Constellations Podcast

Episode 47 – Automation, Service Orchestration and the Future of the Teleport

Guest: Robert Bell, Executive Director, World Teleport Association (WTA) – 23 minutes

John Gilroy: Welcome to Constellations the podcast from Kratos. My name is John Gilroy, and I will be your moderator. You know, everyone listening to this podcast knows about the explosion in satellite capacity. It is dramatically changing the dynamics on the ground. The teleport which sits in between the terrestrial and space segment is being driven to become more automated and operationally efficient to meet these new bandwidth demands.

In this episode, we find out how automation is playing a critical role in transforming the teleport from traditional antenna farms that provide satellite access to data centers with dishes that layer on value added capabilities and services. Today, we have someone uniquely qualified to discuss how automation is playing a critical part in the evolution of the teleport. Robert Bell is the executive director of the World Teleport Association. He has over 30 years of experience in the industry. He has authored numerous articles and WTA research reports, and recently wrote a report entitled "Automating the Teleport". Welcome, Robert.

Robert Bell: Thank you. Pleased to be here.

John Gilroy: Well, this word automation is being bandied about and a lot of discussions in data centers and portfolio large network management and virtual network management, software defined networks. So automation is being applied in your world as well. And so why is this automation becoming more critical for teleport operations than ever before?

Robert Bell: That question was actually answered by a member of our board who was interviewed for a different research report, "The Teleport of Tomorrow", a few years ago, and he had this great quote that I remember ever since. He said if you are currently serving a few hundred or even a few thousand terminals in your network, you should expect to be serving hundreds of thousands in the future, because the cost of capacity are coming down on the cost of the terminals are coming down. Don't plan on doubling the terminals in your network. Plan on seeing a tenfold increase. And that, in the short form, is a kind of challenge that only automated systems can handle.

John Gilroy: Right. And I'll tell you, in the world of firewalls, for example, there are some firewalls now that have 10,000 rules. I mean, how can you manually manage something like that? And this is exponential growth in your area as well. I mean, how can you manage that much capacity? It's got to be challenging.

Robert Bell: Well yes. And it takes a lot of very smart systems. One of the things that we got out of this report which I appreciated, in addition to a lot of good, specific advice and examples, was the understanding on the part of the people who are having to make these decisions, that those 10,000 lines ... You absolutely can't do it manually, but you can also set up your system to automate it and make a complete hash out of it. So you have to be very, very, very careful and disciplined about how you approach this.

John Gilroy: You can't just go up to 7-11 and buy you some automation. This is a very careful, complex process. You've got to be very judicious about applying automated systems, I would think.

Robert Bell: Yeah, absolutely. Like any other technical process, there's a lot of specification, a lot of very hard thought. One of the oldest rules in the world is, you make sure that you understand the process very, very thoroughly before you're going to turn it over to a computer to do.

John Gilroy: Last week I sat down with a guy who manages these large portfolios and he uses containers. And he talks about orchestration. I guess this is a new trending phrase in software developers and project managers. And so I guess in the satellite world, there's service orchestration, too. What role does that play in terms of automation?

Robert Bell: Well, it's really a term borrowed from information technology. I guess the best way to think about it is, it's the layer above just automating a process. So when you're talking about service, you're talking about virtualizing everything, right? Creating virtual machines everywhere, so that you've got this “One ring to rule them all”. And architecture that handles provisioning, it converges everything. It manages this very dynamic set of assets.

Example that makes that clear, I think is, let's say you've got to deploy an application, right? So you've got to deploy it again across a hundred sites, a thousand sites, whatever it might be. That could be a huge manual task, or you could reduce the time and the effort required to do that by approaching it as this process you're going to orchestrate. And you can also then set it up so that as those new applications are triggered, it kicks off automated tools that will perform tasks that, again, used to be done manually.

So frankly, it's the kind of thing that scares you to death until you realize that the car you drive around in has about a hundred million lines of computer code, so we've actually gotten pretty good at this stuff.

John Gilroy: Yeah. New flexibility gives you a lot more power. Well, let's look at our operators here. So how have operators approached these automation projects

and what have been the driving factors and considerations in terms of cost benefit for this automation?

Robert Bell: Well, it's pretty straightforward. I mean, it's nuanced but straightforward. They're looking for better quality of service. They're looking for the ability to add revenues without expanding headcount. I mean, net-net. So they're looking at specific areas. Network management control, that's an incredibly complex thing to be doing manually. And as the number of services and the number of the terminals, endpoints, you're managing grows, then it gets completely out of hand unless you're going to automate it. They're looking at quality assurance for video, for Internet protocol, for baseband. They're looking at customer booking and media production workflows. The job of trying to manage terminal installation in a VSAT network. And it kind of goes on and on and on.

