Episode 197 – Interoperability, Cloud Services and Satellite-Enabled Network Resilience

Speaker: Sergy Mummert, SVP, Sales Global Cloud & Strategic Partnerships, SES Networks – 19 minutes

John Gilroy:	Welcome to Constellations, the podcast from Kratos. My name is John Gilroy and I'll be your moderator. Today our guest is Sergy Mummert. He's the Senior Vice President for Sales Global Cloud, and Strategic Partnerships at SES Networks. Now, the subject of network resilience has unfortunately been in the limelight over the last few years, whether in the context of the war in Ukraine, or cyber attacks on communications networks, or increasingly severe weather incidents. When access to connectivity is lost or limited, there can be huge humanitarian and socio-economic implications, particularly given how so many of us have been reliant on digital services in our everyday lives. For example, nearly three quarters of North Carolina cell sites were knocked out by the Hurricane Helene in September 2024. With those communications disruptions, delaying rescue efforts, particularly in the western part of the state. A 2023 cyber-attack on Ukrainian mobile operator, Kyivstar, left millions of Ukrainians without access to communications or the internet, and affected air raid alerts in the Kyiv region, that notified residents of Russian missile strikes.
	Not only that, but AT&T network outage back in February of 2024 cost the company millions, and affected public safety communications, including AT&T subscribers' ability to reach emergency services. Next generation satellite technology has the potential to mitigate that impact, by creating a resilient network fabric. With us today, again, Sergy Mummert, Senior Vice President, Sales Global Cloud, and Strategic Partnerships at SES Networks, who's been working with partners and end users, to expand the concept of satellite enabled resilience, to encompass more than just the network. More than the network, really? So Sergy, what role has the satellite industry historically played in network resilience?
Sergy Mummert:	Well, it's interesting. Obviously satellite communications has often been used obviously for media distribution, cable head and satellite TV. It's also been used for remote data networks, but principally as a primary network. And I think that's most of our experience. But in many segments today, they're using multi network deployments. And so that's where we're moving. But in terms of using it to supplement terrestrial networks, a long time ago that wasn't that common, because it was saying, "I got my primary network, I'm happy." But I think based on these events you described in the experience of either both natural or unnatural events, disrupting networks. The idea of a multi-network deployment

terrestrial and satellite, multiple satellite orbits being involved to give even more resiliency for something that moves or something that's very remote, we are starting to see a progression to using satellite communications in a network design.

John Gilroy: Yeah, this multi is a trending phrase. I was as an event yesterday, talked about multi-cloud, multi-modal, multi-orbit, all kinds of multis going on. It's nice to have that because it does give flexibility if it's constructed properly. But Sergy, how do you define network resilience? How does that differ from infrastructure resilience?

Sergy Mummert: Well, I deal mostly with hyper-scalers. So if they look at their infrastructure, it's a mixture of their compute, their storage, and the network. So the network's a component of the infrastructure, the way to look at it. But many times you're looking at not just the network, you're looking at the services and the applications that are running across it, to make sure you prioritize and designed your network to deal with the key things you want to maintain. You might have lower value services, emails, whatever it might be that don't need as much resiliency, and you may have control playing requirements that need really high availability to maintain the operations. So you may actually differentiate in your system what you want at a different resiliency. And so that's part of the thinking.

John Gilroy: As individuals, enterprises and governments rely more and more on digital services. So how can satellite ensure that access to those services withstands any impact to the terrestrial network?

Sergy Mummert: So there's several things to think about. One is, for the satellite industry, we've been trying to make sure we start working with partners and developers that are in the early stage of that process. Oftentimes, if a network goes down, they say, "Well, what are we going to do? Let's find someone who has a satellite connection." And that's a reactive approach. The goal really lately has been thinking about the process that someone goes through in the network planning, and making sure that satellite communication is part of their toolkit, making sure that we're in areas that we probably haven't been seen before, working with system integrators and maybe vertically integrated players, to say, how do you integrate the SATCOM service? So some examples would be, when they're developing an endpoint, they say, "Well, gee, this endpoint in the past has had a connection, but we've designed it to be disconnected at times, because we just don't think we'll have resilient connections."

