



Technology Policy Institute

Fireside Keynote, Aspen Forum 2022

Speaker:

Marc Ganzi, CEO, DigitalBridge

Moderator:

Scott Wallsten, President and Senior Fellow, Technology Policy Institute

Monday, August 15th, 2022

12:00PM-1:00PM

Event page: https://youtu.be/jdgf_pEjb8s

Scott Wallsten:

Welcome to lunch everybody. I hope you're all having a good time. This morning sessions were fascinating. We're glad to see you all out here outside. It's always much better to be outside in Aspen than in the basement of a hotel. Now at lunch today, we are honored to have as our Keynote Speaker Marc Ganzi, who is CEO of DigitalBridge. Because DigitalBridge is part of so many aspects of digital infrastructure, he's really a perfect speaker for this year's Aspen. We'll take questions at the end, but remember, you can use Slido to submit questions.

Marc Ganzi is CEO of DigitalBridge and has been an investor and operator in the digital infrastructure sector for more than 25 years. He founded DigitalBridge holdings in 2013, built the firm into a leading global manager of digital infrastructure assets with more than 20 billion in assets under management until its merger in July 2019 into the current company, DigitalBridge Group.

Scott Wallsten:

Previously, he founded Global Tower Partners, which became the one of the largest privately owned tower companies in the U.S. before being acquired by American Tower Corporation in 2013. Prior to that, he worked as a consulting partner for DB Capital Partners, where he oversaw the institution's investments in the Latin American tower sector. Before that, he co-founded and served as president of Apex Site Management, one of the largest third-party managers of wireless and wire line communication sites in the U.S., when it eventually merged with Spectra Site Communications to create one of the largest telecommunication site portfolios in the U.S. Now, not just business, but in 1990, Mr. Ganzi served as an Assistant Commercial Attache in Madrid for the U.S. Department of Commerce's Foreign Commercial Service Department, was a board member of the Wireless Infrastructure Association, and was chairman of that from 2009 to 2011. As you can see, if you want to know something about digital infrastructure, this is the person to ask. hopefully we'll ask quite a lot. Also, Marc's family is here and it's always nice to have someone care enough that they bring their family. Marc, thank you so much for being here. I really, really appreciate it.

Marc Ganzi:

Yeah. Thank you, Scott. A pleasure to be here.

Scott Wallsten:

So DigitalBridge touches really probably just about everyone in the audience, even if you don't realize it, whether as a supplier, a competitor or for policymakers, a company's whose products and services are going to determine whether your policy priorities succeed. Before you really get into it, tell us a little bit more just about the business, what DigitalBridge does and its role in the infrastructure.

Marc Ganzi:

I like to distill it to maybe the simplest form, which is we're sort of the dumb plumbing, I guess. We own about 368,000 miles of fiber here in the U.S. We've about 250,000 macro sites. We have about 48,000 small cells. Globally, we own about 450 data centers. If you've made a phone call or you've sent a text or you've responded to an email, that form of communication will touch something that we own and operate. Everything that we do on a daily basis today requires low latency, high speed connectivity, and our 29 companies globally are focused on that, not just here in the U.S., but we operate now extensively in Asia have a very large presence in Europe, and then we've been investing and owning and operating in Latin America since the late 90s. We're a big believer in infrastructure, down south as well.

Scott Wallsten:

Do you see from your vantage point effects of the various policies that we've been talking about? You know, the biggest broadband subsidies are yet to come, but there's been a lot so far and all this talk about ways government is trying to stimulate the sector. Do you see it in different kinds of orders people are putting through?

Marc Ganzi:

We're not seeing it yet; I don't think we're seeing it down at sort of the street level yet, but the implications I think are significant. You know, there's a lot of change that's happening in network infrastructure, and there's a lot of change obviously happening not only in wireline technology but the migration of 5G is probably the biggest step function form change we've seen in network topology and going back all the way, if you remember the days of 1996 when we moved from 1G to 2G, I would say this migration path to MIMO that standard. Ultimately the decentralization of the RAN - the Radio Access Network is a massive change in the way RF engineers are designing networks, the way that we're thinking about how to use 5G, the use cases are changing very rapidly.

Marc Ganzi:

There's a lot of awareness around that catalyst and what it's going to do. It then also changes definitionally where we put infrastructure, how do we put infrastructure? It creates a lot of challenges for policy makers because they're, they're trying to keep up as fast as they can. I'm when I say policy makers, there's a federal overlay, but there's a state overlay. Then there's what I call the state and main overlay, which is local municipalities, trying to figure out how to deal with the onslaught of applications that are coming that involve, you know, for one example, private 5G enterprise networks: should that be regulated? How do we think about building that infrastructure? Our businesses are incredibly dynamic at the moment and we're responding to how regulators are thinking about that. I think on the president's initiative around broadband deployment, it's a bold, big swing.

