OpenSpace®

OpenSpace Earth Observation and Remote Sensing Service Chain –
Increase Automation, Accelerate Deployment Times, and Optimize Costs

The EO & Remote sensing service chain is monitored and reported on using the OpsCenter dashboard.
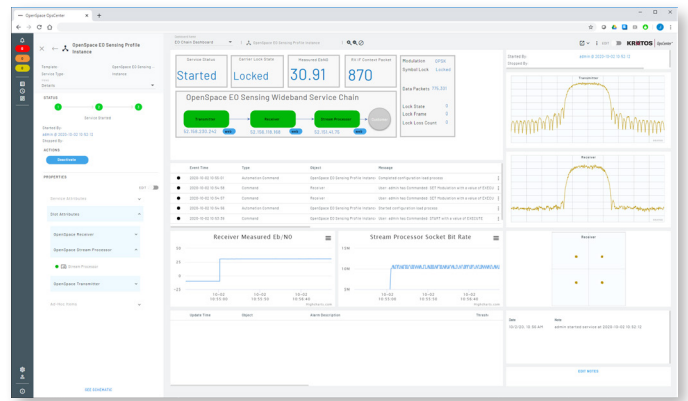
Earth Observation and Remote Sensing Missions Challenges

With the increasing amount of information being collected and transmitted from the current and next-generation of Earth Observation (EO) and Remote Sensing (RS) satellites, there is increasing pressure for ground systems to be become more agile, cost-effective, and scalable.

A New Approach to Ground System Operations - OpenSpace Platform

The OpenSpace Platform is the first fully virtualized and orchestrated satellite ground system that addresses the need for highly dynamic EO/RS services.

The OpenSpace Platform orchestrates the applications required to download large volumes of data on the fly during the short time periods when satellites are over the ground system. Once a pass is complete the

resources used are returned to the compute pool. This allows for greater operational control of when, and where, EO/RS workloads are executed.

By using generic compute in public or private cloud environments, the OpenSpace Platform allows customers to deploy EO/RS workloads in concert with their other IT systems, avoiding hard to deploy and manage purpose-built hardware.

OpenSpace EO/RS Service Chains

The OpenSpace EO/RS Service Chain (SC) includes a fully virtualized Telemetry, Tracking, and Command (TT&C) modem, wideband receiver, and stream processor/recorder to support EO missions.

The EO/RS SC chain runs on the OpenSpace Platform to seamlessly integrate and automate the tasks of service delivery end-to-end through the power of orchestration in a fully virtual environment.
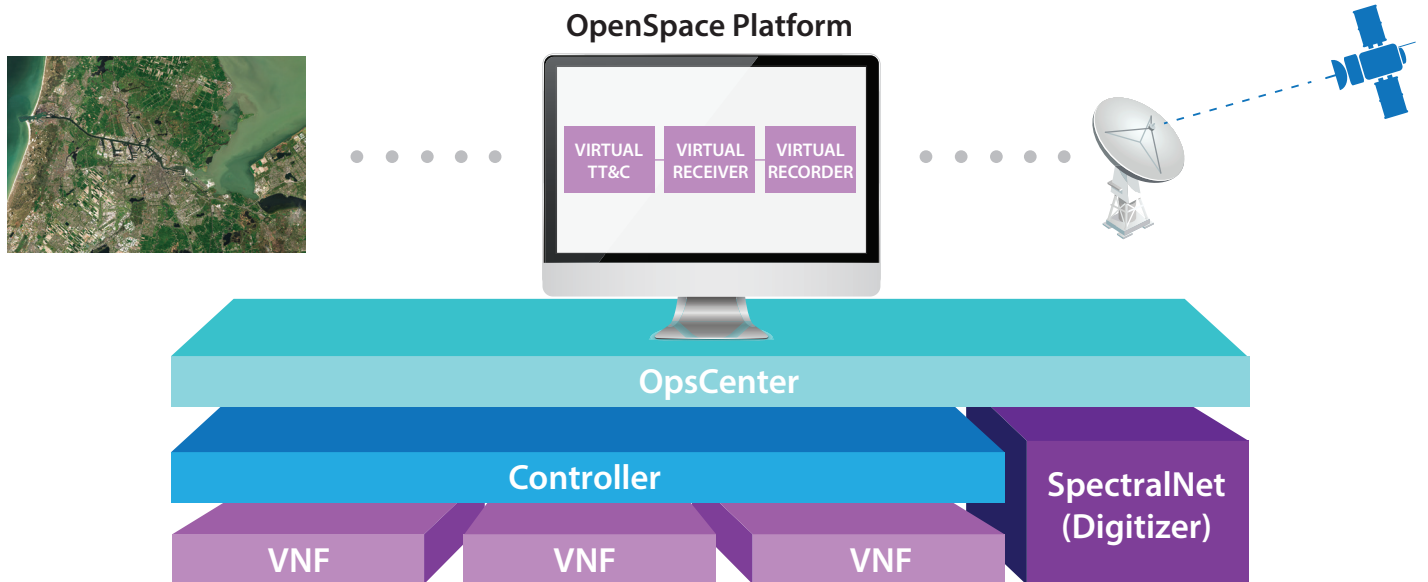
The OpenSpace Controller, the brain center of the Platform intelligently and automatically deploys EO/RS service chains. The EO/RS SCs can be activated and de-activated in tandem with satellite operations to dynamically support changes in supply and demand.

