Kratos Introduces the Software Replacement for Traditional Satcom Hubs

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Fully virtual and orchestrated, OpenSpace vStar enables operators to deploy flexible satcom networks for next generation satellites

SAN DIEGO, March 09, 2023 (GLOBE NEWSWIRE) -- Kratos Defense & Security Solutions, Inc. (Nasdaq: KTOS), a Technology Company in Defense, National Security and Global Markets, introduced the first of its OpenSpace® vStar solutions designed to modernize satellite communications (satcom) ground systems and enable them to interoperate smoothly with terrestrial and cellular networks. Part of Kratos' OpenSpace ® Platform, vStar products are virtual replacements for the traditional hardware-based hubs used in satcom today. As software, vStar offers dramatic advantages over traditional hubs, including simultaneous support for point-to-point and star topologies, multi-mission operations, dynamic configuration and touchless deployment within cloud and hybrid environments.

According to Greg Quiggle, SVP of Space Product Management at Kratos, "With 5G, the wireless industry has shifted from purpose-built hardware equipment to flexible, software-defined networks, called vRANs, expanding their markets and services in the process. OpenSpace implements this same model to mainstream satcom services with the rest of the global communications infrastructure while simultaneously capitalizing on the advanced capabilities built into the new generation of software-defined satellites."

The Evolving Satcom World

Today, satellite operators employ satcom hubs in their networks providing connectivity to the many remote user terminals in the field. These hubs are racks of purpose-built hardware devices, such as satcom modulators and demodulators, which must all be physically installed at one or more teleports or ground stations. The permanent nature of these installations makes them severely limited functionally. In addition, they lock satellite operators into a single vendor's equipment and usually to a specific network topology.

However, two phenomena are occurring across the space industry making this approach obsolete. The first is that satellite technology has made tremendous leaps forward in recent years enabling more dynamic services, such as software-defined satellites and large constellations of smallsats. The second is that terrestrial and wireless networks, which make up 99% of the world's communications infrastructure, have advanced software-based operations even further, from 3G to 4G to 5G, while satcom infrastructure has remained effectively in a 2G world. As a result, hardware-based hub systems form a bottleneck between these two ends of the network. Hardware hubs simply cannot react fast enough nor are they agile enough to support the increased beam proliferation and reconfiguration capabilities at the space layer, nor processes like automated provisioning and service level transparency common in the global communications networks they feed.

The New Model for Satcom Networks

With OpenSpace vStar, satcom providers can finally leverage the full dynamic capabilities of their next generation satellites while catching up with the rest of the communications industry's networks, integrating their services with those of global carriers. vStar employs a widely used, more modern framework to perform the functions of a traditional hub—and more—at an enterprise-grade scale without the hub's limitations. vStar simplifies, orchestrates and automates operations, as well as laying the foundation for satellite to eventually become part of mainstream 5G service delivery.

vStar replaces the traditional hub hardware with fully virtual software equivalents that can run on generic x86 computing platforms, whether an off-the-shelf server or the cloud, and without the need for performance enhancing hardware like FPGAs, GPUs or ASICs. Hub functions can now be fully disaggregated, no longer concentrated at one physical location. As a result, the satcom network becomes far more resilient, scalable and adaptive to changing conditions.

vStar solutions interoperate seamlessly with Kratos' recently announced OpenEdge™ software-enabled terminals to support faster, more flexible and far more powerful services that are more responsive to changing customer or mission needs. For example, operators can actually turn an OpenEdge remote terminal into a mobile "hub" in minutes simply by remotely enabling additional network functions to accommodate increased demand or new services. Working together as part of the OpenSpace Platform, vStar and OpenEdge provide a full software-defined, virtualized satcom ground system.

And virtualization is just the start. OpenSpace Platform products, including vStar, are also *orchestrated* to optimize service delivery from end to end across the network. Orchestration is the next step beyond virtualization in the digital transformation of satcom, enabling OpenSpace, to deliver dynamic automated, intelligent services that are easy for network operators to create, update and adapt in minutes. For example, as workdays end around the globe, satellite operators can use OpenSpace orchestration to automatically reduce satellite power in one time zone and increase it where the workday is starting. Similarly, defense and government networks can instantly shift resources to new missions or disaster recovery efforts.