Marc Ganzi:

You know, there's sort of that lip to cup execution, to use a golf analogy, a lot of money being thrown around, where does it ultimately end up? How do we create change? And, ultimately, how does it impact consumers and businesses? And I think this is the real challenge for policy makers and for private enterprise. I look at that bill and I dissect that bill on multiple levels and there's some places I think we've hit it right. There's some places I think we need more work. I was going to say miss, but I don't want to do that in this room.

Scott Wallsten:

What are some of those places?

Marc Ganzi:

Where did we get it right? I think the 45 plus billion that's going out to the states that the NTIA is distributing is inevitably the right path for that money. We do need more infrastructure spent at the state level. A lot of that money will be sourced I think with the traditional swim lanes, which is mostly the regional Bell carriers who are incredibly well-established and have great lobbying efforts at the state level. A lot of that money's already spoken for. We kind of know where that's going. look, in all fairness to the Windstreams and the Lumens of the world, they've got a massive challenge to overbuild copper infrastructure and bring fiber to homes and fibers to businesses. a lot of those territories you don't want

to serve. I understand that - I feel Jeff Storey's pain and, and I feel Tony's pain, and their customers of ours and they need help, because there's well financed, private operators that are overbuilding them.

Marc Ganzi:

There's a lot of competition that's happening. I think this does stimulate the right competitive profile on a state level. The one thing that I like what Alan did in this: in that first tier of the spending there is an opening for education and for jobs. That's really important. We cannot miss that right now. Our biggest problem, once again, owning 29 companies globally, I can't get people back to work. I can't get people to micro trench ditches. I can't get people to climb poles. I can't get people to build cell towers fast enough. We have a massive labor shortage issue. Supply chains are correcting themselves, but our biggest challenge today is keeping up with customer demand. That I see a lot of people doing this. I think people agree with what's happening, and we have to find solutions to that.

Marc Ganzi:

You and I were talking about it earlier, and this is something I'm particularly passionate about. I know that we've got to find a new vocabulary, or we've got to find a new dialogue about how we really stimulate our youth to want to go into vocational based education. How do we not make that a bad word because you and I were talking about vocation training earlier, that oh - that's community college. No, that shouldn't be in community colleges actually. There should be degrees for RF engineering. There should be a data center engineering degree. There should be engineering degrees around how we ultimately build fiber and how we build networks. This is something that, that we're pretty focused on, and I hope the NTIA will help us in doing some of these things. I know our trade association, the Wireless Industry Association, our former CEOs sitting here in the front row and our current CEO, somewhere in the audience area.

Marc Ganzi:

He is right there. These are two guys that understand infrastructure deeply. You know, when I was involved with Jonathan helping drive policy at WIA, we were very focused on jobs. we initially focused on the military. I see there being two really good opportunities to re-tool our economy. I see our youth and I see our military, you know, "Warriors for Wireless" is a great association. It's something that we should be driving more money into as our veterans sort of time-out. They come in back to the workforce; what a better place to put them in than building cell towers and micro trenching and doing some of the things that we're talking. We're building data centers. I can't think of the employees that we've hired down at our portfolio. We have 29,000 employees across our 29 companies.

Marc Ganzi:

Our best employees are ex-military by far in operations. People that maintain the infrastructure, people that build the infrastructure. Why? their profile is suited for that; they're mission capable. They understand duty, they show up on time, they work hard. These are things that seem to have escaped the American workforce recently. I like people that want to go to work and want to get the mission done. We've screened 50,000 veterans. We put 2000 veterans to work. We could probably put 20,000 veterans to work in the telecommunications industry, just on the front lines of building that infrastructure. I would really love a part of that first tranche of the bill to go towards jobs.

Scott Wallsten:

So let me push a little bit on the labor issue, because there are a few things. One is, you know, there's a short-run problem. Then there's sort of a longer run problem, and we'll hopefully solve some of the longer run problem with some of the educational changes that you're talking about, or maybe even medium-term. But right now it's not: it seems like it's not enough just to train people because the problem is not enough people in the labor market, the labor force. You know, do we think about how to encourage people to come back into the labor force - I mean, or that the most immediate way is to allow lots more immigration and that just doesn't seem popular.

