S1 EP3 - The Road to Launching Bravera SSD Controllers

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Thad Omura, Vice president of Marketing in the Flash Business Unit discusses the road to launching the Bravera SSD controllers with podcast host Chris Banuelos. Thad provides insights on his career at Marvell and discusses how flash storage is increasingly more prevalent for cloud service providers in light of the work and learn from home environment. Stay tuned to hear how Thad and the Flash Business Unit worked closely with Facebook and Microsoft to comprehensively understand challenges in their infrastructure to solve application needs.

Speaker
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Vice president of Marketing - Flash Business Unit

Host
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Christopher Banuelos 00:04
Welcome to the Marvell Essential Technology Podcast. I'm your host, Chris Banuelos. And today I'm with Thad Omura, Vice President of Marketing in the flash business unit discussing the highly anticipated Bravera™ launch. Thad what I thought we could do today is before we actually jump into our discussion, let's talk a little bit about your career here at Marvell. How you got started? And what was some of the work you were doing prior?

Thad Omura 00:39
Sure, so I joined Marvell, in my current role about a year and a half ago, it was really interesting story, because it was one week before the pandemic really hit. And we had to start working from home. And I remember just talking to my boss, Dan Chrisman at the time, and he pulled me aside and he said, we may be out as much as two weeks before we have to come back for work. And I only been in the office for one week. So interesting times and again, you know, obviously we're we're still out right of the office and everybody still work from home. So basically started about a year and a half ago in my role is running all of the flash business unit marketing, which includes marketing products, in the SSD controller, Flash accelerators, and NVMe over Fabrics to NVMe converters. These are advanced technology products that tie storage into the actual network itself and brings it one step closer into the network. Basically, my role is to drive all of these advanced technologies into the market to obviously explain a lot of these of the capabilities of these advanced storage products to customers. And also, integrate them more end to end in Marvell's entire portfolio of data center infrastructure products, as we know, that includes processors, and switches, Ethernet switches, and now storage. And so it's really a really a fun role to find ways to on how we can promote our entire portfolio into the data center marketing.

Christopher Banuelos 02:33
Yeah, definitely an interesting start full week in the office, and then turning 180 degrees and going to complete work from home environment. It's great to have you on this episode today. And what I thought we could do first is talk about the actual launch.

Thad Omura 02:47
Sure. So when we launched the Bravera™ SC5, we were launching industry's first PCI Express Gen five SSD controller that supports that latest and greatest IO interface. And that's significant, because it really represents a new level of performance and capabilities, that data centers and cloud service providers are going to be able to take advantage of to be able to deploy the most efficient flash storage solutions in the market.

Christopher Banuelos 03:28
Thad, can you articulate why flash storage solutions are so significant today?

Thad Omura 03:34
If you take a look at how cloud service providers today support their customers, they need to be able to store their customers data on reliable and very responsive storage solutions. Because the storage itself has a greater it's a has an increasing impact, if you will, on the applications their customers are running in the cloud. And so flash storage is becoming more and more prevalent as the storage solution of choice for these cloud service providers. And in order for them to be able to guarantee service levels guarantee that applications will be responsive, not just some of the time, but every single time a user runs that application on that infrastructure. It now is really coming down to storage and making sure it can guarantee in service level to support the application. And that's why it's super important that as the industry moves to from Gen four to Gen five PCI Express based servers, that there is storage that's available that can take advantage of all of that capability as soon as those servers are deployed.

Christopher Banuelos 04:58
What about the Bravera™ name, where does that come from?

Thad Omura 05:01
Yeah, we, you know, as we all launched products, we really thought long and hard about what kind of name would represent the class of products that we're deploying. And Bravera™, as you can see is a little bit, you know, somewhat obvious once you hear it, it represents a brave new era in storage. And we thought it was really fitting at this point in time because Marvell has been in storage for multiple decades, right and has yet to attach a brand name to its storage products. But because these products now are so significant in cloud and data center infrastructure, we thought it was was time to introduce a brand name associated with this technology. There's also a lot of other reasons, like, the entire ecosystem needs to now get involved with the storage in order to take advantage of its capabilities and features to enable the best infrastructure. So it's not just the NAM vendors, whose media we're connecting to with our controller. But there's also the server processor vendors who are introducing the PCI Express 5.0, PCI Express Gen five, server solutions. It's the operating system providers who need to make sure that all of this can work together. It's the application folks, it's folks who make test infrastructure to test these platforms and make sure they're reliable. There's a whole ecosystem that's required to make sure this technology can be deployed at scale for these cloud infrastructure providers. And that's why we wanted to make it very easy to identify our technology, who we are, and that it's truly industry leading technology. For these next generation PCI Express Gen five servers.

