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COPILOT+ A.I. PCS DECODED: SNAPDRAGON X SERIES INSIDE WITH MIKE BELCHER

T R A N S C R I P T

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One of the things that we think is hugely valuable as we start thinking about AI PCs is how it's going to help us improve productivity. I don't know about you all, but I just looked at my email. I have over 900 unread emails, which is kind of frightening. But I hear folks all the time talk about how challenging things are right now. Today, we're being asked to do more with less.

And honestly, we think this technology is going to be one that truly does help us. So, I'm going to start off with just a little bit of background. During the beginning of the pandemic, we couldn't get devices built and people couldn't go to work; we had to work from home, so we had to use whatever we could get our hands on. In conjunction with that, Windows 10, which has been around a long time now, is actually going to end of support in October next year. So, there's about 35 million devices that are going to need to be refreshed, just in the U.S., which is kind of mind boggling when you think about it. Those devices just aren't going to be able to run Windows 11.

They certainly won't be able to run these new AI feature sets. As we think about directionally where most of us are, it is a huge challenge. We do think this era of AI is going to help us in this productivity challenge that we're all facing right now.

About 65% of all employees in a recent study felt burnt out in 2023. I'm sure some of you have felt that. I know I sure have, as we've been maximizing all that we can possibly do. This idea of struggling to have enough time to do your job the way you would like to is even more challenging now. We were able to have a lot of that time when we were working from home. We didn't have much that we could do outside of the home because of the pandemic.

Now that we have our lives back, it's really, really challenging to keep that pace up and to continue to improve. We're having to look for ways to make that happen. We do think that this next generation of technology is going to help us. So, if you don't know what a Copilot+ PC is, this is the next generation of devices. Microsoft has set standards that you have to have some certain technology that can run 40 trillion operations per second on a neural processor. That allows us to run AI in the background and do so really efficiently.

These NPUs, or neural processing units, run incredibly fast. They're incredibly good at AI operations. And while we have CPU to do the traditional compute tasks and graphics processors to do graphics, we really need an NPU to drive these AI experiences.

At Snapdragon, we think it's a good idea to achieve more versus doing more. So, I do a lot of work and I have a lot of emails, but are they helping me achieve the goals of our organization?

Does our business effectively run the way it should when I'm doing more, or is it really about how do I achieve more? Boy, could I get rid of a lot of these mind-numbing, soul-sucking tasks that happen to me every day. We really do think that that's where the future of these AI PCs are going. We're going to see lots of help come from the software providers that begin to allow us to take a lot of this traditional tactical sort of work and allow our computers to do a lot of that for us, or at least provide that information for us so we don't have to continually do the same thing over and over again.

We wanted to talk about the silicon behind the Copilot+ PC. And we'll talk about some of the experiences that we think are going to be important for you all to know and understand. I came to Qualcomm/Snapdragon because of the future of this technology. I saw what it looked like three years ago and it blew me away. And that was before I knew about the AI capabilities. Just how much less power consumption there is with this next generation of technology, how the NPUs work, and that the ISVs are going to be able to actually design applications to run off these really low power processors is really important.

Our whole focus for the last four years has been the development of this technology. We've just released devices in the commercial space called the Snapdragon X series. And the Elite is our top-of-the-line processors, which have come out first. The X Plus processors are in process of being released too.

And these are 12 and 10 core processors that are a little bit different. They're designed different than what we're used to seeing from our x86 counterparts. And if you look at this image, this is actually the image of an x86 motherboard.

The wireless is separate from processing. None of that is built-in together. Now, what Qualcomm has always been known for is building these Snapdragon chips for phones that are incredibly powerful, and incredibly efficient. If we think about the battery life that we get out of a phone, they're really, strong. And we've been building NPUs for a dozen years. We've been putting them in phones. No one has done this in compute outside of Apple.