Marc Ganzi:

It's not popular, unfortunately. Look, immigration can be good. I mean, we've sourced a lot of great RF engineers from places like India and the Middle East where they're highly educated they're vastly underpaid in their countries. Look: if Americans aren't going to take those jobs, then we need, you know, next woman up or next man up. I don't think our economy can sit and wait. We've had some of those challenges and immigration's one possible lever that we have. Another is, you know, through the education system. We've invested, you know - one of our sort of DEI initiatives is impact data. This is a great organization. We're building data centers at Historic Black Colleges and Universities. There's 107 of those universities. We think a third of them are ripe for doing it. We're building our first location at Morehouse College. These are 40 to 80,000 square foot data centers. Half of it is you know, working with Amazon and Microsoft who are actually putting infrastructure in those data centers, but the other half of it is classrooms and educational tracks, and creating that curriculum that's ultimately going to retool the economy and put young Americans into great jobs.

Scott Wallsten:

This is actually one of the, I think, one of the interesting things about DigitalBridge is that you've got these different, I don't know whether you call them pillars or I don't know what, but you know: you focus on towers, cells, fiber networks, data centers, and edge infrastructure, and they all kind of fit together. You've got these initiatives - how do they, I mean, how are they complimentary?

Marc Ganzi:

Well, I think what's unique is we have different businesses that address very surgical parts of the ecosystem. Whether it's, you know, fiber optic cabling or cell towers or data centers. But the sort of overlay is really based on what the customer wants. I think in my sort of 29 years of doing this our customers have changed and where we have found relevance is the ability to sit with customers and ask them, okay, where do you want to go next with your network and, and having that sort of high level intellectual conversation about what the network looks like. How do we put the pieces together is our primary challenge as investors and as operators. I think what's been a lot of fun is, you know, in the last three to four years is really thinking about this marriage, Scott, between cloud and mobility and which gets me to one of the pieces in the \$65 billion bill - which is the middle mile and really the definitional change of middle mile, and what does that pose and how do we redefine it?

Marc Ganzi:

If you think about 5G and cloud sort of both going down, you know, sort of two highways together they do converge, right? Because ultimately, all of the network radio infrastructure that makes 5G work is now cloud-based. Everything that Nokia and Ericsson delivers to AT&T, Verizon and T-Mobile is based on a CRAN or ORAN architecture. If I'm going too fast send a text to Scott and I'll answer your question. But the key to this is, networks and the way they were built were typically a very linear relationship. You'd

have a tower, you'd have a radio, you'd have a set of antennas, you'd have fiber, a copper back hauling that to a switch somewhere. That no longer exists in a 5G architecture. You have a multipath authentication where, because of the MIMO standard, MIMO is multiple input, multiple output, which means you can operate one wireless network and you can operate three or four different bands of spectrum from one set of infrastructure - really unique.

Marc Ganzi:

So your phone: if you have a 5G phone, your phone can actually work on four different bands of spectrum. Your phone is actually doing four different things at the same time. It's running apps, you're responding to text messages, you're taking a phone call. You're inevitably sending an email, you're opening a PDF and your phone intelligently because of the CRAN or ORAN network is making the spectrum decision for you. You have no choice in that. So to make that happen, you need the cloud. This is the first time where the cloud is intersected with mobility. To make that happen, it's no longer building a quarter, you know, 250 million switch in downtown Dallas. Now, if you're T-Mobile, you've built 14 RAN hubs around Dallas of which none of that infrastructure sits in downtown Dallas, it all sits on the edge.

Scott Wallsten:

So do you consider the cloud part of middle mile now?

Marc Ganzi:

Completely. It's actually seminal to middle mile. I think you and I were talking earlier about what is edge computing. How do you find - how do you define edge computing? I think we're going through that right now. We're trying to create a definitional physical location to where the edge sits, and to most people you're like, "oh, edge computing - that sounds really cool". What does it actually mean? The edge actually is a physical place. It's where data is originated. It's where data comes back. It's where data is stored and it's where high-powered compute exists. Typically, most of that cloud architecture sits in what are called availability zones. I think some of the cloud players are here in the room so that they'll be, they'll be saying, yes, that's correct. But those AZs are changing because historically you've had really two types of compute. You've had ultimately high-powered compute that is fueling applications. Then you have high powered compute, which is storage. You can put anywhere, you can put it in Reykjavik, you can put it somewhere in the middle of Sweden. That's easy. It's really, how do you create low latency compute that's inevitably close to the consumer and the enterprise, and ultimately to devices in a world where we're fastly changing this notion of consumer to consumer, to B2C, to D to D-device to device?

