact, and we can reach out and touch base with you after the event is over. So, the system grabs the questions for us, and we'll be able to follow up later if we don't get a chance to ask David right now. So, a couple questions on the performance, just kinda talking about that more in that frame of mind. What about Apple M one, if you guys had a chance to do any comparisons with Apple yet? I know the AMD stuff is fresh. And people on this call are getting to hear it for the first time ahead of anybody else.

45:41

Right, but what about M one?

45:42

You got any information on that, we don't yet, Ameen and you could also argue that the M one is, is really focused at a very different parts of the market than 12th Gen ..., M one is more kind of an all round CPU for everyday use.

46:03

12th Gen Case, Q is really fairly and squarely aimed at that gamer and the content creator. So, not not really a comparison. That's something that I brought in today for sure.

46:14

We're waiting to hear back from our competitive analysis team to get that data. But as soon as we do, I'd love to come back into an, into a form like this with their sign and then talk about those results as well.

46:26

And what about? Whoa, Some feedback, those might get a little bit more technical on the configuration of the AMD system, but do you know where the latest drivers used on, you know, in these texts that you guys did, latest AMD drivers?

46:42

Latest Intel drivers, latest everything?

46:46

And I think that that question may be aimed more at the fact that there was some there was a known AMD Windows 11 issue going back a few weeks ago that Microsoft provided a fix for.

47:00

And these benchmarks in this comparison, we included the fix that was provided for for the AMD system, so it's it's we're not we're not artificially hampering the the AMD testing that we did in our benchmarks as result.

47:18

Great.

47:18

And going back to, when you were talking about the thread director, and I have to be really careful how I say that. The thread, detector thread director, I always wanna make sure I get it right.

47:33

So the thread director, is that better for Windows 11, better For Windows 10, what what's the software involvement in the thread director?

47:46

Yeah, And I think everyone knows we worked very closely with Microsoft or IBM for Decades.

47:53

We optimize and so, today, based on what's being offered, but if for thread Director there is, there is no change in terms of how that feature works, on 12th Corps.

48:07

When you're using Windows 10 versus Windows 11 this, there's just no.

48:12

The way the thread directories is handling the workloads and deciding which cause to point different applications to is exactly the same across the two versions of the operating system.

48:25

And on the testing you did with AMD, you did DDR five or DDR or.

48:35

We ran both.

48:37

I think in most of the slides I showed, it did say DDR for them may have been a couple of ... for good measure of it.

48:45

And the reason for keeping things aimed fairly and squarely at DDR Force, because, again, the mass media for the reason market, over the next weeks and months, versus the lack of more general lack of supply around We wanted to make sure that people were getting a good feel of, You know, if they went out and bought at 12 10 core CPU today, what can they expect? given?

49:07

The reality is that the vast majority of us would be doing that on

49:12

Great! And now totally leapfrogging all the way back to Thread director again.

49:19

Is there any performance degradation or bottleneck in that occurs with thread director when I wanted to doing it, functions, Know, quite the opposite. In fact, right, and, and if it was providing a bottleneck, it would be doing the opposite of what it was intended to do in the first place, but the real beauty of thread director.

49:43

Is that it will it will direct a lot of that background traffic that normally causes bottlenecks on PC and in terms of performance it directs that traffic straight to the so-called efficient cause the cause.

49:56

So that the, you know, whatever you're doing that's, you know, front of mind.

50:00

Right There, Whether it's content creation or gaming, whatever it is, that that's free to to you you're allowed to have the full impact of that experience and a lot of the bottom that making stuff thread directory sending off to those efficient core, so, it's it's it's very seamless.

50:18

Yeah, There's no point from looking at all.

50:21

And so what about looking at the comparison of this processor with, let's say, the extreme additions from an hour there are different to the extreme there on, you know, if you follow the ... roadmap, you'll know that extreme roadmap tends to follow the data. Census CPU roadmap, more closely right, and, at the same time, we haven't really paid any attention to X series CPUs now for a couple of years. You know, the current offerings in market for a couple of years.

50:55

And, that will change later next year.

50:58

But, and, I haven't seen any, any benchmarks that show how 12 900 K performs against the current set of of X series CPU's To be honest.

