DR: [00:00] I am Danielle Royston, and this is Telco in 20.

[00:14] Five years ago when I started yapping about the public cloud in telco, everyone told me it would never happen. But then things started to change. At first, they said, "Okay, but for enterprise IT and BSS workloads only." Then it was, "Sure if you're a Greenfield network like DISH." But so much has changed in the last few years since Cloud City at MWC21. Now my question to everyone is, which telco workloads can't move?

Ignoring the obvious strategic question about whether you can trust the hyperscalers or not, I wanted to do a podcast on whether or not we are technically able to run network workloads on the public cloud. Are the hyperscalers ready to support highly resilient, low latency networks or not?

Today on the podcast, I'm talking to Ben Baker from Juniper Networks, the company that works with both hyperscalers and operators to build networks. While we can't answer the strategic question for you, wamp, wamp, we're going to get to the bottom of exactly how far telco can go. How much of the network can move to the public cloud? Let's take 20.

[01:25] Ben Baker is Senior Director, Cloud Marketing and Business Analysis, at Juniper Networks. Hi, Ben. Welcome to Telco in 20.

Ben: [01:32] Hey, Danielle, been a longtime listener of your show, so it's nice to now be a participant.

DR: [01:37] Yay. Well, thank you for being a longtime listener and now a guest. I am super excited to have you on the podcast today. And to start, you've been in the telco industry way longer than me, I think close to 25 years. Tell me about your telco experience and what do you do for Juniper Networks today?

Ben: [01:55] Yeah, I've been in and around telco and networking for about 25 years, as you say, the last 11 at Juniper in a variety of roles. Currently, I wear two hats. I run a business case analysis group that works across all our customer segments and all of our product portfolios. And I also run

marketing for our cloud data center business unit. And it's a great position to be in that gives me a front row seat into how networking has been moving towards the cloud.

DR: [02:20] That's awesome. I'm a software girl and I've got to be honest, when I think about Juniper Networks, I think about hardware, but that's maybe because I'm old school. And so has Juniper been making that transition to be more of a software company or maybe a combo of the two, software and hardware?

Ben: [02:37] Yeah. Juniper Hardware Company, that's so 2000's. But yes, of course.

DR: [02:41] Sorry.

Ben: [02:42] We have a comprehensive hardware portfolio around routing, switching, security. It's what we're known for. But did you know that about 90% of Juniper engineers are actually software engineers?

DR: [02:54] I know that's surprising to me, to be honest.

Ben: [02:58] And part of that is our Junos operating system, which is every bit as important as the underlying silicone that it runs on. And then thinking about the last 10 years or so, to the point of your question, we've invested incredible amounts of time and money in what I'll loosely call off-box software. Increasingly, the differentiation that you provide for a customer today is in the experience, and this is the experience of the network operator, but also the end user.

And we do this through management and automation software across the different domains. Paragon in the WAN, Mist in Campus and Branch, which is our AIOps solution and Apstra for data center fabric management and automation.

And then when you get into telco cloud, which I know we're going to dig into further-

DR: [03:46] For sure.

Ben: [03:46] ... our contrail product or CN2 is our CNI, our container network interface, but with better features around

networking and security than your typical CNI. And a lot of exciting things going on with CN2. It's a great solution to solve problems like Kubernetes multi-cluster sprawl. CN2 is portable across public and private clouds. It integrates well with Apstra, so we have that direct link from controller to hardware. And this is a key part of our overall telco cloud solution. And also our cloud metro portfolios, a key piece of that as well. And we had a ton of interest in these topics recently at the Mobile World Congress.

DR: [04:26] Yeah, I mean, two years ago I went to MWC, took over the Ericsson booth and we created CLOUD CITY. And at the industry level, I'd say there wasn't a lot of talk about cloud at the time. And now walking around MWC23 this year, the hyperscalers are there in full force, all three. Big booths, multiple booths. Lots of discussion about cloud.

[04:44] And so I'm the public cloud girl in telco. It sounds like you guys are also seeing that transition in your business to more cloud computing. Sounds like you're driving that into your products as well.

Ben: [04:55] Well. Yeah, absolutely. And city is a great term to refer to some of the sizes of booths at Mobile World Congress.

DR: [05:00] Totally.

Ben: [05:01] I agree with you. And I think it's not a stretch to say that the most important strategic decision up to the board level for many telcos around the world is should you work with the hyperscalers, the public cloud providers? Or should you do it yourself?