Scott Wallsten:

Let's go back to middle mile for a minute. Because there's an interesting conversation before, by the way, when I'm looking at my phone I'm not answering emails - I'm trying to look at Slido. I'm very engaged here. I hope defining middle miles, you know, has always been a problem and definitions matter for policy a lot, because that affects what a subsidy goes for and whether how you can evaluate whether successful in various things that I, lots of other people have written about. Other broadband subsidy programs will write something and someone will say "no, no, no, that's not right, because it was middle mile and you're not using the right metric". You ask what the metric is, they'll say "well, I have no idea".

Marc Ganzi:

Well they're based on old maps, right? They're based on old data. That's, that's a decade old.

Scott Wallsten:

If you were to be thinking about a public policy for this, which is totally an unfair question because it's not your job, what would you include in "middle mile", and how to know whether, you know, it's the program's being successful?

Marc Ganzi:

Well, I think you have to reassess the middle mile because a lot of what's impacting middle mile is wireless. Historically, we've been only thinking about it in the context of wire line technology. You have to reimagine that and you have to reshape it because ultimately network usage has changed. COVID taught us that ultimately: where we went to work, how our kids got educated, how we did commerce, all of that changed overnight. Everyone left the big cities. We all flocked out to the suburbs. Many people flocked out to the country. They found out some of those homes had internet. Many of those homes didn't have internet. You'd have to get wireless connectivity. You'd use a dongle or use a Hive or you'd use your cell phone to get connectivity. Everything changed. Usage patterns changed. Use cases changed really fast, and adaptation and migration to all things digital changed.

Marc Ganzi:

And meanwhile, we're operating on these maps that are, as I said, antiquated. Don't exactly represent where pop density is, but most importantly, where data's being originated and where data's being consumed and where it's being stored. We're thinking that middle mile was always about connectivity to households, but no one's tracking how much data is being used in the middle mile. That's really the metric we should be thinking about, is "where is data being consumed"? That's really the definition of where the middle mile needs to be redesigned. So we had a billion dollars put in the \$65 billion bill for middle mile that probably at a minimum needs to be \$10 billion minimum. All of that middle mile should be focused on edge infrastructure. That's principally dark fiber, that's edge compute sites, which are really small data centers or edge data centers or open RAN hubs or CRAN hubs. You have to begin to start putting wireless metrics into the middle mile because you know - how many people still have in this room, a wire line phone at their house today?

Marc Ganzi:

Okay. Very few. There's a couple of hands. Congratulations. I'm sure AT&T or Windstream or Lumen thanks you. But that's a key point, right? We're operating off of old data. Scott, we need new data and we need new work and we need new grants put out to go do this work. One of the big, you know, opportunities that could have been addressed in this bill was dealing with exactly that. There's not enough capital spent in that bill for wireless infrastructure. This convergence of wire line and wireless has happened. It's over. If we think that wireless is not a relevant part of our infrastructure, then that was a big miss in the bill. So, I'd put more money into the middle mile. I'd put more work into studying what the middle mile is. I would create new KPIs and new metrics around the middle mile because our data is antiquated.

Marc Ganzi:

And ultimately our competitiveness as a country will rest in our ability to proliferate data on the edge, not data in the CBD. We've got plenty of data centers. We've got plenty of fiber in places like New York

City and Los Angeles, Atlanta and Dallas. You know, the pain points in COVID were candidly places like Poughkeepsie, New York. Aspen, Colorado. Not that people have a lot of sympathy for Aspen, Colorado, but there was really horrible connectivity in COVID here. But we have to start thinking about Tier Two and Tier Three markets. We have to think about transport. We have to think about new local loop in terms of how you define ultimate transport inside secondary and tertiary markets. We have to - what gives me hope is that part of that \$45 billion that's going to be appropriated at the state level will go to the R box who do have a series of old switching facilities that if you ever walk into one of those things, they're typically massive concrete buildings that had racks and racks and racks of copper switching gear. Now, all that copper gear is out - 95% of those buildings are empty. What can we do? We've got to repurpose those. We've got to put money into power. We've got to put money into connectivity and we've got to put money into backup facilities so that we can retool those old switches, those old COs into modern day edge compute facilities.

Scott Wallsten:

So DigitalBridge operates all around the world. How many of the types of issues that you've been talking about now are specific to the U.S.? How many are broader, you know, sort of dealing with just industry change, market change and you know - how do you, what do you think about the business climate in different countries? How do you compare them?