We say, "Well, no, that doesn't have to be the case. You can actually put multiple network connections, maybe different types of satellite systems, and have a more resilient architecture." The other thing that we're seeing just to set the stage, is a lot of enterprises and the hybrid clubs we're working with, have done operations, infrastructure, threat and risk assessments. And they've

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isolated where they see the higher risk and threats. Maybe it might be a natural risk or an unnatural threat. And then they say, "Well, gee, what do we do to actually improve that area, that application, in terms of its resiliency?" So it could be actually, like I said, upfront, understanding the objective and then designing it in.

John Gilroy: Now, when I think of an enterprise architect, I've met many of them, I think of a data center, and a whiteboard, and people arguing. And I never say, "Look up." Maybe your job is, "Hey, look up man, this is part of the enterprise architecture here too." And they're missing it. I think your job has increased reach and brand awareness, but just look up.

Sergy Mummert: That's right. And it's starting to happen. What's interesting for us is, we partnered with several hyperscalers to make sure they had the option, if you will, had it in their toolkit. We've even joined their marketplaces. So if you look up in the marketplace for network solutions, we will show up. So we're trying to make sure we're in these channels and in the areas, where the designers and architects can find our tools.

John Gilroy: Yeah. So what role can satellite play beyond delivering communications and network backup?

Sergy Mummert: Well, that's a great thing we start with, to your point, but really a lot of times what we look at now is, you have ... I'm going to tell you a little story, John, just to set the stage. A hyperscaler brought me into a meeting with a large train operator in Western United States. And when I walked in, they said, "Here's a satellite person." And I said, "That's great to meet you." And the person said, "Well, great. Tell me about your earth observation capability, your IoT directed device and your SATCOM." And I said, "Well, gee, in our industry that's fragmented between three different categories, and there's probably five or six players in each one of them, and they don't talk to each other.

So your point about what can it do, I think interoperability between these systems is where we're headed. You're starting to see SATCOM systems that could maybe deliver imagery from another system via space data relay. We recently did a NASA program where we're in that process of doing that. So you're starting to see integration of these different formats and delivering content much more real time. So it's around situational awareness, but again, you're tailoring it for that outcome, driving it towards the outcome.

John Gilroy: I reflect on my conversations with Enterprise Architects again, and they use the word you just used, interoperability. And they don't look east and west, but not up and down.

Sergy Mummert: That's right.

John Gilroy:	And so this whole concept of interoperability, you can put it on a whiteboard and talk about it and draw things, but what has to happen to satellites to play this expanded role?
John Gilroy:	So first of all, I mentioned to making sure we were in their toolkits. Make awareness, is our first thing, to your point. The second thing about it is the standards. There's 3GPPs, orthe non-terrestrial networking standards. These things are really helping make sure that we can integrate. And then, ease of adoption. One of the key things that people think about satellite, it's too complicated. We've got to make it easier for people to implement it and adopt it and consume it. And that also means making sure the system's flexible. Oftentimes in the past, you deploy a satellite network, and you say, "Great, I deployed it, I'm done.
	Well, if you look at terrestrial networks, they're oftentimes studying the use of this network, optimizing it and evolving it quickly. We have to do the same thing. We can't just deploy and forget. We need to really work with the enterprise and the partners that are managing it, to make sure they're optimizing their use. So that's all part of that chain.
Sergy Mummert:	It's almost like a continuous endeavor, isn't it? It's not set it and forget it is set it, and I'll be back in five minutes. It's always constantly optimizing, because it's changing. It's so dynamic.
John Gilroy:	That's right.
Sergy Mummert:	You're watching the applications, then you get ideas. "Well, what if I try to do this?" "Great, let's take a look at it." So you keep evolving it for sure.
John Gilroy:	If you talk to the people at Akamai, they talk about a terrestrial network. Everyone knows them, and they know about terrestrial networks out there, bunch of different networks out there. So what does satellite networks need to integrate with terrestrial networks, to deliver infrastructure resilience?
Sergy Mummert:	We touched on a little bit, but if you think about the end-to-end architecture for satellite communications, you're going to have the equipment side of it in terms of at the premise. So you're going to want to make sure it is a form factor, and the performance of it is what they need. Sometimes you'll have people say, "Hey, look, I don't really need a highly really resilient, I just need best evidence." Great. There's those options. Then they say, "Look, these applications I'm running are super important. I want a service level agreement. I need that high quality service." So you bring that service. And then sometimes you have a mix of those two, and you actually have an SD-WAN, and you set it up to manage the traffic across it. So at the premise or at the customer site, you have a piece

