



Daniel Newman: Shawn McCarthy, welcome to The 2022 Six Five Summit.

Shawn McCarthy: Hey Daniel. Thanks for having me.

Daniel Newman: It's so good to have you. Haven't seen you in person since we chatted in Barcelona at Mobile World, but even though we're back to doing a lot more physical and live events, it is great to get you here to our virtual event, absolute list of rock stars, and you're part of it. So excited to talk about scaling the network, 5G connectivity, and all things important to this audience.

Shawn McCarthy: Well, that's awesome. Thanks for having me. It's an honor to have the opportunity to share a bit about what we're seeing out there and talking to customers and what's happening in the networks.

Daniel Newman: Yeah. Let's start there. You are leading a very large sales organization, Shawn. You are thinking about monetization of the network. That's one of the things that, gosh, I've been hearing about for a few years right now. You're talking to CSPs, looking at the next evolution of killer apps in all these spaces. Give me a little lay of the land of what's going on in the field as you're out there, as your team is out there talking to all these CSPs service providers about their needs in the network. Where are things at? What are you hearing?

Shawn McCarthy: Yeah, no, thanks for asking. Listen, there's really two fundamental things at Cisco, in our service provider business that we think about every day when we wake up. One is, how do we help our service provider customers grow revenues? And then how do we help them reduce costs? And that, if you look back the last 10 years of that service provider business, the trend in the phenomenon you see, we call it sort of the 4G period. It's not necessarily a mobile specific thing, I call them app developers, but all these over the top players, be it the Googles, the Facebooks, the Netflixes of the world have built these giant businesses based on the delivering of services to the customers of service providers.

And it's led to this explosive growth in bandwidth. But what you see is the revenue and that value the revenue flows to those app developers, and the cost to continue to build out these networks. That lands on the service providers' desk. So, it's a broken model and we're spending a lot of time working with our customers to say, "Hey, how can we help you participate in that value chain? How do we leverage the proximity you have? How do we think about things like low latency and more effective bandwidth delivery to help you participate in that value chain?" So we spend a ton of time there and we call that our carrier edge initiative. And it's a huge focus for me and my team.

Daniel Newman: Yeah, I like that you bring that up because we spend a lot of time talking to the vendor side, talking to companies like yours that are trying to solve this problem. And one of the things I've noted is that the over the top has moved extraordinarily fast. The innovation happens at scale. These companies are largely crushing it. Markets have shifted a little bit. So the growth is maybe slowing. We'll see a little bit. But I'm not even sure that's actually the growth slowing as much as it is just the broader economy, Shawn.



But what I have noticed though, is that the CSP, what you're talking about, has kind of struggled to decide how much to invest, how quickly to upgrade their networks. Are the applications going to demand that next level of connectivity and bandwidth? And when will those big investments that, as you said, in this broken model that are required, when do they start to pay off? How are you guys thinking and aiding this particular group of service providers to move their plans along at the right speed to not necessarily overinvest too soon, but at the same time, not be at risk of not having the right architectures and investments in place where they fall behind?

Shawn McCarthy:

Yeah, no, it's a great question. We took a lot of time to reflect on the past 10 years as we put our strategy together for the next 10 years. And there are two really main principles that we came up with. So one, the app developers, the success that they've had, it's been based on the ability to develop once in access, all of these eyeballs in many countries through many different service provider networks. So, the old model of, I call it the old field of dreams approach, if you build it, they will come. I'd say about five years ago, we would've gone to these communication service providers. When we said, "Hey, you should build these next." Put a bunch of CPU, put a bunch of GPU, put a bunch of compute and storage out of the edgy network and you'll figure out how to monetize it.

And when you do that, two things happen. One is, it's a hope and a prayer in a lot of ways. And two, you're creating really these bespoke environments. So now, as an app developer, I say, do I want to go develop and have these unique snowflakes for every service provider that has a different set of APIs, different compute, different network, different storage? Or do I want to be able to develop once and maybe do it a couple milliseconds away and in a public cloud? And so, I think the approach has to be, one, is creating a federation, such that all of these communication service providers have the same infrastructure deployed throughout their network. So as an app developer, I can develop once and I can access all of those eyeballs.