Marc Ganzi:

Well, I think, look - I know it might be hard for this room to stomach, but we actually have a pretty efficient regulatory scheme here. Go to Europe and your, your mind will be blown. Sure, but I actually find it's easier to operate here than it is in other parts of the world. I think I find that parts of Asia are very easy to do business with, and some parts are very difficult. You can figure out which one's really difficult. We don't do business there. I would say Latin America is evolving really fast. We've been down there for over 20 years. We really like the market. Wireless adaptation is actually faster there than it is in the U.S. social media; Latins are incredibly social on their phones, which is good news for us.

Marc Ganzi:

We're building a lot of the things that we were building three or four years ago. Scott, we're now building in Latin America. I always find there's kind of a four-to-five-year lag between Latin America. The U.S., believe it or not, we're still building 4G in many countries in Latin America, places like Peru, Columbia, Chile, they're just now starting to make decisions around their hardware and spectrum in those countries. Spectrum clearing down there's really hard - takes a lot longer. Our FCC does a really good job of spectrum clearing - it's my shameless plug for the FCC. We do a good job of clearing spectrum. We do a great job of auctioning spectrum in the U.S.; other parts of the world - very inefficient. That's in the plus column for us. Europe has a host of challenges.

Marc Ganzi:

I'd say the biggest challenge in Europe today is around data sovereignty and around power. You can't provision enough power fast enough to keep up with the web scalers. We're the largest owner of cloud-based data centers in Europe. We have over 28, you know, massive, public cloud campuses that we build and operate. Every time we build something it's fully leased within nine to 12 months. The demand is vastly outpacing the total amount of power availability in Europe, particularly in the, in the AZs that are in big cities. Europe has a power issue. It's not going away anytime soon. It's probably going to get worse before it gets better.

Scott Wallsten:

Are governments telling you to prepare for worse power problems in the winter to, you know, what we're reading about? Yes. Are they going to affect their edge?

Marc Ganzi:

Yes, Germany. We have that problem in Germany right now. the grid is being held back in Germany. They're reserving power. It's definitely you know, sort of, the Loudoun County of Germany is Offenbach Germany. Offenbach has no power availability for probably the next 18 months. if you're trying to light up capacity in Germany's most important data center market, you won't get it for another two years. that's some of the challenges we're dealing with in, in Europe right now.

Scott Wallsten:

That also, I mean, that sort of goes to some of the data localization challenges you might -

Marc Ganzi:

Well in Europe, we have to create a duplicate data set in every country. When you're running a business like ours we have a business called Vantage Data Centers there. This is the one that has the 28 cloud campuses. We're not only dealing with the overlay of the EU, but we're also dealing with the overlay of every country who wants to make sure that the data repository stays in the country. That there's a copy of everything that's done in that country and Amazon and Microsoft and Google have to go through this as well. there's an extra layer of regulatory, I would say, that does slow you down a little bit there, but it's more on our customers than it is on U.S.

Scott Wallsten:

Is there right now a constraint in Germany because you can't add to capacity?

Marc Ganzi:

There is, I think, if you were looking for 50 megawatts and you're a web scaler, and you want to be in Offenbach or, which is Frankfurt you'll be told: "get in line". You're going to wait - you're going to wait 18 months.

Scott Wallsten:

So that's sort of an implication of data localization laws combined with this power problem.

Marc Ganzi:

Correct. Same thing in Zurich. We just lit up the last sort of 48 megawatts in Zurich, and we're being told "come back in two years". Zurich One, Two and Three, which is a massive cloud campus that we just built - it's fully leased, you know, we can't do anything with the next four data halls for a while.

Scott Wallsten:

Wow. One other thing: another issue we were just, we just had a panel on antitrust and M&A, has been a part of DigitalBridges growth strategy. Are there aspects of antitrust here or in other countries that concern you that you think might affect your future growth?

Marc Ganzi:

Well, I think in Asia it's been pretty wide open. We don't really have a lot of regulatory. There's not a regulatory overlay framework for the region; obviously here in the U.S. & Canada it's pretty tightly regulated. Europe's the worst. Every deal that we have that we do in Europe goes for EU regulatory. We just announced a significant transaction about three weeks ago at Deutsche Telecom. We're trying to explain to investors when we're going to close and we tell them, we don't know. They love that answer, right? As a public company, you love telling people you don't know when you're going to close something. our best guess is January. That's sort of the EU overlay. Then with DT, we've got sort of the Austrian overlay and the Germany overlay. there's, there's actually four regulatory approvals to get that deal done.

