Dr. Vagan Shakhgildian, President of Comtech Satellite Network Technologies Corp in Montreal, Canada

Satellite Evolution Global

Q&A

Breakthrough VSAT technology solution

On January 31, 2022, Comtech unveiled its breakthrough VSAT technology solution, Comtech ELEVATE. We reached out to Dr. Vagan Shakhgildian, President of Comtech Satellite Network Technologies Corp in Montreal, Canada, to ascertain how the new platform fits into the company's near and long-term business goals.

By Crispin Littlehales, Global Contributing Editor, Satellite Evolution Group

Question: You are now heading up a newly formed business unit. How does this reorganization augment your ability to accommodate new business opportunities afforded by the NewSpace ecosystem?
Vagan Shakhgildian: We are in the process of inaugurating a new facility within the Techno Park here in Montreal, Canada. This is a state-of-the-art facility for research and development as well as some of the system integration work. Our focus will be streamlining, accelerating, and capturing commercial opportunities for VSAT networking platforms. We have a very exciting roadmap for that, and it is fully funded. We will concentrate on international business where agility, nimbleness, and speed of reaction to different challenges within the marketplace is essential.

Question: What makes your newly minted VSAT platform, Comtech ELEVATE, so different from traditional VSAT solutions?
Vagan Shakhgildian: We're not the only group that is innovating. That's what makes our life as a VSAT technology provider interesting in this

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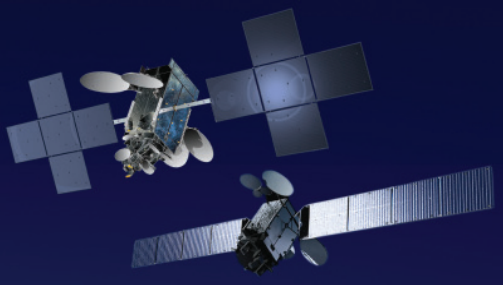

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competitive race. However, there are several things that set our new product line apart. First, we can achieve very high data throughputs of more than 200 megabit per second per remote terminal with essentially the same small, reliable, and low-cost hardware. We are leading the industry in terms of processing density, processing power, and return channel data throughput measured in any known metric (Mbps, IP packets per second). In addition, the ground infrastructure architecture is software-defined. We have very sophisticated, very well-designed software that runs on top of our hardware. That allows us to flexibly split functionality across multiple hubs or gateways to create a distributed infrastructure which is self-healing with high availability and high reliability. We migrate elements of that infrastructure to the cloud—in other words, virtualize it. To the best of our knowledge, no one else is yet able to have a fully software-enabled infrastructure that provides this level of flexibility and scalability. Scalability is defined as the ability to add or reduce functionality.

In our system this can be done by adjusting the software licensing. We can easily transform our offering to a platform-as-a-service. By combining Comtech's HEIGHTS Dynamic Network Access (H-DNA) and Comtech UHP TDMA waveform flexibility, we're achieving the optimum in bandwidth efficiency as far as the return channel, protocols and signalling are concerned.

Question: What are the specific design elements that make Comtech ELEVATE suitable for the increasingly complex demands of today's VSAT networks?

Vagan Shakhgildian: Our technology has very high processing capability and our core demodulation and modulation techniques are such that we can cope with much greater Doppler offsets and Doppler accelerations than a lot of the other equipment out there. Even the most basic modems that we offer have multiple demodulators which is something that is sought after by service providers and LEO constellation operators. Our nimble, small, easily deployable, compact gateway infrastructure which is software-defined and virtualized, also addresses the challenges associated with the existing and emerging non-GEO constellations.

Question: What are some of the primary market drivers and trends that inspired Comtech to develop this next generation platform?

Vagan Shakhgildian: Comtech is well-known for excellence of its solutions in high throughput, high quality of service applications. Historically much of it was based on a single carrier per channel, or ICPC technologies. From there, the technology evolved to deliver dynamically assigned bandwidth, improved bandwidth efficiency, and the allocation of bandwidth-on-demand, which was all embedded in the HEIGHTS product line. We then saw the need to address much larger networks, not only in terms of aggregate throughput, but also in terms of the sheer number of remotes—a low-cost solution that would be scalable so that we could cover a broader range of applications.

We envisioned hybrid networks able to cater to trunking and cellular backhaul as well as having uniformity and universality so that they could be used for telemetry, IoT, and in rural and ultra-remote environments where there is a greater number of remote terminals with somewhat lower throughput per terminal. We also responded to the current trend towards utilizing compact size, weight, and power (SWaP) terminals and on-the-move terminals with flat panel or electronically steerable antennas.

Ease-of-use is another driver, particularly from the operator and the service provider point of view. Comtech is automating as many functions on the network management system as possible, from software upgrades for the remote terminals to audits of the network. Whereas in the past, you needed to have a fully skilled engineer to go through multiple screens, now a lot of this troubleshooting can be done automatically with the help of artificial intelligence or machine learning.