The other approach is rather than do it on a hope and a prayer, what we're doing is, although we're an infrastructure provider, we feel it's incumbent upon us to bring the apps to the table, to bring the revenue to the table with our customers. So the low hanging fruit we started with is actually content delivery. So content delivery, it was really ripe for disruption. It's very much the over the top model where these CDNs sit outside of service provider networks. The service providers still have to bear the transport cost and have to deliver the bandwidth to their end customers. They don't participate in the revenue stream. So what we said is, "Hey, we're going to put content delivery inside of your network, deep inside of your network, and we're going to do it with a revenue share model."

So, A, it's a better experience for your customers. B, it's a better experience for your network, less demand on your network is much deeper in your network. And C, you participate in the revenue stream. So it's like everyone wins a better experience for everybody, but rather than build a huge platform and hope to be able to land content delivery on it, we're starting with, "Hey, content delivery and we're doing it in federated. We've got a bunch of certified across the globe that have already deployed this." And so, it's been a big success and now we're working on how do we layer the next use cases. And again, it's not like, "Hey, we sell you infrastructure, and



you go figure it out." It's we sell you infrastructure, but we bring the applications along in the process, so you can monetize it on day one.

Daniel Newman: Yeah. So I like that, theoretically, Shawn, because it sounds like you guys have been able to ramp up. What I'd found, and gosh, this goes back multiple years for us, when we were doing surveys and research on say 5G, and we were talking to service providers, and that question that they were asking is what's the killer app going to be?

Shawn McCarthy: Yeah.

Daniel Newman: So it kind of sounds to me like you've been able to partner with them, they rose their hands and said, "All this OTT that's going on, especially in content, we're not really making the revenue from it. It's kind of going around us. So how can we participate?" And it sounds like that's been sort of the first killer app and by the way, very natural-

Shawn McCarthy: Yeah. I think I would say content delivery is more of a low hanging fruit than the killer app.

Daniel Newman: Okay.

Shawn McCarthy: And I think it's an interesting space and it's really ripe for disruption. The most interesting live content today is becoming sports. And you're seeing more and more live sports being delivered by streaming services. And we're working with a couple big content providers to deliver live sports today. We just did a trial in Europe, and we have a big initiative happening here in the United States, where we're going to be delivering those live sports.

But I think when people talk about the killer app, they often talk about latency. Like this ARVR, we talk about the metaverse and it's really around, well, latency. Now, I agree latency is really important and the apps that require latency are really important, but the reality today is while 5G has this promise of one millisecond latencies on the radio network, that's a solid 10 years out. So we can't wait for these latency intensive.

So right now, today, it's about 20 milliseconds is what you're going to get in terms of the latency of a radio network. And to get outside of a service provider network to a public cloud, or an edge cloud that a Google or a Microsoft or an Amazon host, you're only adding about another two milliseconds. So latency's probably not the killer app, at least now. I think it will be eventually. But rethinking bandwidth consumption, I think, is a really important thing.

I'll give you an example because with the live sports thing, it's really top of mind, we're working with a startup company that does video rendering. So if you can have a 360 degree, every camera angle covered of a live sporting events, this company makes software that will crunch all of that data together and will re-render the sporting event, such that you and I could be neighbors, but if we're watching a soccer game, I might want to watch the game through the eyes of Messi. I can watch it. I can watch him score that goal through his eyes. You may want to be the goalkeeper and see what it looks like when messi rips a shot from the 18 yard line at your net. So, we can choose different perspectives.



Now, today, that is about a 500 meg stream to be able to deliver that experience. Right now, a typical Netflix movie is about 2 megs. Now, listen, the technology's going to catch up. It's going to get crunched down, but it's never going to be a 2 meg stream. It's going to be tens of megs, maybe even up to close to a hundred meg stream. And so if you think about the scale of networks to be able to deliver that, the only way these things happen is if the service providers are participating in the value chain. If they have to bear all the costs to continue to double and double and double the capacity to networks and all the revenue is going to go to someone else, it's just not going to work.