Marc Ganzi:

It's a joint venture between us and, and Deutsche Telecom for 43,000 towers. It's a big deal, and we're expecting the German regulator to come back and say, you know, we're going to have to divest some of those towers. We spend a lot of time on regulatory in Europe and here in the U.S. it's been pretty good. I think CFIUS has done a very good job. Every transaction we do goes in for CFIUS approval. I think the Treasury has done a good job, whether it was under Obama or Trump, dare I say, or Biden, it's been pretty good and it's been very transparent. We know exactly what they're looking for now. I've been to CFIUS, I think probably a dozen times in the last 15 years. you know, it, it takes time, but it's always constructive. I don't think it's destructive yet.

Scott Wallsten:

We'll start doing some questions, although we should do questions - live questions because my phone keeps overheating up here. I'm having a little trouble with it, but here's one that I am able to read. Sure. Let's talk Zayo, which I don't know about.

Marc Ganzi:

Zayo. Yeah, it's our fiber business.

Scott Wallsten:

Oh, okay. Seems like they want to expand scope but haven't seen much in terms of innovation there lately. What can we expect to see in coming years?

Marc Ganzi:

On the product innovation side, we're spending a lot of time on SDWAN. SDWAN is sort of Software-Defined Wide-Area Network, which is the ability to really use the cloud to dial up incremental capacity for voice and data. SDWAN is kind of, I don't want to say it's the future of the company, but it's a very important product that we did not have when we bought the company. One of the things, when we did buy the business, we said we would do is we'd go back to innovating again. SDWAN was really important. We also acquired an E-Rate platform. We're spending a lot of time on public education and private education and how we bring appropriate broadband services to universities and, and in school districts. That's something that's important to us. Then also we're in the midst of redesigning some of our long-haul infrastructure. Creating lower latency routes between Europe and the U.S. creating a couple of new transit transcontinental routes that are candidly old. Many of our fiber infrastructures now is coming up on 23 to 25 years old. Believe it or not, fiber does have a finite life to it. We do think some of those -

Scott Wallsten:

So, hold on a second. The fiber broadband association does a lot to tell us that you need fiber to future proof. I mean, that you're telling us that it has a limited lifespan.

Marc Ganzi:

Well it does because physically it's glass and it ultimately ages and the casing that's on the outside of it sometimes ages as well. You get acts of God, you get, you know s--- happens, you know, it's a network - it's a living breathing network. Some of the infrastructure that was put in place, some of the long-haul infrastructure that's really vital to our economy was put in place in the, you know, in the 90s and early 2000s. Just like a cell tower has a useful life of 25 years. Most people don't know this, but sub-oceanic cables actually dissipate over 25 years. Now what's happening is we're laying a lot of those new routes. Now we're using the existing routes, but we're overlaying new conduit, new sub-oceanic conduit.

Marc Ganzi:

It's really expensive. I mean, those routes take years and years to build. A lot of those routes that were built by Level 3 and, and some of the RBOCs are now aging out. We do have an aging problem with some of the long haul infrastructure. At Zayo we're rebuilding that - we're putting 200 million of CapEx every year back into the network. We had a major network fortification program we put in place that we didn't run around telling investors that had to happen, but it is essential for, to stay at Five-Nine standards. You got to keep reinvesting in the network.

Scott Wallsten:

What is the fiber market like right now? I mean, in its quarterly reports Corning touted the rising prices of fiber. We know there's lots of demand for it. Do you see that as an issue?

Marc Ganzi:

We do see it as an issue and I think Corning's right to move prices up. This isn't an infomercial for Corning, but we've, we've bought a lot of our Corning capacity out three years. We did that about a year and a half ago, and we'll go back to the table and, and sit back down with them again and look. Verizon does the same thing, AT&T does the same thing. My suspicion is the cost of fiber will go up. Corning is our far, and away our number one provider, and the fiber space is really competitive right now, Scott, super competitive.

Scott Wallsten:

Do you think it's going to be a problem? Is it going to affect the broadband subsidy program? Is fiber scarce enough that it'll drive up prices sufficiently to, to, to delay things?

Marc Ganzi:

I think the actual cost of the fiber itself is pretty stable. We have this sort of notion between supply chain and then execution. We haven't had a real problem sourcing the fiber. What's interesting is at the end of fiber, you've got fiber because when you lay it, it's called dark, which means you haven't lit it up yet. Most, I think most people in the room know that, but you do have to light it up on both ends, which requires optical light switching gear. That, actually, we're having a problem with. Interesting. some of that component tree actually does come from China. Hmm. it does come from places overseas. We can

go lay a perfect low latency route between Dallas and Atlanta. But if we don't have the right optical light switching gear at the other end to light it up, it's going to remain dark for the foreseeable future.