John Gilroy: So when we look at return on investment in automating systems, where do you think the biggest opportunities are for our listeners?

Robert Bell: Well, I don't deserve an opinion, because it's not what I do, but we've got a lot of very good opinions from people who contributed to our research report. And I thought they were really illuminating. Very specific ones, so here's a company that has to look at the issue of automating service life cycle management, which basically means spinning up new services, changing them and automating them. This all has to do, in this case, with sports, news and file transfer.

And their analysis showed that by automating this in a really smart way, they could give their customers the chance to actually run a lot of this themselves and they could achieve remarkable cost savings, like 60% cost savings on what they were doing. That's very large.

Another one looked at booking. I mentioned, we're going to book occasional use capacity. And their calculations showed that they could reduce the time it took the book of circuit between, let's say, New York and Tokyo, from an hour, from 60 minutes down to five minutes. And that would, every time they do it, save them about 50 US dollars. So that doesn't sound like much money per booking, but the bookings mount up.

Even more impressive was the issue of avoiding booking errors. As soon as you put human beings in a loop, you've got errors. Their calculations said they could cut their total operating costs by some 10 to 15%, so it's like anything else, the devil is in the details, but the details end up being pretty impressive.

John Gilroy: Well, in some competitive markets, 4-5% people give their right arm for. We're talking 10% here. That's a lot.

Robert Bell: Precisely, precisely. And then probably the single most common example in here would be network management. That seems to be where the biggest load of investment goes in, because these networks, we're demanding so much from them. We need to squeeze out every possible a bit of throughput and, ultimately, revenue from them.

So this particular operator looked at the issue of, all right, what do we do in our ... This is across 10 network operating centers. So we do trouble tickets, we do alarms, we do customer calls, we have to do field interventions when there's a problem. We have to spend time calculating the service level agreement reporting so that we can make sure that we're doing what we're supposed to be doing. And we have to manage all of that inventory. After they added it all up, they were able to reduce their costs by 50% from doing that in a really smart way.

John Gilroy: Wow. Well, where there successes, there's people who fail. What about failures? Are there some circumstances to avoid, or what kind of pitfalls have there been in automation that you've seen?

Robert Bell: Well, there's lots. Of course, you probably know when you interview people, it's very hard to get them to talk about their failures.

John Gilroy: No one wants to admit that, do they?

Robert Bell: But there is a lot of lessons learned, which sort of tells you the inside of that. And some of them are I guess a lot of the stuff that you've sort of heard before, but plan it the right way ... But there's some interesting insights into that. So what does that really mean? Doing a good job of planning?

One of things that was said to us, which I really struck me, was that an effective automation plan is not just about these processes. They actually are also about the human interactions within the system. So everybody who is going to have any role in that system's success needs to be involved. You need to play out in scenarios all the common actions that are going to occur with those people. And one of the benefits you get from it, aside from a better system, is you also reduce the training time for the operators, because they already understand how the automation and the logic should work. And so when there's something wrong, they know how to respond to it.

Another piece of advice that I really liked was, of course, take it one step at a time. Break it all into bite sized pieces and prioritize your easy wins. Don't try to just come in and build a new world all at once.

But the point that was made that I thought was really important was, as you do these initial steps for automation, you should be thinking of them as something that assists the people to do their job, not to reduce the head count, not to take away jobs. If you make people more productive, they're going to obviously engage this system, and you're going to achieve more success. And down the road you may find you're going to need fewer people to accomplish the same thing. Or you may find that the same team can handle three to four to five to 10 times more of the load than they could before. That's really the win you're looking for,

John Gilroy: And that brings us back to our first question. If it's going to increase by 10x or 20x, then they're going to have to be able to do that whether they like it or not. That makes sense.

Robert Bell: Oh, absolutely. This is about survival. Anybody who has to deal with a complex operational process will tell you, it's about staying ahead of the curve because otherwise that wave is going to come crashing down on you.

John Gilroy: Now, Robert, thousands of people from all over the world listen to this Constellations Podcast. If you're listening now and wanting to get alerts when new episodes are available, go to Google, type in Constellations Podcast and click on Kratos and sign up. We have people at trade shows, they come up to us from China and they listen to this. So we're going to make you famous here, Robert. We really are.

Robert Bell: Well, that's good. I appreciate it.