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that needs to be really designed, and it's got to be able to be evolved to your point about whether the applications are going over time.

Then you go through the different systems and then you have the aggregation of the gateway side of it, and how it interfaces. One of the things we did early on is, a lot of customers that have really high valued applications, want them to go directly into their cloud environment and avoid going through the internet. They were previously doing VPNs, and we can now offer a direct private network that gives them comfort that they'll never have any of the variability that might occur. I'll give you an example. We worked with Microsoft with their Azure ExpressRoute. AWS has the Direct Connect. I can go through all the alphabet soup there. We worked with Oracle and their FastConnect, so just all of them have this type of private networking, and we wanted make sure it was available at our gateway, so that our customers who want those applications secure end to end, we could deliver it.

John Gilroy: You mentioned Oracle and AWS and Microsoft, these big, what they call, hyperscalers. So we know there's a growing number of applications and services are moving to cloud. We know that. What about them? What roles are the hyperscalers like AWS and Microsoft playing, to ensure this infrastructure resilience? Not all on you there, Sergy, is it?

Sergy Mummert: That's right. No, that was really our goal, is their world is the idea of sell to, sell with, sell through, and they have a lot of tools, but they're very programmatic. Everything has to be at scale, so you got to fit in their architecture. So the idea of putting a set product in their marketplace, it's got to be click and go. They don't want a lot of high touch experience. In addition to that, a lot of ways that they work is they do first, a proof of concept, and I'll give you some examples in a minute. And once that's proven successful, then they run to scale. They try to simplify it, be able to build the material, put it in their systems, and then they can run with it in terms of implementing it, and they put it out into the catalog, and that's how you get it out there.

So let me give you some examples of that. So we worked with, Microsoft as an example, in Taiwan, they worked with first responders trying to do a deployable private 5G setup, if their threshold network is down due to a natural event. And we did it, the government was very pleased with it, because they were able to use the same applications, laptops, pads and phones, all were on the same application, and all getting the data back to the headquarters so they can make decisions quickly about the first response activity. So that end-to-end deployable infrastructure, something satellite communications can do, especially when there's an event. But of course, it wasn't that they called us up at the last minute and say, "Hey, we just had an event. Can you show up?" It was all pre-planned, designed, so that when they had an event, they were ready to execute.

John Gilroy:
Serge, I remember a few years back, I started studying 5G. And remember, you'd see the little diagrams, and the satellite was always in those diagrams, and I don't know if it was intentional, or they forgot about it, or not. But let's talk a little bit about 5G here. So what role will 5G play in infrastructure resilience, and how does satellite fit into that ecosystem, the old map from five, six years ago?

Sergy Mummert:
Yeah, exactly right. And just it's an issue you look that far back, John, because we invested to have people in that standard process to make sure non-terrestrial networks were included in the design of 5G. So it is been in that roadmap to your point about the icon. But in terms of applications or scenarios, one of the things we've seen is, if you look at the public or the macro 5G deployments, we've been working with MNOs, and showing how SATCOM can either extend the service, give route diversity just in case they only have one fiber at their pop, and they want to make sure they had route diversity, or even a disaster recovery or a scheduled event. Maybe a big rock concert for example. How they can use our services to implement and deploy the 5G, so it's people have the same experience whether they're in the center of the city or out in a remote area. So that was sort of the first one.