So, we're working on those things. I think rethinking bandwidth delivery, rethinking use, consumer experience of high bandwidth applications, because, listen, I think at some point, it just becomes a bad experience for the consumers if the service provider isn't able to keep up and deliver that capacity. And if they don't have the revenues, they just can't do that. So, I think it's really short term. It's going to be around efficient bandwidth delivery versus latency. And I think latency applications will become the killer apps as we get closer to those theoretical one millisecond latencies in 5G.

Daniel Newman: Yeah. I think there's some, and obviously, there's kind of a span of consumer to industrial because like what you guys are doing with consumption based, fixed wireless 5G, at the part of your business model is certainly an example that will probably be heavily adopted in industrial manufacturing type applications initially, and will very likely scale into other applications as well. Listening, you talk about sports. I think when you and I had a background conversation, I told you, I still remember four years ago at the World Cup, I got a set of VR goggles sent to me and an app on a smart device. And I was told, "Hey, you can watch the World Cup games like you're standing in the stadium." And the amount of bandwidth and the intensiveness of it and just the quality, it just wasn't there yet.

It's kind of like, this is the symbiotic relationship between the service providers and the network and the actual app developers. Sure, you can develop an app. You were talking about the one you mentioned about seeing the game through the eyes, but if the network doesn't deliver, it doesn't matter. And the big problem and the big risk for both the service providers and the app developers are you bring something out too early and it doesn't work well, you often end up spending time in that disillusionment phase where people, it takes a long time to get them back to believe. Because you're like, "Oh, I tried VR. It stunk. I didn't like it."

Shawn McCarthy: Yeah.

Daniel Newman: Well, you were trying to run it on a 4G or 3G network. You were trying to use a huge application. The screen res, all the things that have come along, but at the same time, innovation sometimes moves a little faster than, what I would say, largely available consumable technology.

Shawn McCarthy: Yeah.

Daniel Newman: I want to ask you one more thing to wrap up our session on, because first of all, this is a huge opportunity and I really appreciate how you're putting this all together. But some of the things



I'm hearing here, Shawn, I'm hearing federation. It sounds to me like you're working on creating unity across the service provider landscape. Two, it sounds like you're focused deeply on use cases that help these service providers identify revenue streams.

With those couple of things in mind, what are the recommendations that you're making to the global service provider CSP space when it comes to thinking about architecting networks, developing streams of revenue to make sure that they're able to capitalize on this next generation of opportunity associated with networking?

Shawn McCarthy:

Yeah. Yeah. Listen, there's probably three areas we're spending a ton of time with tonight. So the first is what I talked about today already is around this carrier edge initiative. And like I say, it only works if we create a unified environment for the app developers such that it's sustainable for them. They cannot afford, in their business models, to go and have a unique deployment per service provider, so that's where that federation comes in.

You mentioned 5G, right? So I don't know about you, but I've never met a person that says, "Hey, I'm getting 5G for my mobile service provider but I'm willing to pay more for it." So, the way 5G is going to be monetized is a hundred percent at the enterprise. And when we think about that, we actually think about 5G at the enterprise is like the movie Fight Club. So, if you know the cult classic Fight Club, the first rule of Fight Club is you don't talk about Fight Club. Well, with private 5G and our private 5G as a service solution, the first rule of private 5G is don't talk about 5G.

It turns out, customers don't care about 5G. What they care about is building the factory of the future. They care about turning on new services at SmartPort. They care about worker safety in minds. So it's about efficient operations. It's about more safety, it's things like that. So, we're working with service providers in very, very verticalized, focused effort to help them deliver on these goals.

It doesn't really matter. Most of these things are half Wi-Fi, half 5G, or I should say, actually, they're probably 75% Wi-Fi, 25% 5G. There are some things that 5G really brings to the table to enable the factory of the future. Wi-Fi is still going to play a role in it, and actually, the customer doesn't care. They don't really care what it is. They just care about delivering the outcomes that they're looking for. So, those are two initiatives in terms of how we help service providers participate in value streams, grow their revenues.

The other big piece of it is looking at how they take costs out of the network. And we really need to rethink the way we architect networks to do that. And I probably won't get into too much detail with you on this one, but the way we build networks is based on assumptions from 20 years ago.