Christopher Banuelos 07:09
What about the folks that are involved in the ecosystem? Who are they? And what roles do they play.

Thad Omura 07:15
There are a lot of people who are involved with deploying cloud infrastructure solutions, especially when you start talking about the flash storage infrastructure that we support, you first start out with the folks who are providing NAND flash media. And there's arguably six or seven of these NAND flash media providers that provide their flash technology. Then as you kind of move up the stack, and you take a look at the breadth of server providers. Some cloud vendors build their own servers, or they may purchase servers from an OEM or ODM and you know, a name branded server or white box server manufacturer. And it's important that we make, you know, the server manufacturers are able to identify the Bravera™ based SSDs that are compatible and have proven compatibility and reliability in their servers versus potentially, you know, folks who are not supporting the latest Gen five PCI Express solution.

Christopher Banuelos 08:26
Can you describe what is happening in the cloud market as it pertains to storage?

Thad Omura 08:32
So, in the cloud market, there are more and more workloads that are migrating to the cloud. And what's really interesting is a lot of these workloads are becoming and demanding lower and lower latency from storage. For example, all of the AI and machine learning workloads are moving towards the cloud, because you're able to use the hardware as a service, you may not have a huge AI processing workload you need to run all the time. So it's more economical to then utilize cloud infrastructure for the times you need to use this and run these very high performance low latency workloads. Now, these cloud infrastructure providers need to provide the lowest latency infrastructure when you actually want to use it. And this is where the Bravera™ SC5 flash storage solutions, you know, solutions based upon our technology can guarantee that on that cloud infrastructure, you get the lowest latency performance. At the same time, what's happening is because these cloud service providers need to support multiple customers on the exact same hardware and infrastructure You have to be able to intelligently prioritize different Customers that utilize and maybe talking to the same SSD, the same solid state storage drive. And as a result, it's really important to have the features in the drive to make sure that the latency response for those customers who pay for low latency get it. And for other customers who may be running less demanding applications, for example, an email server, or they may be running Office 365, which it's not as performance demanding, they would then you know, pay less and not be guaranteed the low latency response because they didn't pay for it.

Christopher Banuelos 10:50
How would you describe the growth opportunities and challenges in building out infrastructure to address new data demand?

Thad Omura 10:58
So what we've seen, especially in the last year and a half with COVID, and the pandemic hitting, is, there is a tremendous move, obviously, to work from home to learn from home. And all of these, this kind of new working environment has driven a lot more traffic and data storage demands are being placed upon cloud infrastructure, much more greater store greater data storage demands. What that means is that the cloud providers need to provide more and more low latency storage to guarantee that people's applications running at home run just like they were running in the office. In some ways, the applications need to actually run even faster, because there's more and more applications relying on AI and machine learning, which require larger datasets, and lower latency response in order for those applications to remain efficient. So the challenge in building out this infrastructure is, and the cloud providers get access to cost effective, low latency storage at scale. That's really the name of the game and the challenge that they're faced with today.

Christopher Banuelos 12:31
From what you described a moment ago, it sounds like there's tremendous opportunity. What is Marvell doing to address these new requirements to help customers? The first thing that Marvell is doing to help deploy flash storage at scale, especially in the cloud infrastructure is we are seeing that the NAND flash media that we connect to is naturally increasing in density to be more cost effective. Now, what we're doing in our technology to take advantage of that is we are making sure that we can more cost effectively in a single drive, integrate more Nan capacity. Because when you do that the economics are such that it's cheaper. It's lower cost and more cost effective for the for the cloud service providers to procure solid state drives that are higher in capacity. The downside with that, though, is you now have more applications trying to access that SSD at the same time. Because there's more capacity of storage on that SSD. It just means more people more different applications are trying to get to it. And that's why in our controller technology, we've built in hardware mechanisms we've built in a way to be for all of these different folks trying to get to the data. We've built in mechanisms so that they can get to it reliably, and at the lowest possible latency so that all of the users of the data on the drive can have the ultimate end performance. Why Marvell?