DR: [05:16] Yeah, it's a big question. I did a talk at MWC21 about two sides of the public cloud because it's not necessarily the easiest decision to make. But there's so many advantages of using the hyperscaler technology you can't really ignore it.

And so for you guys, it sounds like as you are designing your products and going to market, designing things that are, I'm going to use air quotes, cloud native, is that more like containers and Kubernetes things that work in a cloudy

way and not so much hyperscaler-specific and running on the public cloud per se?

Ben: [05:48] Yeah, absolutely. I think it's a great summary of it. The idea of cloud native for me starts with how an application is fundamentally architected. And cloud native generally means an application is written as or composed of microservices. That means typically, like you say, it runs in containers with Kubernetes as the orchestration system.

And this change in how applications are architected versus traditional ways where an app would be tied monolithically to a VM or even a particular piece of infrastructure, this change has ramifications. It means that apps are now more dispersed. They're spread out as a collection of workloads across different logical or even geographic data centers. Cloud native means apps are ephemeral. These workload components are now turned up and down really quickly. They're more dynamic. And it also means that apps are fungible. Microservices are movable and interchangeable across cloud infrastructure.

Now, I think the most important ramification of all of this, and this is really why I come to work every day for a network infrastructure vendor, it's that in this new cloud native world, the network is even more important than ever. This dispersion of workloads, it causes new and very acute challenges around basic connectivity of course, but also around security, latency, resiliency. And we say the cloud is a network, you can't separate the two. And of course, the cloud is really an operating model, a way to work.

DR: [07:19] Yeah. It changes everything. I think people are starting to realize that. Obviously I come at it more on the enterprise IT side, which I think is a foregone conclusion that that is absolutely able to run in the public cloud. But even for the software applications, like you said, they're fungible, they're dynamic. There's components that are being updated and upgraded.

And in the old days you were in control of that rate of change. And now with public cloud components, things are happening underneath you and you're not even in control

of it. It just requires a higher level of robustness and operational capability. And that's hard.

But I also think there's a great opportunity for cost savings and ideas coming to market so much more quickly.

Ben: [08:03] Absolutely.

DR: [08:04] And I'm not a network girl. You're coming here with the network. As you guys are talking to telcos with your products, are they asking Juniper to run their workloads on hyperscalers networking workloads? Or is it still really, "Okay, yeah, we're going to move IT stuff over. That's a no-brainer, but the network still is staying in house."

Ben: [08:26] Well, the answer is it depends, yes and no. I'll give you two examples. On one side of the spectrum, you have the clean slate network operators like Dish, and they're very aggressive as you know in this strategy of being public cloud first which is designed from the ground up as a cloud native architecture to be run on a hyperscaler public cloud.

Now, on the other side of the spectrum, I'd call out Deutsche Telecom as an example, and they're another operator that we've worked with very closely in cloudifying. In this case they're next gen IMS and keeping that in-house effectively on prem.

And a key point I add into the discussion about telco's potentially owning their own telco cloud infrastructure is that horizontal stacks are the way to go, not the integrated vertical stacks that would come from a single vendor for each separate application. Some telcos had gone down the vertical path, but it wasn't really successful. The experience of telcos here has been very clear. They need the flexibility that a horizontal telcos cloud stack could give you.

DR: [09:30] And in that example, just to name names, but is that an Ericsson vertical stack that you're talking about or like a Nokia?

Ben: [09:36] Yes, those are examples. Yep.

DR: [09:38] Yeah. So now let's get into what everyone asks me all the time, which is, "How much of the network can you really run at a hyperscaler?" And ignoring the obvious, should you or shouldn't you from a competitive point with the hyperscalers. Let's just pretend the hyperscalers were like, "Nope, we're never going to build networks. We don't care about networks. We're going to give it up to the telcos. You guys know how to do that." But just from a technical perspective, can you really run a network on a public cloud? Does it really work? What do you guys think?

Ben: [10:09] The short answer I would say is generally no, or at least not yet. And here's the way we start to think about this question. Hyperscalers have key capabilities. Telcos have key capabilities. The hyperscalers are really good at building massive cloud infrastructure. They have armies of talented software developers, and they typically do it themselves when it comes to building automation tools and hyperscalers move really fast. I think you had mentioned before, sometimes they break things, which is an important point to consider when you're asking that question about telco workloads running on top of them.