So 20 years ago, the router was the most expensive element in a server provider network. I always use the example of, if you had four cities, daisy-chained along, city A, B, C, and D, and you needed to move traffic from city A to city D, well, because the router was the most expensive element in the network, you actually avoided the router at all cost. And the way you avoided the router is we built a parallel network at the optical layer to avoid that expensive element in the



network. And we added a ton of complexity by doing that. There's new control planes and management planes. We have whole teams inside of service provider organizations just to maintain and do sparring and mops and upgrades and just maintain and operate that parallel network.

Well, here we are 20 years later and we ask ourselves, "Well, is the router the most expensive element of the network?" And the answer is no. There's been tremendous innovation in silicon. All right, what else has happened in the last 20 years? Well, we, actually now, also have the opportunity and we've had development in silicon photonics that allows us to take really complicated transport technologies at the optical layer. And we just put them in a little pluggable optic.

And the third leg of the stool is there's been so much innovation in software to abstract the complexities of networks at a higher layer. So now, you say to yourself with all those things in place, "Would I build these really complicated three layer networks?" And the answer is absolutely not. So, we've coined the term routed optical networking. It's a collapsing of the IP and the optical layers into a single flat network.

If you had a Greenfield opportunity, you would do this 100% of the time. We've done our own studies. There are other folks have done studies. It's roughly a 50% reduction in CapEx, reduction in savings. It's much more sustainable and green with less power and space. But there aren't a lot of Greenfield Networks out there. So we're working with all of our customers on journeys to get them to that next level, to get them from this complicated three layer network, to this very simple flat one layer network. It's probably a five year journey. It might involve reorgs inside of customers. It might be combining of optical and IP teams. It's a rethinking of processes, but it's something they can start today because instead of deploying a very expensive transponder, they can deploy much more cost effective pluggable optic for their next wavelength.

So, we're seeing it today. We're working with, I think we have, last I saw, over 130 customers that have begun that journey with us. About 20 have already started deploying with us. And it's just really going to be a disruptive way to build and operate networks. And it's going to drive, like I say, 50 X, 50% cost reduction is very material for these service providers that are spending 20 billion dollars on CapEx a year. So, we can really make a big dent with this. And it's something we talk about with every single customer we're engaging with today.

Daniel Newman:

Yeah. It's definitely an important transformation to be able to support innovation. And the bottom line is this, you and I have kind of debated a little bit. What is the killer app? What is the most pragmatic approach to revenue? Right now, what we do know is with each generation of networking and connectivity capabilities, the apps tend to follow in terms of what becomes heavily adopted. And to your point right now, no one's willing to pay more for 5G on the consumer side, because none of the apps have necessarily hit a point yet where it's life changing. Like, "Hey, I'm on this versus this. I can now stream my Netflix, or I can now do..." Most people are saying like, "What can't I do without 5G? What is the new thing that I'm able to do when I've added it?"



And the bottom line is we like to serve faster. Our streams come up a little bit quicker, but in the end, people's lives haven't changed yet. When all of a sudden, you're able to throw on a pair of lightweight frames and you're able to have immersive shopping experiences, where you're looking at things and you're seeing data in front of your eyes, and you're adding things to your cart and it's doing eyes and you're doing it with low latency...

Shawn, I could see all of the sudden, people will say... Again, the question, will they pay more specifically or can carriers raise their rates a little bit for that kind of connectivity? But the fact is you'll see the pricing skew. But as of right now, what you identified really are what are the in-market applications. And if these service providers do not make the investments at the core with their network, with the architectures, they're not going to be ready to quickly shift and pivot that word agile, when those next apps do become pervasive. And at that point, they're going to want to be ready to both monetize it and be sure to deliver and meet customers where they are.

Shawn McCarthy, Cisco, appreciate you so much joining me here in Six Five Summit. There's going to be a lot more conversations between us. I have no doubt. And it's really exciting to watch you guys continuing to innovate, taking technologies make them more consumable. And of course, the delivering those core technologies to that service provider space that are going to be required for that market to meet future customer demands. Thanks for joining me here at The Six Five Summit.

Shawn McCarthy: Thanks for having me, Daniel.