Marc Ganzi:

It's beyond just fiber. I think the cost side of the fiber business is, is okay. It's pretty stable. We're building somewhere around \$65,000 per route mile in terms of a, a low latency high-capacity route. I'd say, when we bought the business, maybe that number was \$58,000 two-and-a-half years ago. It really hasn't moved that demonstratively, but here's the problem. It comes back to labor: finding the right people to actually micro trench and build those trenches is the problem. I can't, I literally can't keep up with the demand in terms of how we build it today.

Scott Wallsten:

Right. How do you feel about the Buy America provisions? That must be difficult for you?

Marc Ganzi:

It is difficult because some of these components, some of these components are just not made here. Jonathan Adelstein and I were talking about the, the CHIPS Act earlier, which I actually quite like, I think we do need to be not only energy independent, but we need to be semiconductor independent. That's a big part of where this economy needs to go. That's not firing a shot at our Asian partners that build that, but our reliance on that is just, it's entirely too heavy. I'd like to see us be fully chip-independent in 10 years. It won't happen, but I think that would be a step in the right direction. Certainly if, if we could focus on not just the steel and the fiber and the generators that fuel data centers, but thinking about other niche industries and specialized components, it would be good for industry to have a conversation with the government before they go out and they, they put these bills in place. I think some of my frustration is sometimes we go write legislation and we haven't brought industry into the room and say, where are your pain points? Because if you had taken the top, you know, dozen digital infrastructure CEOs and sat them down with the people that wrote the broadband bill, you'd have a very different outcome.

Scott Wallsten:

We should take some questions. There's one over here. One back there too.

Marc Ganzi:

And there's three.

Scott Wallsten:

Okay. Anyway, somebody has the microphone - ask your question.

Evan:

So you've mentioned lots of challenges, particularly workforce. Right now, there's hundreds of billions of dollars available for broadband in the United States. Even before the NTIA program that we heard a lot about last night, do you see the municipal overbuilds that are kind of rapidly building up around the country as creating a workforce challenge that by the time the rural money is available, there won't be enough workers to deploy in rural America, cause those companies will compete for the same workers,

same switches, optical light gear that you mentioned with much bigger and potentially more lucrative projects in urban areas?

Marc Ganzi:

Sorry, your name?

Evan:

Oh, sorry. Evan Schwartz-

Marc Ganzi:

Hey Evan - How are you? So Evan, I think you're spot-on. A lot of what he's talking about is a lot of municipalities are going out and they're overlaying and building broadband infrastructure and saying, we want to control our pipes just like we control our sewage, just like we control electrical transmission. It's interesting. It is absorbing resources. It is a problem. We are competing for the same subcontractors. I think when municipalities actually own this infrastructure, they find out actually how hard it is to run it. They're probably going to put out RFPs to do private public partnerships where we're going to have to come over and run the infrastructure. We've already seen that happen in one Midwest-specific city that's asked us to come in and help them do it.

Marc Ganzi:

I don't think municipalities should be in the business of, of laying fiber for the sake of just laying fiber. I think that's a bit misguided. Where municipalities need to help U.S. is in permitting and helping U.S. plan and ultimately accelerate the process of building out fiber infrastructure, small cell infrastructure, and ultimately where we're going to put edge compute locations. The municipalities that have very active planning and permitting are the ones that are the communities that are excelling. The solution isn't just go dig a ditch and lay some fiber and hope that the cable companies and the traditional telcos are going to lease your capacity. We'll see how that plays out. I am, Evan, a little bit worried about that. I'm seeing that increasingly more municipalities are trying to get into the business and I just don't understand if that's good business for them or not.

Scott Wallsten:

Yeah, please.

Fiona Murray:

Thanks Marc. I'm Fiona Murray from MIT. You mentioned investments in innovation that you are making. I wondered if you could say something about what you're seeing from startups and whether you're seeing enough of that and if not, what should we be doing to try and increase that kind of innovation coming from the startup community?

Marc Ganzi:

Thank you. Good question. We felt like we weren't doing enough. Two years ago, we started a division inside of our business called ventures, DBRG ventures. We hired the team out of Qualcomm Capital to go run that business unit for us. Our overlay on that is, because we own all the infrastructure, inevitably we are running into startups that either they're taking one rack in our data center or they're provisioning, you know, five strands or two circuits. Ultimately some of those businesses would come to

us and say, "Wait, you guys are an investor. Can you help us?" And we said, well, we don't do that. We just do infrastructure. Then what we found out is we were missing a big opportunity to help entrepreneurs. My background is entrepreneurship.