51:11

So, I can't really talk to it.

51:13

I can go off and find out what, what that looks like.

51:16

But I would imagine generationally how far behind X series is now versus 12th Jain core. That 12th Jain core is going to be superior, but I can't.

51:27

I can't say that with certainty without going in and looking at that data.

51:33

Great.

51:34

Now, what about the socket, or for 12, 10, is that is that different?

51:40

Or It is so it's a new sockets.

51:43

So it's the 1700 socket New socket, new chipset, new board. So if you have a 12th gen customer that can any pretty much everything new that you can't.

51:55

You can't use a 12th gen core CPU on an 11th general 10th Gen board, OK.

52:04

And so, does that make the cooling fans different photos entel doing for cooling fans around 12 Chen?

52:13

Yes, it does, So there are some differences there. So, and again, if you, if you follow your Intel box CPUs, you know, that for a non K box CPUs, we offer an Intel cooling solution.

52:31

In the bottom box, since we're not shipping those products yet, we don't need to worry about that too much until beginning of next year, but for the, for the K series, there are new cooling solutions available from the usual suspects.

52:44

The third party vendors are out there, that always provide, you have cooling solutions for, for Intel CPUs, but yeah, it's, it's a different cooling solution.

52:53

Yeah, so, just to add, on, top of that, for everybody on the call, just to be aware that, you do want to make sure, when you're buying your cooling solution, that you get one that does specify LGA 1700 because the whole mouths are in a different, in a different position.

53:11

Some of the fan manufacturers will provide a bracket that will allow you to convert a fan to a LDA 1700 Mount. So, as we move through the week, we'll have additional information on them but just to let everybody know the key thing to look for that LGA 1700.

53:34

So, David, what about max memory on, um, on 12 gen, Given DDR five? Is there, is there a greater memory support with 12 gen?

53:48

There is, in the top of my head, I can't remember what it was. I mean, that's really going back to my slides. It's a C because I know.

53:55

I know I mentioned that, Second, the top of my head, I'm not sure.

54:00

We'd have to come back, You know?

54:03

Yes.

54:05

The short answer is yes. Yes.

54:09

Perfect. OK, so let me take some look here.

54:19

Got a lot of questions about availability, so maybe without trying to address each one of these specifically, I know you mentioned it in the beginning, but can you kind of give us a quick overview and what availability looks like on 12 June? Yeah. And it's been a long time since we were able to say this, but it looks solid. I mentioned earlier that our supply overall, this quarter is 50% more than it was last quarter.

54:49

A significant portion of that is on 12th gen.

54:52

So yeah, we're very positive about the amount of supply on 12th Street and the Reserve.

54:57

And as I also mentioned for the first time in a long time we're actually making some of that 12th gen supply allocation available to the broader channel as well.

55:07

So I think it's, I think it's good news all around you, you know that I'm speaking at a very high level, right?

55:15

There may be specific skews where that's not the case, but generally speaking, it's it's a vastly improved scenario of where we've been over the last three years.

55:28

So you showed a slide earlier, and maybe it's actually even on this slide where you are talking about the number of cores that the ...

55:37

processor has 16 cores and 24 threads.

55:42

So in our traditional thinking, 16 cores would mean typically 32 threads, right? I did my math correctly. So where does the 16 cores and 24 threads come into play?

55:57

Yes.

55:58

I think just making sure I'm on the right slide here. So, yeah, So for 12, 100 K, we've got 16 cores, 24 threads.

56:08

Yeah, I'm not sure about your math can.

56:11

Yeah, You don't necessarily have, you don't necessarily have to have two threads for every core.

56:22

Is that is that?

56:25

Feedback that the answer. So, as you can see up and down the stack here, you know, 16 cores, 24 threads.

56:32

If you're down at 12 cores on the 12 700 K, you have 20 threads, and 10 course give you 16, so it's not.

56:39

It's not a direct correlation between the number, of course, and number three. I'm just kidding. Can you go great math skills, but, Yeah.

56:49

Yeah, I have horrible math skills.

56:51

So, we can line up all my teachers that would, uh, confirm that back the only thing worse, or my spelling skills.