John Gilroy: Well, let's go back to these poor teleport operators who are getting pushed and squeezed and they're getting 10x and 20x'ed. So what are some innovative ways that they can use automation in the competitive environment? I mean, they're competing with people and they've got to be more efficient. So can you give us any examples of how automation can add in this innovation?

Robert Bell: Well, sure. I mentioned some of the places they're looking at, but the issue of, I've got to book customers. I've got to run this knock and make it support all those services.

One of the more interesting ones was, I've got to install a lot of VSAT terminals. And so it used to be I'd have a hundred sites or 200 sites or 500 sites. Now I'm really cooking with gas and I've got a very large network to install. The labor component of that installation is remarkable. You're sending somebody out into the field. They've got to get where they're going. It's presumably not the center of a city, because that's why you've got a VSAT going on. So they got to get there, they have to get this thing installed, and they have to point it. And to do

that, they've got to reach the knock and go back and forth, do a lot of handshaking about how to do that. And what a sink for labor.

So one of the companies we talked to has used an automation system from a company called Integri-sys to automate that pointing process. It's a cell phone based application. It's really quite remarkable. And they were able to jump from installing, eight V sets a week to a couple hundred with no sweat with the same team, because the efficiencies they gain where so much higher, and they also cut down on the need to revisit the site to fix the problem that had been left behind the first time.

John Gilroy: Wow. We're down here in Washington, DC and the federal government is accused of having a lot of IT projects that are in silos. And there's a company here that tries to break through that. It's called Silo Smashers. And if I look at your world or the world of satellites, I think teleports have always been managed in silos. And so do you think a unified management approach can impact this concept of silos and teleports?

Robert Bell: Well, yeah. We asked our respondents, "What do you not have that you want?" And universally, the answer was, "We really want to have the unified view. We want it all in one place. We want something I can talk to all aspects of our operation." And that's really, really hard to do, by the way. One of the respondents we talked to said, “As soon as you start drilling into this world, you come upon this sort of a fork in the road. And on one side of that fork is, you're dealing with a proprietary system and it's really, really good at doing the thing it does because it's designed to work with whatever the set of equipment might be. And the other side you have a generalist system, very IT-based, that's designed to be customized to manage everything."

And the tradeoffs are really interesting, because with the dedicated proprietary system, it works extremely well and it's also simple to use. The interface is pretty simple, because it's a known set of parameters. When you step over to this IT, these big, big, big systems, unless you tune them properly, unless you really work on the implementation carefully, they start throwing off alarms by the dozens and the hundreds and the thousands. Everything's a problem. And so that's the point that one of our respondents stressed. It's not cheap to get into this, to do it really the right way. You get a big happy return from it, but you've really got to be willing to customize, customize, customize, and then build the training around it that's going to let your people get the most out of that system. So it's not a small thing, but it's very much what everybody wants.

John Gilroy: Amazon and Google have made great inroads all across the world in their cloud and virtualization. And have you seen virtualization and cloud maybe increase this operational efficiency for teleports?

Robert Bell: Yeah, absolutely. We did a report actually last year on cloud services and the teleport, and we were looking at those kinds of impacts. It actually started out in a discussion which has kind of gone away, but the discussion was, can teleport operators become cloud service providers? Do they want to manage their own private clouds?

And what seems to be happening there is that because of the companies you named and others, they've got so much capacity, they're so big, they're everywhere and they've got the capability to create a whole lot of tools that are just sitting there waiting for you. You didn't have to build them yourself. That they're going to become ultimately the solution. There's still going to be places where customers don't want their precious asset, whatever it might be, whether it's a television program or whether it's a customer dataset, just sit out in the cloud forever because they're concerned about security. So they do want to keep it in someplace where they can see it. So it's either their own facility or it's their teleport operators facility. And it's only ported out to the cloud when there's a requirement.

That said, I think it's pretty clear where it's all going, because quite frankly, the cloud providers have better security than certainly anybody in the satellite business is likely to have. So what we looked at was the issue of, so what's in it for you if you're a teleport operater with the cloud?

And what seemed to come out of that was, first of, all access to new customers, because the cloud providers have got a zillion customers on their network today. And they're very conscious of the value of that and if you are willing to make a significant commitment to them, they will help you connect with new businesses you couldn't have got ahold of him before. You've got the opportunity to plug into new applications in the service package that, again, you don't have to build. Amazon's particularly rich, for instance, in the media management world.

And you also achieve this other great thing which is, since the cloud is going to increasingly become part of everything that your customer does, you get to be in the position of helping your customer migrate to the cloud and maintain control of that customer relationship as you step forward together. The short answer is yes, by all means, and you hit the high point there, right? Once you start bringing that kind of asset into your network that you have to manage, boy, do you really now need to be good at network management, because you're managing all kinds of assets that you don't control and that you need to really understand well and know how to automate properly.