Now, telcos on the other hand, own vast real estate assets. The biggest telcos can have what, 10 times the number locations versus a hyperscaler probably. Telcos have long-standing billing relationships with millions of customers. I've been paying my wireless service provider $75 a month for 25 years. That's a lot of money. That adds up. And I pay even more to my internet service provider.

Getting to your question, telcos are also fundamentally driven by reliability. You have regulations around 911, CALEA that the public cloud is just not ready for today anyway. It's been a while since I picked up a landline phone. But seriously, when did you ever pick up a phone and not get a dial tone?

DR: [11:33] And it not work?

Ben: [11:34] Other than 9/11, I mean, the answer for me is I think never. You put these strengths of telcos with the strengths of hyperscalers, and that question is, okay, are they friend or faux or partners or friends with benefits? And

we generally think that they should be partners. Of course they are in many, many cases.

One end of the spectrum is Dish, and like I mentioned before, getting cloud native workloads on public cloud. And like you say, in some cases, private cloud even for critical telco workloads like 5G core and RAN.

When you get into the traditional telco part of the discussion, one way to look at it is different workloads. And you had mentioned before, generic IT workloads. You know a telco is just like any other big enterprise.

DR: [12:17] Sure.

Ben: [12:18] They have their enterprise workloads, including perhaps most importantly OSS and BSS. There's no I would say big strategic barrier or technology barrier to a telco going to public cloud for those general IT workloads. But of course, you weigh the standard trade offs of cost and flexibility, predictability or bursty-ness of workloads, security, all the factors that go into that.

DR: [12:41] Yeah, I don't think there's anything particularly unique in these applications that you don't see in any other industry. And a lot of the other industries have said, "Yeah, the cloud is reliable enough for customer relationship management." Salesforce is a clear winner there. But then all the other things along with it, there's not this 25 nines of reliability for your customer support that you need. And so the cloud is secure enough, reliable enough, and if you do it right, cheap enough and it makes sense. And so I don't know if that ship is sailed in telco, but I think it's definitely getting ready to leave the port on enterprise workloads, for sure.

Ben: [13:21] I would still perhaps push back a little bit on that. And there's plenty of enterprises that are keeping plenty of workloads on-prem, and that'll I think continue for the foreseeable future. But no doubt there are many large benefits in many cases to moving those workloads to public cloud.

[13:36] But getting to the interesting part of your question is should telcos put their network workloads on public cloud? You can certainly use public cloud to experiment. A telco can and should help build up their own cloud skillset by using public cloud tools. You can certainly easily use public cloud for development and test environments, for speed obviously to get things out quickly. But we think it would be a mistake to just seed that telco cloud, that the telco infrastructure workloads to public cloud. Because it's the essence of what a telco is, or at least what we think it will become over the next five to 10 years.

[14:12] And I'm pretty confident that most large telcos agree with this sentiment. And in a roundabout way to answer your question, it really depends on a lot of factors and some incredibly complex interactions. And if this question weren't murky or messy enough, a final point I'd make here is exactly what is telco and what is public cloud? Where's the demark? It's conceivable to build telco edge infrastructure on an AWS outpost rack, but it sits in a telco location. The economics that the money can go both ways, it's really murky about where that demarcation is.

DR: [14:52] Yeah, I mean, I guess to summarize, I think people will say, "Oh, greenfield network, sure. Okay, enterprise IT workloads, that's okay too. Testing R&D, we can run those workloads in the public cloud." And I think the last private networks, "Okay, doesn't have the 911 requirement and all that stuff." But if I'm a telco from a technical perspective, I think I'd try to run as much as I could on the public cloud for the things that I could and the things that I couldn't, keep it.

Because my point of view is those hyperscalers, they're chasing all the industries. They're chasing horizontal workloads. They're looking at the telco industry that's like, how do we make our 5G use case and our ROI on it and the massive CapEx to extend the network and cover rural? They're like, "We're good. You guys can't figure it out. And you guys have been doing it."

Ben: [15:46] Don't need to deal with local city councils to get permits for a new cell site.

DR: [15:50] They don't want to do that. I mean, again, this is a debate, and I could be wrong. I'm not a network person, not an expert, never run a telco. But if I'm at AWS, I'm like, "That sounds like a really hard job, guys. You guys are doing great. Keep doing it. We need it. We use it. But yeah, we don't want to go do that."

Ben: [16:06] Yeah, there are some elements of the last mile that just aren't a great business. Yeah.

DR: [16:10] It sucks. Now maybe Starlink is something you got to worry about. I don't know.