And the second is the private 5G area, the enterprise implementation of it. And to your point, that does two things. One, it's used as a primary thing, but it also can be used with other technologies as part of a resilient fabric. They may have other wireless technologies, but they want to have a combination to make sure they have high uptime. We've done private 5G deployments. We've worked with offshore energy players, who deploy multiple networks on site to make sure, let's say the remote platform is highly automated, improved performance and yield on the system, but they need more than one network to connect it. Sometimes they even have fiber to them in the Gulf, but they want several satellite networks on top of it to give them that high uptime, because they're trying to get to the cloud and they could rely on the cloud.

John Gilroy:
I'm thinking about a group experience like a concert, and it used to be nice to have WiFi connections, and now it's almost mandatory. Because I think if you're under 35, everything's done on the phone. I had an electrician come out, I scheduled on the phone, he gave me an estimate on the phone, and I paid him on the phone. But it's all phone. And so if you want to have a good user experience at a football game, a Super Bowl or at a concert, you really have to think about that backup and resilience. Not thinking about the military at all, but just in a commercial environment, you have to have backup. That user experience is becoming so important today. Opening up the box from Apple, the user experience.

Sergy Mummert:
We had another example like that. We did work with Microsoft also on a sporting event, and Qatar. I can't name the brand, but we did provide resiliency for that architecture, because they wanted to make sure certain applications

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were mirrored between two different regions. And the performance was great, because the region was so far apart, if you will, on our system, they didn't know the latency over satellite. Because oftentimes you hear about latency, but the MEO system, it was like 200 milliseconds different between fiber and MEO, because of the distance of the two regions. But it worked out great. They got a high performance out of it.

John Gilroy: Yeah, it's interesting. I keep thinking of user experience and retail and everything else, but user experience is for big events too and huge. The amount of people, for example, in a soccer game that people all over the world are watching, it's incredible. So we've talked about some use cases. So do you have any other satellite enabled use cases you see really moving the needle for infrastructure resilience? Anything else?

Sergy Mummert: I think I mentioned some of the segments we serve. Government is a very big area. They have four deployed people. They want to make sure they have multiple networks providing high quality, high uptime services for their application. But on the commercial side as well, we're seeing it. And our team that works with the cruise industry, for example, they deploy integrated suite of satellite communications. And then as the ship gets closer to the shore, and suddenly it switch to microwave and switches to fiber. So seeing these commercial applications, but it's really around what are the key infrastructure and applications they want to maintain. And they're able to take those networks and say, "This traffic is guest traffic, this is the operation of the vessel, this traffic's for the crew." And they're able to manage it across different networks and maintain good experience.

John Gilroy: This has been a fun interview. I think you've given our listeners a real handle on the whole concept of infrastructure resilience, and new and flexible ways to think about that. Sure.

Sergy Mummert: Can I throw one more in, because it's one of my passion projects.

John Gilroy: Sure, yeah.

Sergy Mummert: So you talk about using SATCOM as resiliency for terrestrial services, right?

John Gilroy: Yeah.

Sergy Mummert: I want to talk about SATCOM also providing resiliency for space operations. So we won a contract with NASA to do a space data relay. So give you an example. We partnered with Planet Labs who does earth observation imagery, and we're able to connect their LEOs to our MEO and GEO systems, to help them provide services faster, backhaul the content faster, and increase resiliency. Because I started the world with GEO satellites, had always had a TGNC link, and now I

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learned that the LEO systems, they didn't always have a persistent link. And now with using our GEO system, they can provide LEO systems, a persistent link to both task them faster to change orientation if they need to, or deal with any type of operational issue. So the idea of space resiliency is also coming into this. So this is a little plug.

John Gilroy: No, it's just like the enterprise architect not looking up. Maybe when you're up, you should look across, because it's also another way to get backup, isn't it?

Sergy Mummert: Absolutely right. That's absolutely right.

John Gilroy: Well, you've sure given our listeners a lot to think about here, as far as backup goes. This has been a real fun interview. I'd like to thank our guest, Sergy Mummert. He's the Senior Vice President for Sales Global Cloud and Strategic Partnerships at SES Networks.