We are moving some of these functions to the cloud and making it much less complicated. Ultimately, this delivers better quality of service and a better experience to the end user. We have also taken steps towards simplifying and streamlining the installation of remote terminals, again making sure that the provisions for health checks are in place so that unscheduled downtime and even scheduled downtime is minimized. The user interface is elegant, and the controls are limited to only those that can be used by a non-expert. Of course, expert users can have access to a broader range of adjustments and capabilities.

Question: Do you foresee Comtech addressing new markets with this product?

Vagan Shakhgildian: Although we will continue to maintain our dominant position in premier connectivity and cellular backhaul, we do fully intend to go after new markets. These include enterprise VSAT with multiple geographically redundant hubs; mesh networks; larger scale IoT networks, and of course networks operating over LEO/MEO satellites. Our plan is to address these and many more markets with the same universal and unified platform solution that is flexible and scalable.

Question: What are the key challenges you face with the new product roll out and how do you plan to address them?

Vagan Shakhgildian: There are supply chain issues that are plaguing many players in the high-tech industry.

Comtech puts a lot of effort into building a solid supply chain with multiple alternatives. We streamline our hardware and put a lot of complexity into our software. This doesn't make us fully immune to supply chain challenges, but it does mitigate our risks and difficulties in that regard. Another challenge is getting through various certifications, proof of concept, and demonstrations. We also need to explain to our existing customers the roadmap and timelines associated with the products that they have been using. We are fortunate to have an experienced business development and sales team worldwide to evangelize the new product line, which, as I say, was designed in response to market drivers and customer needs.

Question: The satellite industry has evolved dramatically in just the last year; what do you think Comtech will be doing five years from now?

Vagan Shakhgildian: I believe that Comtech will continue to evolve and innovate at an accelerated speed, not just in the satellite space, but also in wireless. We are now a significant player in location-based services and next generation 911 technologies. Five years from now, we will have solidified our position as a total system provider as well. Our Comtech ELEVATE product line will be at the forefront of satellite technology and we will have a very successful track record of deployment all over the world.

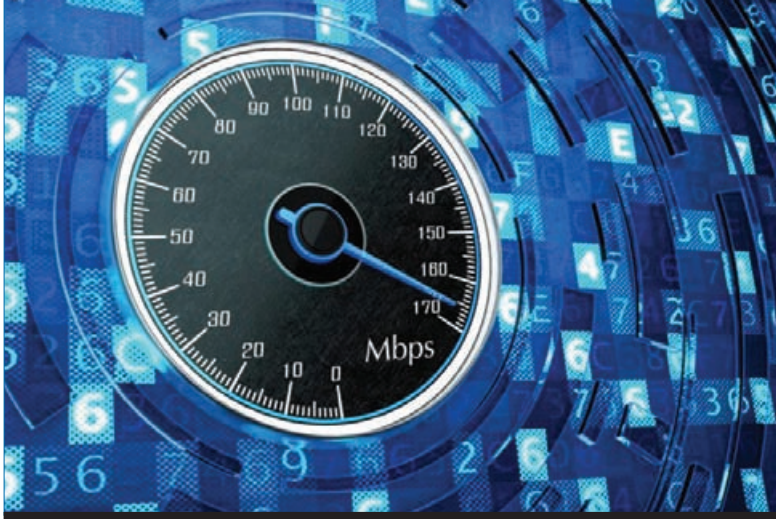
Question: What attracted you to the satellite industry in the first place and what have been the top three highlights of your career thus far?

Vagan Shakhgildian: As an engineer by training, I relish the technology challenges in the satellite industry. The other thing that has kept me here for many years is the fact that it is a very close-knit community. There is a spirit of camaraderie that is second to none and I think that is one of the things that keeps me very excited about being part of the industry. In addition, satellites have wide international coverage and that is reflected in the way the industry is set up. You get to know many cultures and traditions, both technology-related and in other respects.

As my first career highlight, I'd like to mention taking part in the development of 3GPP cellular standard in the late 1990s while working at Motorola Cellular Infrastructure Group. We knew we were working on something new and exciting—the development of wideband CDMA and various radio access protocols.

The second highlight was when I worked for Advantech and was part of a team that was scaling the company up from a Canada-based RF manufacturer to being a global company with multiple product lines. By the time my tenure was over, the company's revenue had increased by seven-fold.

Then, I was fortunate to be part of the UHP Networks team that grew the company from its humble beginnings all the way to the moment when the company was acquired by Comtech. Over the last year or so, being part of the Comtech family has brought a lot of new experiences: working on a different scale and being part of the team that I'd known about and interacted with for a long time. That is definitely something I count as a very important highlight of my career. ●



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