With traditional hardware hubs, this kind of coordination is, at best, severely limited functionally because of the purpose-built

nature of the hub hardware. Compared to OpenSpace's orchestration, hub-based coordination is a complex and time-consuming manual process that can take weeks when technicians must travel to distant physical locations to add or reconfigure hardware, rather than in just seconds with OpenSpace.

Intelsat, one of the world's largest commercial satellite operators, will employ OpenSpace vStar technology as part of the advanced network being built to deliver services for their new family of software-defined satellites. According to Carmel Ortiz, VP of Systems Innovation at Intelsat, "OpenSpace software will enable us to reliably deliver flexible services to our customers across our network all the way to the edge. This is particularly important for growing our offering of mobility and migrating to 5G services."

Benefits of OpenSpace vStar Software
Virtual and orchestrated, OpenSpace vStar solutions are far more powerful and flexible than hub systems in other ways:

- **Simultaneous support for multiple topologies.** With few exceptions, hardware-based hubs are typically optimized for one service delivery structure, called a network topology, such as SCPC or FDMA. This can mean many duplicative hubs often running under capacity. With vStar software, however, a service like unified Carrier Ethernet can be offered over a range of topologies, toggling between SCPC and FDMA in concert with demand; and support for TDMA will be available later this year. Operators can fully leverage their infrastructure as customer needs change and new missions arise.
- **Better strategic planning, scalability and resource optimization.** Support for added network capacity can be accomplished in seconds with OpenSpace simply by remotely enabling new network functions. As a result, infrastructure investment grows in step with real demand without over-provisioning. In contrast, today's expensive hardware hub systems must be purchased far in advance, shipped and installed, tying capital in unused or sub-optimized equipment. In addition, since vStar has no hardware to ship, global operators will not be burdened with meeting the bureaucratic and costly demands of exporting regulated equipment between countries.
- **Cloud native operations.** Operators can design the best network architecture for their growing needs, mixing onsite implementations at the gateway with cloud environments. Since all OpenSpace products comply with industry standards for openness and run on generic x86 servers, operators have maximum network design flexibility and lower CAPEX costs.
- **Accelerate time to revenue.** Network operators can design and deploy new services in minutes tailored to specific customers or missions, specifying needed apps, rules, policies and procedures from the teleport, across the cloud and all the way to the network's edge. Provisioning and delivery can happen almost immediately, adapting to peak usage times and multi-mission support needs.

For more information about OpenSpace for Satcom visit: https://www.kratosdefense.com/satcom

For more information about Kratos's OpenSpace dynamic ground platform visit: https://www.KratosDefense.com/OSP

About Kratos OpenSpace
Kratos' OpenSpace family of solutions enables the digital transformation of satellite ground systems to become a more dynamic and powerful part of the space network. The family consists of three product lines: OpenSpace SpectralNet for converting satellite RF signals to be used in digital environments; OpenSpace quantum products, which are virtual versions of traditional hardware components; and the OpenSpace Platform, the first commercially available, fully orchestrated, software-defined ground system. These three OpenSpace lines enable satellite operators and other service providers to implement digital operations at their own pace and in ways that meet their unique mission goals and business models. For more information about the OpenSpace family visit http://KratosDefense.com/OpenSpace.

About Kratos Defense & Security Solutions
Kratos Defense & Security Solutions, Inc. (NASDAQ: KTOS) is a Technology Company that develops and fields transformative, affordable systems, products and solutions for United States National Security, our allies and global commercial enterprises. At Kratos, Affordability is a Technology, and Kratos is changing the way breakthrough technology is rapidly brought to market – at a low cost – with actual products, systems and technologies rather than slide decks or renderings. Through proven commercial and venture capital backed approaches, including proactive, internally funded research and streamlined development processes, Kratos is focused on being First to Market with our solutions, well in advance of competition. Kratos is the recognized Technology Disruptor in our core market areas, including Space and Satellite Communications, Cyber Security and Warfare, Unmanned Systems, Rocket and Hypersonic Systems, Next-Generation Jet Engines and Propulsion Systems, Microwave Electronics, C5ISR and Virtual and Augmented Reality Training Systems. For more information, visit www.KratosDefense.com.

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