Marc Ganzi:

My 20 partners globally, half of them are entrepreneurs that used to run businesses. We're investing \$500 million of new capital into, specifically into startups that are focused on enabling the digital economy and we can do more. Right now the venture world's a bit upside down. I think there's a lot of dislocation in terms of where that is and valuations are being reset. The sand is shifting under our feet pretty fast, but we remain very committed to deploying that \$500 million of capital over the next two years. We've made four investments already into four different startups that are mostly so far on, I'd say, two sort of core thematic. One has been around private enterprise 5G networks. How do you ultimately use 5G to change enterprise and specifically how to create efficiencies and workflows? Then the other area we've been spending a lot of time on is AI. That's an area that really fascinates us and machine learning, autonomous vehicles, autonomous shipping ports. These are use cases that we're deploying right now and some with, with a high rate of failure so far, but some with some success. I think it's going to take the next decade to really play out how AI impacts enterprise. You'll see us investing a lot in AI based applications that are impacting enterprises.

Scott Wallsten

Yeah. Over there. Go there, and then there.

Alan Raul:

I'm Alan Raul from Sidley Austin. What about cyber security? You mentioned chip independence as, and I assume that there's a cyber security component to that - national security, but what do you see as your biggest risk being really an essential part of communications, critical infrastructure? The biggest risk - how do you interact with the U.S. government on that and how does your global business complicate your ability to assure cyber security?

Marc Ganzi:

Yep. Big issue. I'd say probably the second biggest issue today, Alan, in our data center practice globally. We do provide cyber security. We provide the security of the facilities, the physical security of the facilities, believe it or not. We have security guards and multiple layers of security to get into the actual data hall. Our customers demand that. We sort of build to their standards. We did just announce about two months ago, we're buying a business called Switch out of Las Vegas. They're one of the largest providers of private cloud environments. Sort of the counter to public cloud there, we do a lot of work in a Tier Four and, and mostly Tier Five environment for the U.S. government. We spend a lot of time servicing the government and making sure that they have incredibly secure work environments.

Marc Ganzi:

Ultimately it is our customer's job to make sure their data stays secure, but there are certain things that we do at the physical layer of the infrastructure that really helps secure that. So you know, we've done a good job there. Once again our sort of obligation to the customers' Five-Nine standards and our Tier Three and Tier Four and Tier Five data centers and our track record there is really strong. I think we've had maybe two network outages in eight years, which is pretty good. They do happen. Network outages happen and cyber-attacks happen every day on our data centers. It's an area where I think the

government sort of is trying to figure out what their role is and how far and how deep they go into the IT stack. That'll be a debate that'll probably play out over the next 10 years, but my job is to keep the physical layer of the infrastructure very secure. Then the metaphysical layer is probably something that we'll be involved with over the next 10 years. That'll be in our digital ventures group by the way, where we're dealing with software to find networks and, and building companies that are focused on cyber security in that metaphysical layer between the cloud and between the physical infrastructure.

Scott Wallsten:

One last question.

Ruth Barry:

Hi, thank you. My name's Ruth Barry I'm with the Department of State. As you know, the U.S. government has been very focused on promoting the use of trustworthy telecommunications network and equipment around the world. My question is for you given your global operations, how can the U.S. government better partner with companies - U.S. companies who are providing telecommunications networks, data centers, et cetera, around the world.

Marc Ganzi:

Great question. Actually a lot of our investors who are U.S. pension funds ask us the same question. Really it's become a - the war there is in wireless first and foremost. I think across the globe today, less than 5% of the network-based stations are Huawei and the rest is in the green list. So we put a lot of emphasis in the facilities that we build in working with, you know, American enterprises and American OEMs. We can do that here in North America. We do that principally in Latin America. It gets harder in Europe, and it gets a lot harder in Asia. Now the ultimate question is how can commerce help, you know, our customers get access to lower cost equipment? Because the reality is the way Huawei had gained prominence was, you know, 0% financing for 10 years, which was all backed by the Chinese government.

Marc Ganzi:

The only way that we gained market share in predominantly in optical light switching gear, in bay stations, is the U.S. federal government willing to finance and help finance innovation in this country. That's where it starts. The only way we can be competitive is if you're providing to the AT&Ts and the Deutsche Telecoms of the world, low cost of financing, that's the game. If we're just sort of cutting right through the sort of substance of the matter, I'd be happy to talk to you about it. I have a lot of opinions on this great question.

Scott Wallsten

All right. I think we've got to wrap it up and move on. Marc, thank you so much.

Marc Ganzi:

Thank you, Scott. Really appreciate it.