Ben: [16:15] But yeah, Danielle, I generally agree with some of the things that you've summarized from a technology point of view. But the premise of your question was ignoring the elephant in the room about the strategic aspect of it. Does a telco want to give away the crown jewels?

DR: [16:30] That's a whole discussion. But let's solve the technical debate, can it work?

Ben: [16:35] Yeah.

DR: [16:35] And it sounds like there's still work that needs to be done to make these hyper clouds carrier grade. You can't run the whole thing. Can't do 911. There's still lots of stuff changing and things like that, but they solve that maybe, and then you leave the strategic question of should you or shouldn't you.

Ben: [16:51] Right. Even to the extent we're not there today, I think technologically we'll get there. I don't think there's a huge barrier to that.

DR: [16:57] I think so too. Oh my God. Anyways. Well, that's fun. I mean, I get this question all the time. It comes up on panels, and so I think we'll be talking about it a little bit more this year on Telco in 20.

Ben: [17:09] Yeah, and the nice thing is Juniper wins either way. We supply both sides, so it's all good.

DR: [17:14] So you're psyched. And there's so much change coming. You guys have tons of opportunity, so it's going to

be super exciting. And so speaking of super exciting things, when I was reading up on Juniper Networks, I found out you guys are a global partner with Aston Martin F1 racing team. And so what do you guys do with those guys?

Ben: [17:33] Yeah, Aston Martin's a fun partnership that we have. And it's easy to get excited about Formula 1 and even James Bond, so we get a lot of buzz out of the relationship.

DR: [17:41] Yeah, totally.

Ben: [17:42] Yeah. Aston Martin is an important customer of ours. There's that part of it too. Just relatively standard enterprise networking infrastructure across their manufacturing sites, corporate offices, customer facing sites that they have. And between Aston Martin and Formula 1, they're such big brands that we have other opportunities to work with them, whether it's something like sustainability initiatives in local communities, and of course the races themselves, which are the most fun part I think.

DR: [18:11] I interviewed an F1 race IT guy, and I guess it was a couple years ago. It was during COVID. And it was so funny because they moved a lot of their infrastructure up into the public cloud. And I was like, "What were the objections that your company had?" And it was all the same things I hear from telcos. Security, we don't want other F1 teams to be able to get access to our data. Latency. It was so much of the same excuses, and I was just laughing the whole time because I had telco execs on. I was like, "This sounds like all of you guys." And the F1 guys got over it, so maybe the telco guys will get over it too.

Ben: [18:47] Is it mission critical is the key question. And it just is for a lot of companies.

DR: [18:51] Yeah, it is. Well, Aston Martin, good enough for James Bond, good enough for me, maybe. Every so often in Austin I see an Aston Martin and I'm like, "That's a good looking car." Sounds like you guys have awesome customers, a great future, cloudification of the network is

coming. And so again, Ben, thank you so much for coming onto the podcast. I think we had a great conversation.

Ben: [19:10] Thanks, Danielle.

DR: [19:11] Awesome.

Ben: [19:11] Great to be here.

DR: [19:12] Yeah.

[19:13] Stick around because we're ending each podcast with a Telco and 20 takeaway. I have 20 seconds to tell you something you need to know.

Did you hear what Ben Baker just said? He thinks it's only a matter of time before the hyperscalers can support workloads for telco networks. Whoa, Nelly, that's huge if true. Telco can move a lot more to the public cloud than most people think. The only question that remains is whether or not moving the network to run on the public cloud is the right business decision.

[19:45] Like I said in the podcast, I don't think the hyperscalers want to run networks. As you know, building a network is hella hard and you guys are great at it. Meanwhile, all the talk at MWC23 was about how to get the ROI on your 5G network. I think the hyperscalers will leave that to you while they continue to march on their quest to own all the enterprise workloads in all of the industries. So I say use the public cloud, jump on and ride that public cloud dragon. Dracyrious!

[20:12] Speaking of Dracarys Targaryen and her army, it's time for me to activate my cloud army. Vote for me as telco's most influential person in cloud, in Silver Lining's March Madness contest. Help me make the Elite Eight this week. I'm up against some heavy hitters like Adam Selipsky, Thomas Kurian, and Satya Nadella. Holy shit, can I take down the big guys? Help a girl out and cast a vote for me?

[20:41] You'll find the link in the show notes. If you can't find it, then DM me on Twitter @TelcoDR and connect with me on LinkedIn.

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