

GILAT BLOG

Network Management Systems for Next Generation Satellite Communication

June 9, 2022

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Living in Times of Mass Disruption

For many, the last 2 years have felt like a scene from a science-fiction movie. Almost everything we knew about daily living was turned on its head, as we learned to work, study, receive medical care and even socialize in 'remote mode', relying on communication technology to keep us going.

2020 and 2021 were two of the most disruptive, if not THE most disruptive years in recent history. While adjusting to the world's new normal, the satellite communications industry quickly responded to the urgently increasing need to bridge the digital divide as well as enable a whole host of new products and services that will take advantage of new satcom technologies.

To meet these requirements, satellite capacity is growing faster than ever before, as next generation satellite technology is evolving to multi-orbit constellations that include Non-Geostationary Orbit (NGSO) constellations and Very High Throughput Satellites (VHTS). Customer demands are increasingly growing with new verticals and geographic markets opening to satellite communication.

This next generation of satellite communication will enable ubiquitous connectivity for fixed and mobility sites anywhere, will extend 5G and mobile Edge computing to serve remote sites and will enable mass market growth to connect IoT devices everywhere. At Gilat we refer to this next generation as the Elastix Era of satellite communication, based on the demand for agile, flexible and scalable solutions.

Gilat is meeting the demands of global crises and the Elastix Era with its next generation platform, SkyEdge IV, that will accurately and efficiently focus resources on actual demand with minimal costs. This transformation will address the major satellite industry challenges of requiring higher network capacity, at a lower cost, with ensured availability, lower latency and higher throughput per user.

Managing Disruption: Network Management Systems are More Critical Than Ever Before

VHTS and NGSO constellations bring massive bandwidth, scale and service flexibility, leading to more powerful and capable satellite networks than ever before. These networks provide unparalleled agility and enable demand-based bandwidth delivery where and when it is needed.

However, as networks expand globally, in bandwidth, number of subscribers and with the introduction of new satellite constellations and software-defined satellites, efficient network management becomes more and more challenging. For that, Gilat developed the industry's most advanced network management system for multi orbit ground systems – the Elastix-TotalNMS.

Managing the Promise of Next Generation Satcom

There are 3 critical capabilities of an NMS that are required to maximize the impact of Next Generation ground segment technology:

1. Microservice-Based Cloud-Native Architecture

This first element means that the management application is broken into functional blocks running as microservices.

These microservices are bundled with all their dependencies (configuration files, libraries etc.) into containers, that can run anywhere.

To make things even simpler, Kubernetes is then used to automate the containers deployment, scaling, and management.

Applications built in this manner allow communication service providers (CSPs) to benefit from simplified deployments and maintenance, true elastic scaling of both compute and storage, and high resiliency of cloud IT resources.

2. Real-Time High-Volume Data Delivery

With the expansion of networks, and moreover the introduction of software-defined satellites and demand-based bandwidth delivery, the requirement for high volume real-time delivery of network's performance and usage data becomes critical.

This requirement is perfectly addressed by Apache Kafka's Data Stream processing solutions which have become the de-facto standard interface for monitoring with today's OSS and BSS environments.

3. Standard API to Satellite Resource Managers and Service Orchestrators

The API is built on RESTful Web design principles. REST provides a flexible, lightweight way to integrate applications, and have emerged as the most common method for connecting components in the OSS/BSS era.

Featuring REST API, an NMS can easily integrate with the operator's satellite resource manager and service orchestrator to enable the agility required by NGSO constellations and software-defined satellites.

Elastix-TotalNMS Has Them All

Gilat's new Elastix-TotalNMS, introduced with the launch of SkyEdge IV, is a microservice-based cloud-native application utilizing Kubernetes to simplify and automate the containerized application management.

The system features Kafka bus for real-time streaming of events and performance data and standard Rest based API for fast and reliable network configuration.

Built on top of this modern architecture, and focused on operational simplicity, Elastix-TotalNMS provides:

- Simplified service provisioning using configurable profiles for various services including Broadband Internet, Enterprise, Mobility and Backhauling services
- Big Data and analytics-based service assurance
- Advanced cross constellation mobility service management
- Flexible wholesale business models

With this innovative architecture and rich operational tool set, Elastix-TotalNMS is best equipped to support high availability, scalability and elasticity as well as automation and orchestration in multi-orbit networks deployed with both SkyEdge-IV and SkyEdge II-c platforms.

Conclusion

Elastix-TotalNMS gives network operators all the tools, information and APIs needed for end-to-end automation, simplified operations, reduced costs and an improved customer experience.

By all indicators, the satellite communication industry will continue to transform in the years ahead. We will see new satellite constellations and increasing demand for network services for key applications and verticals. In order to meet the challenges brought on by all this transformation, choosing the right ground segment partner with an advanced network management system is an operational imperative.

For more information please visit: [Elastix-TotalNMS](#) or contact us at: info@gilat.com