

S1 EP24 - Scaling HDD Capacity in the Data Center

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Matt Kim, Vice President, HDD & SCBU Marketing, and podcast host Chris Banuelos discuss Marvell's HDD solutions, powered by a comprehensive portfolio of cloud-optimized silicon solutions for the data center. Join the conversation to learn more about Hard Disk Drive's (HDD) relevance to the data center, Marvell's unique solutions, and what is next for the HDD industry. With over 25+ years of experience developing storage products and over 5 billion HDD controllers sold, Marvell's cutting edge Bravera™ HDD family of products enables customers to meet surging data demands with cost effective solutions. Read the press release mentioned in this podcast: <https://bit.ly/3xFMyrB>

Speakers

Matt Kim

Vice President, HDD & SCBU Marketing

Host

Christopher Banuelos

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C Christopher Banuelos 00:04

Welcome to the Marvell Essential Technology Podcast. I'm your host, Chris Banuelos. On today's episode, join in on a conversation between me and Matt Kim, Vice President of HDD and SCBU Marketing. Today we discuss why HDDs are still relevant, why growing HDD capacity is still important, as well as how Marvell's cloud-optimized silicon products are enabling high capacity growth and much more. To stay up to date on future episodes, please be sure to subscribe to the Marvell Essential Technology Podcast. Hi, Matt, it's great to have you on today's episode. Really looking forward to jumping right into our discussion points. Why don't we get started with Why are HDDs still relevant?

M Matt Kim 00:57

You know the connection of HDDs with PCs just throw that out the window because HDDs have been on this transformational journey. But let's start out from the basics the fundamentals of just overall exabyte growth of data, it's well established that data is growing at an accelerated rate doubling every, say three years or so by 2025. Some estimate that will have data reaching at 180 zettabytes. So the final destination of where the majority of this data resides is in this lukewarm cold storage tier where latency performance aren't really the major decision factors. Instead, it's all around how you reliably store massive amounts of data in a cost optimized fashion. Now let's talk about HDDs. It turns out, we already have an established storage technology that meets this need, and that's HD DS, many people still connect HDDs to PCs, which may have been true, let's say 10 plus years ago, back then 90% of the HD exabytes shipped into consumer applications. But the evolution of HD exabytes has changed dramatically. Today, 70% of the HD exabytes are shipping into the data center. And this will jump up to 90% in just a few more years. So what many people may not be aware of is that HDDs are critical to the data center infrastructure. And it turns out that in the data center, 80 to 90% of the data is being stored on HDDs.

C Christopher Banuelos 02:33
You know, Matt, it's interesting hearing your perspective in that HDDs are still on this transformational journey that you just described. My next question for you is why is growing HDD capacity important? And how is this accomplished?

M Matt Kim 02:49
Great question. One of the reasons why HDDs are the predominant storage medium in the data center is because of its dollars per gigabyte advantage. That's a measure of the cost per unit capacity of storage. And this advantage is driven by the continuous scaling up of HDD capacity, generation over generation. Five or six years ago, the industry was primarily shipping 10, maybe 12 terabyte capacity drives. Today, we're mainly shipping 18 to 20 terabytes, and in just a few more years, we'll be shipping 30 terabytes and beyond. So the capacity has been growing at this outstanding rate. The industry has enabled this capacity growth through several means. One is by extending conventional recording technology. Secondly, increasing the number of heads and discs. And lastly, you know, the technology is moving to a new type of recording architecture called energy assist recording to reset the S curve on air of density.

C Christopher Banuelos 03:51
And how are Marvell's HDD products enabling this capacity growth?

M Matt Kim 03:56
So let's first talk about Marvell's history, in HDDs. We've been developing HDD products over the past 25 plus years. And we have this just rich heritage in driving technology leadership and innovation.

C Christopher Banuelos 04:14
There was a significant milestone that was made back in December 2021. And I recall a press release going out that came from your team. Can you tell me about that?

M Matt Kim 04:25
Absolutely, Chris, and thanks for asking that because last year, we shipped our 5 billion HDD controller, which was just a huge accomplishment. I mean, shipping, a billion of anything is amazing, let alone shipping 5 billion devices. And this is really a testament to the longevity of our business and our ongoing commitment to our customers.

C Christopher Banuelos 04:49
Matt, can you provide some insight on Marvell's HDD products?

M Matt Kim 04:53
So our first product is our HDD controller. Think of this as the brains of the HDD device and leverages our re-channel technology, which enables higher areal density recording capability, allowing you to pack more bits onto the media. Our second product is our preamp, which controls the read write functions of the recording head, and drives. The key sensors for enabling energy assists recording also mentioned that the preamp is important in enabling more hetson media to be packed into the HDD at the end of the day. These are both cloud-optimized silicon products. And they are at the heart of enabling this capacity growth.

C Christopher Banuelos 05:40
Matt, I wanted to finish our episode today with his last question, what's next for the HDD industry?

M Matt Kim 05:46
While each of these have been around for some time, the innovation and the underlying technologies in these devices continue to advance. Just to touch on a few examples. We're really in the early innings of energy assist recording. So as this technology advances, we're gonna see HDD capacity continued to scale to new heights. So look forward to that. Secondly, NVMe as a native interface is also just around the corner. This makes a lot of sense, as this enables a unified storage interface with SSDs and simplifies the hardware software stack. Lastly, I would say the next space where you will see HDD innovation take place is in the growing archive market. So stay tuned for that.

C Christopher Banelos 06:32

Hey, Matt. Just wanted to say thank you for your participation on today's episode. I'm looking forward to having another discussion with you again in the future.

M Matt Kim 06:39

Thanks, Chris. It was a pleasure to be on. I love talking about HDDs. So I look forward to coming on to a future podcast to talk more about the progress that we're making. And by the way, just congratulations and getting this podcast off the ground. It's been just a phenomenal success.

C Christopher Banelos 06:54

Thank you so much, Matt. It's been a really good collaboration between our entire corporate marketing team, as well as our solutions marketing team and all of Marvell's business units. You know, we're 24 episodes in and it's been a great initiative, and we're looking to finish out this year very strong. Thank you for listening to the Marvell Essential Technology Podcast. As always, please feel free to visit our website to learn more, and we'll see you on the next episode.



To deliver the data infrastructure technology that connects the world, we're building solutions on the most powerful foundation: our partnerships with our customers. Trusted by the world's leading technology companies for 25 years, we move, store, process and secure the world's data with semiconductor solutions designed for our customers' current needs and future ambitions. Through a process of deep collaboration and transparency, we're ultimately changing the way tomorrow's enterprise, cloud, automotive, and carrier architectures transform—for the better.

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