Orchestrating OpenSpace EO/RS Service Chains

The EO/RS SC enables a customer to provide fully orchestrated TT&C, high-throughput wideband data downlink and packet processing of mission data.

Virtual TT&C modems, wideband receivers, and stream processing/recorders are orchestrated in the OpenSpace Platform as a service chain along with the automated configuration of physical functions such as digitizers and antenna control systems. This enables fully automated EO sensing mission services from the antenna all the way to post satellite pass processing.

Advantages of OpenSpace EO/RS SCs

- Accelerate the Time to Download
  Deploy and reconfigure the EO/RS SC in minutes in the public cloud, private data center or hybrid cloud environments.

- Provide TT&C Capabilities
  Optimize satellite operations by providing RF signal processing for TT&C and narrowband payload missions. Configure virtual TT&C modems on the fly to support multiple satellites and payloads.

- Scale on Demand with Growth
  Instantiate more virtual EO/RS SCs as demand grows without the need to over-provision the ground network. Easily point and click to add more mission profiles.

- Deliver High Throughput for Downlinks
  Deliver more than a gigabit-per-second of downlink throughput running solely on commercially available, off-the-shelf x86-based computers without specialized hardware or enhancements.

- Support Fully Automated Mission Passes
  Integrate operational planning systems directly with the OpenSpace Platform by using the standardized API interface and automation capabilities to enable service-layer processing for fully automated mission passes.

- Enable Cloud-Centric Operations
  Deploy in either cloud-centric or gateway-based environments. The OpenSpace controller manages the automated deployment of the SC in any zone (public or private) defined by the mission profile fully autonomously, pass-to-pass. Customers can select the best downlink locations appropriate to the mission data.

Monitor and Assure EO/RS Service Performance

OpenSpace OpsCenter - the unified manager of the OpenSpace Platform monitors EO/RS SC health and uptime. It also displays alarms in a single dashboard to enable faster troubleshooting.

OpsCenter enables the management of ground system infrastructure including the physical network devices, RF gateway components and virtualized infrastructure in a single solution.
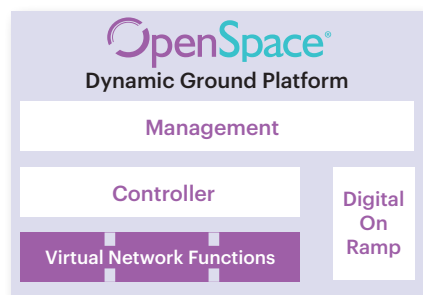
Kratos' OpenSpace family of solutions enable the digital transformation of satellite ground systems to become a more dynamic and powerful part of the space network. The family consists of three product lines: OpenSpace SpectralNet for converting satellite RF signals to be used in digital environments; 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.

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