John Gilroy: You know, when it comes to automation and modernizing the teleport, I think the ability to digitize and reconstruct RF signals has been challenging. But that's really kind of the crux of it all, isn't it?

Robert Bell: Yes. I mean it's funny. It's challenging in many ways. The world of RF is fundamental, right? But of course we all ignore it. RF engineers are actually in short supply these days, because everybody wants to go be a digital engineer. So it's actually going to be one of those high value occupations. If you've got the skill set ... For anybody listening who's looking for a career, RF engineers ain't never going away.

John Gilroy: I don't see it. Popular topics, the cloud, we talked about that. Artificial intelligence, machine learning. I would think that most of these are going to impact automation for operators in the future. It's got to have impact, doesn't it?

Robert Bell: Well, that's ultimately where everybody wants to go. It's already there. It's funny how unaware we are of the artificial intelligence that's all around us. But you know, your phone is paying attention to when your next appointment is and it will tell you, and it's talking to the network and it will tell you about something related to it. The first time my phone lit up and said, "You have a meeting in 45 minutes and traffic is light, so therefore you can probably wait until 15 minutes before you have to leave for your meeting." And I thought, "Son of a gun! That meeting happens to be on the phone, but okay!"

So there's a tremendous amount of this already baked in. In a network management system, the system is looking at, somewhere in my network there's a condition that's out of spec. Okay. So one alternative the system could have, if it's not using machine learning is, it can just alarm everything and that's where you get this horror of your entire board lighting up red and you don't know what to do first.

What the automation vendors and the teleport operators and the satellite operators are driving toward is, we need to learn which one of those things actually are critical, actually need to be brought up to the operators, and which of them go into a log. We have a rain outage and in 15 minutes it's going to be over. Okay. Those kinds of things.

So yeah, it's already there and it's accelerating really, really fast. Even down to ... I don't know if listeners are familiar with this. There's this new standard out called SD-WAN, software defined wide area network standards. And there's a lot of companies all working on this and bringing it into their offerings.

And the whole idea there is, you've got this need to balance multiple forms of connectivity. So let's say in your network, you've got people on satellite, you've got people on cellular, you've got people on Wifi, you've got people on fiber. You've got all these assets. How do you optimize the use of that so everybody gets the least cost, highest performance? Well, if there were ever a job for a

machine, that's the job for a machine. And that's where everybody's focusing now, is having the network dynamically adjust itself based upon experience. And of course, I mentioned human interactions, right? Flagging the operators so that they know what's going on.

John Gilroy: If you talk to people in the industry, they talk about managed services for an SD-WAN and I don't know if that's in the future, but what's a forward-projecting thought here in the next five years? When you think of automation and maybe SD-WANs and managed services, what do you think the future of that teleport is?

Robert Bell: Well, I think the future is going to be that there's going to be more and more of this stuff. Right now it's still a big, nasty thing to do. I shouldn't say nasty, but we all know that when we put in big systems, it's extremely difficult. And the failure rate is high the first time out of the box. And there's a lot of industry statistics. It's kind of like banking mergers. We know for a fact that banking mergers destroy shareholder value, and yet everybody's excited about them.

But in this case, the returns are absolutely real. The trend I see, the thing I'm looking at, is how is this all going to become cheaper, less complicated to implement so that smaller companies, the midsize companies ... Certainly the teleport industry's got a tremendous number of mid sized and smaller companies. The big ones you can count on the fingers of one hand, maybe. Those companies will always be able to do these massive implementations.

But I think what we're going to see going forward is this automation toolkit is going to become increasingly available to companies at all different revenue levels. And obviously they all have different levels of need for that, but I think you're going to find in five years that pretty much every teleport is using a lot of automation and a lot of machine learning systems. They may not even be aware of the complexity under the hood, but they'll be benefiting from it every day in their revenue and their profit and their costs.

John Gilroy: I think that's the right focus, is how is this going to reduce costs? Because it's going to be a competitive environment and just because you have a stack of tools doesn't mean those tools are going to be as effective as your competitors' stack of tools. And so there's going to be humans involved in this somehow and it'll be interesting to see how it plays out. And I've heard of all kinds of tools, but wow, it's a brave new world for us, isn't it?

Robert Bell: Well, it is. And I just try to keep up with it as best we can.

John Gilroy: Yeah. Well, Robert, unfortunately here we're running out of time. I'd like to thank our guest, Robert Bell, Executive Director at World Teleport Association.