For us, we wanted to take this to the Windows world and make it work. We shrunk the motherboard to about the size of your keyboard and reduced it down to about a 50-cent piece size chip. On that chip are a slew of different processors. So, now we have the world's most powerful CPU, beating out our x86 competitors in their current AI PCs and performance, and multi-threaded performance, in particular.

Our GPU outperforms them. Our NPU, which is really what makes us different, way outperforms our competition and even outperforms the Mac processors. On that chip are also some things like a security processing unit that allows us to load Pluton embedded into the chip. This is Microsoft security software that is incredibly powerful and really valuable at that chip level. So, you have true chip to cloud protection on your devices, improving the security devices instead of having those separately on a motherboard. We have a sensing hub that has a slew of different sensors and a micro NPU on it.

That's what actually runs all of our audio and video. It does all of our sensors and allows us to get much better video and audio quality. We're going to start to see as a lot of the computer parts manufacturers build better cameras.

They needed this technology to make that happen. So, you're to see lots of improvements that come across the line there as well.

In many cases, there may be one or two SKUs that are available from manufacturers as you go forward. It's got the latest versions of Wi-Fi. We invent all of the 2G, 3G, 4G, 5G, 6G standards, which are in process right now. Qualcomm is really good at building wireless. We have some of the fastest devices in how they connect.

Everything is in that one little, small chip. The amount of information that has to travel between itself is very, very small. It doesn't put out a whole lot of heat. When we think about our phones, we keep them in our pockets most of the day, and they don't overheat. We're using the same thinking as we build these new chips for our PCs.

If we look at some of this performance, it looks really good. Both the Elite and the Plus series blow away our competition. But what's most important is how much power it takes to maximize the actual processing. And it's because of that architecture that allows us to do that. And so that reserves more power for your device. We're all used to at least all day, if not multiple day, sort of battery life on our phones. We're finally going to get to multi-day battery on our PCs.

And this is one of those key sort of criteria that we think is incredibly important in this next generation of devices. We actually even outperform the M3 from Apple in multi-threaded performance on both the Elite and the Plus, so our top-of-the-line and middle line processors. That CPU is incredibly powerful, but very, very power efficient.

40% longer battery life is needed to run just the Office 365 apps. I don't know about you, but that's where I spend a whole lot of my time. The bottom one is where I spend probably the most amount of my time, which is on Teams video calls. So, the ability to have this really great battery life while I'm out on the road is incredibly valuable.

We heard from some folks who are using some of this initial technology that had five days of battery life. They didn't have to charge the device for five days! That's the great raw performance and power efficiency performance that we see in this tech.

What really sets us apart, and what I want to spend the rest of our time on, is AI and this enablement of AI. That NPU that we talked about is what enables us to get to these really new experiences on the devices that enables Copilot+ and the experience that Microsoft is building. It enables all of the ISVs.

Think of folks like Adobe that could actually integrate AI capabilities into some of those really powerful applications like Photoshop or Premiere but allow some of the AI to actually do a lot of that work for us. Think about coding, etc., and allowing the AI processors who are really efficient at this to go out and do that work for us and then to personalize these devices. You can't do that without an NPU, and you can't do it without at least 40 TOPS (trillion operations per second). Microsoft certifies a Copilot+ device must have an NPU that can run at least 40 TOPS.

We also worked with Microsoft on the Microsoft Prism emulator. For any of the apps that haven't been ported over to ARM, it's allowed us to give that great experience and run those applications natively on the device. All the applications run faster. All the browsers run faster. The battery life is so much better too. A lot of us do the majority of our work inside of

a browser, and everything runs faster on our technology because of that efficiency. Chrome browsing is way faster. Edge browsing is way faster. It's pretty mind boggling how quickly things operate on this device.