56:59

But so, looks like the performance corps are probably dual or are hyper threaded, and the efficient cores are single.

57:13

That's sort of looks like.

57:21

That, that could be the case, I'd have to go back and look at that.

57:26

Some of the detail and how those, how we're threading those CPUs to give you a really solid denon, OK?

57:37

So, for the, uh, the case in the apps skews, which of the case is do they all include Iris? I know, you mentioned the integrated graphics. So, maybe hit us one more time with what the graphics inside these processes. Yeah, in fact, this is a good chart to show that race. So over here in the middle processor graphics, the Intel you HD graphics 770, that's the insula Iris **** graphics.

58:04

You can see, we offer those on some excuse, but not all.

58:07

The air they want the skews where we don't offer the integrated graphics is will show the nature of the ends of the up and down the stack. Yes, if it's a non F skew.

58:18

12, 600 K 12 stem into K 12 managed, Kelly all include integrated Iris XE graphics.

58:28

OK, so let me just take one more quick look here and see if we've got any other questions that we did not get a chance to ask.

58:38

Maybe we can wrap up. But if you do have questions, go ahead and keep sending them in.

58:42

Even if we, I received a question while we're wrapping up, We'll still have a chance to follow up with you later.

58:50

It looks like.

58:53

I think, for the most part, we got these answered.

58:56

I know, David, you can't speak to motherboard availability. So, I won't ask. I will tell you guys that are asking about the motherboard is at the motherboard partners.

59:09

That ASI works with the ... MSI Gigabytes, the world.

59:14

They all have motherboards that they are aligning for launch.

59:18

So, the launch is, if I'm not mistaken, David's November fourth, that's when the sales embargo is lifted for the processor and the motherboard guys will be on that same timeline. So, we will have inventory of the motherboard to go along with the processors that launch.

59:38

So, Did I get that date right?

59:41

At least you did this, OK? All right. We just want to make sure. OK, so, with that, I'm gonna go ahead and wrap things up with just a couple of quick announcements for everybody. Again, for all of you that joined us today, and you stayed with us through the presentation of the 12 10 processor, you will be automatically entered into a raffle drawing for a chance to win that notebook that we talked about at the beginning of this session. We will announce the winner of that notebook tomorrow.

1:00:13

Um, I have to gather the data from everybody that attended today. And we'll have the winner, and we will announce that tomorrow, during the micron session, or at the beginning of the microns session.

1:00:23

So, again, tomorrow or the day two of our Tech Summit, we're micron, they're going to be talking about DDR five Memory.

1:00:31

So, they'll be able to go into a lot more depth about density and features and things like that that PDR five has.

1:00:39

There is more to deeply are, five than just greater bandwidth, so there's definitely some things there that I think you guys will be very interested in hearing about. So join us tomorrow and we'll hear from Micron about the DDR memory. Then Wednesday, we'll have Toshiba and Thursday. We'll have supermicro.

1:00:59

But with that, I want to go ahead and wrap things up. And David, was there anything you wanted to say in closing before we finish up?

1:01:09

Just thank you all for attending. Can Team S I thank you very much for for hosting.

1:01:14

This is always fantastic partners of ours.

1:01:17

And yeah, very excited to see what happens to 12th Gen over the next weeks and months.

1:01:23

Great. And for everybody that joined us, we will try these slides that are out of David's hands. So we'll make sure that we can get you guys all a copy. We also have this record.

1:01:34

This session has been recorded, so we'll send out the recording link once everything has been compressed and you can watch it again and go through the data.

1:01:42

Or if there's somebody at your company that wasn't able to join, you'll be able to share the link with them, and they can watch the recording later. So we'll get that out to sometime near the end of day today. So, with that, I'm going to go ahead and wrap things up and thank everybody for joining us. We really appreciate you all spending the time with us. Today, you gotta hear some information that nobody else has heard yet with that, David shared about the performance comparisons between Intel and AMD so that, as you said, a hot off the presses. So, thank you for sharing that with us, David. We really appreciate it. And everybody, we hope to see back tomorrow for day two with Micron at 11 o'clock AM Pacific time.

1:02:25

So, thanks, everyone.

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