Thad Omura 14:26
The first thing when you think of Marvell storage products is quality and reliability. It's super important for any storage product to be reliable, because you're storing people's data. And if that data is lost it there's immeasurable amounts of damage that can be done. So we put the utmost quality and care in the products that we release to the market. That's number one. Number two, one of the critical things that when you work with Marvell, is you get a lot of flexibility in the components that you build solid state drives with, we have great relationships with all of the NAND manufacturers. So when somebody wants to build an SSD or a solid state drive based upon marvellous controllers, you have flexibility to pick between all of the different NAND vendors to build your solid state drive. The third is we fully test in a complete system environment with firmware, our solution to make sure that it meets the performance, the power, and all of the reliability metrics out there. And our test infrastructure now has become so mature over the years that our customers know when they work with Marvell. Again, they're getting a really highly reliable high performing product.

Christopher Banuelos 16:12
Thad I wanted to bring back topic back to our conversation in that having low power and high performance are both two very vital components. Can you describe to our audience and myself why low power and high performance are so important?

Thad Omura 16:28
Having low power flash storage is absolutely critical to the cloud service providers. The reason why is there is so much of this flash storage being deployed into the infrastructure that if you can save a watt, two watts per drive, it multiplies out to 1000s 10s of 1000s, millions of drives that cloud service providers are deploying today. So we can we have built in a number of capabilities inside our solutions to save power. The first is, you want to make sure that you transmit the data from the host down to the drive as it's being stored as quickly as possible. Because if you can store the data fast, that means you can put the drive into a lower power standby mode, if you will, at a faster pace and consume overall less power. So what's really what may not be intuitive, is that some of these PCI Express advancements, especially as the latest state of the art, Gen five actually enable lower power consumption because you can store data at a faster rate. Okay. And that's not such an intuitive thought that most people would think about. But if you can essentially hurry up and wait, that's really kind of the the thought process that we use in driving lower power to all of the drives.

Christopher Banuelos 18:10
How is Marvell being more efficient in reducing power consumption?

Thad Omura 18:14
We make sure with our storage products, we are on some of the leading process nodes that actually consume less power in the silicon itself. So the advanced some of the Advanced Geometry nodes, or high performance processing functions actually consume less power. And those are the technologies we use in our flash controller technology.

Christopher Banuelos 18:38
And let's tie that back to our topic today. Is that part of the solution with the Bravera™ Launch?.

Thad Omura 18:43
it absolutely is for the flash storage data center infrastructure products, because we completely understand that the volume of PCIe based flash storage is increasing at a very fast pace in cloud infrastructure. And so we want to not only be able to provide the highest levels of performance, but also the lowest power and you get that by using advanced process geometry nodes for your technology.

Christopher Banuelos 19:13
Thad to wrap up our conversation today. Can we touch briefly on security?

Thad Omura 19:17
Security is a big issue. When you talk about data storage these days, you immediately have to address the security issue, because of all of the things you just mentioned. And one of the key things that we've done in the Bravera™ SC5 family products is we did put in as as most would put in the ability to encrypt the data at line rate as data is being written to the drive so that does take care of one aspect of security. One of the other challenges in deploying flash storage as it relates to security is that you want to make sure that the drive that you are the secure storage drive that you're talking to that you're actually communicating with is the exact one you deployed out there in the field. Because we're seeing different use cases for cloud service providers to deploy infrastructure. It's not always today in a protected data center with guards, some of this infrastructure now is starting to be deployed on the edge of the network, meaning very close to the end user. And it may be deployed in an environment that may not be as secure, you may not have guards, you know, around the actual servers that are running themselves. So we built in technology that you can actually talk to the drive and make sure it's the same drive that you deployed that you're talking to, and that some would be attacker didn't spoof the drive, if you will put their drive in and make you think you're reading your data when you're actually reading their data. So this capability is the ability to authenticate that you are talking to the hardware and to this flash storage that you've actually deployed. And those are features we've taken care to integrate into the Bravera™ SC5 flash controller.

Christopher Banuelos 21:24
Thad wanted to thank you so much for being on today's episode. Super excited for you and your team as a relates to this launch. And I'm looking forward to continuing the discussion later this year.

Thad Omura 21:34
Chris had a great time. Always fun to talk to you about these latest and greatest storage technologies that we're introducing. And hopefully we can do it again soon as we actually get newer solutions out to market and and more customers to talk about.

Christopher Banuelos 21:56
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.