And when folks use it, that's exactly what they see. The launch speeds to get these applications to actually launch incredibly faster. It's just this whole kind of turbocharged experience that you get out of these devices. We really need that so that we free up that AI engine to do this really cool stuff in the background. Some of the things that we can do are coding on these devices and use the NPU to drive all of that. For example, Visual Studio Code, CodeGen allows us to input sample code and then tell the tool what you want to create and allow it to go build that. In seconds, you can get a day's worth of coding done. Think of that as a software developer. This is huge. We're to see lots of new capabilities come forward from software developers and particularly in coding. You're going to have this huge speed optimization. One of these is on stable diffusion, which is an application that allows you to put text in and then get an image created out of your text. We can do a 4K high-def actual image in seven seconds. It would take over 20 seconds to do that on our competitive technology.

It's really challenging to do live translation from one language to another. You can actually do this live running off the NPU really easily. Language is absolutely simple for our NPUs to drive. You can listen to foreign podcasts. You'll hear it coming over in the foreign language, but it'll give you the subtitles of everything that's being said or vice versa.

So, it's going to allow the world to get smaller and allow us to communicate with folks all over the globe so much easier. And as we think about these tool sets, they open up a whole new world. It's going to allow software developers to integrate all of these inside of their tools, opening them up to new languages.

There's a slew of AI apps being developed. One of the things we needed to do was to get these devices out into market, so that the NPU was available. Now that that's out in the ether, they're developing these cool, AI features to start to integrate into all the different applications. Think about that. If you're an application provider, wouldn't you want to have these AI capabilities into your tools?

I've been making a prediction that by 2030, we will be more concerned about our NPU performance. So, I think most of the computers are going to run off of an NPU than we will be about CPU and GPU. And it's because they're so efficient and we're going to need to save power because we're using way too much power across the world right now.

We have to find ways to get more efficient at what we do. That means bringing AI down to the edge. If you haven't seen these capabilities, it would be a great time to start to talk to folks at Connection and tell them that you're interested in learning more about this. It is really, really amazing.

I will be getting my devices very, very soon. Can't wait. And as soon as I have them, I'll be doing some testing and promoting those. We've got some great links that we'll share afterwards if you want to go to learn more.

Q&A SESSION

Question 1

What are the key differences between Snapdragon X series and other AI focused processors in market?

Answer

Copilot+ PCs powered by Snapdragon X Elite are the fastest, most intelligent and power efficient available for Windows in its class. 40+ TOPS gives you plenty of power to drive all sorts of other AI apps, but it gives you enough power to have that running in the background all the time, so your device learns what you're doing. When you only have 10 or 15 TOPS, you just don't have that sort of capability. Additionally, our architecture—from a giant motherboard down to a small system on a chip—allows us to conserve power providing an even better experience.

Question 2

What are the performance benefits of using Snapdragon X series in AI PCs?

Answer

We've got some great advantages built around the NPU being able to handle these AI workloads efficiently. By running at 40+ TOPS and using so little power, you can do amazing amounts of work. You can put 13 billion parameters in your AI engine and run that using only 300 milliwatts. If you don't have that 40+ TOPS, you're going to be making a decision that might hurt your business in the future. It gives your employees less capability that puts them at a lower productivity standard than your competitors.

Question 3

What improvements in speech and image recognition are offered with Copilot+ PCs and the Snapdragon products?

Answer

Speech and image is one of the things that AI does really, really well. We've created the Qualcomm AI Hub with various resources to help in both of these area. Here you can find the ability to do faster, better image recognition, speech recognition, and then incorporate those tools into the software development. It's all there on the AI Hub. If you haven't seen it, be sure to take advantage of it.

Question 4

What security features are provided by Snapdragon X Series and Copilot+ AI PCs?

Answer

Security is always a concern. We actually have a security processing unit (SPU) embedded in Microsoft Pluton security. If you don't have devices that have Pluton embedded, it's going to be hard to provide the same level of security to protect yourself. Pluton is the one way to protect that whole chip. If you can protect the chip, you can protect everything else going forward—from chip to cloud.



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