

Case Study

US Government Agency

US Government Agency Optimizes ISS Telemetry Monitoring with Allegro Packets

Real-Time Analysis and Modular Scalability for Mission-Critical ISS Operations

Industry: Public sector / Space travel

Customer: Large government agency with multiple locations

Challenge: Seamless, secure monitoring of critical telemetry data between mission control and the International Space Station (ISS)

In space, where every millisecond counts, network failures can be catastrophic. Precise, real-time data is non-negotiable. Allegro Packets empowers the agency to collect and evaluate vast streams of sensitive ISS telemetry—providing a flexible, secure, and mission-ready solution for ground control.

Challenge: When Failure is Not an Option

Before a recent crewed mission to the ISS, the agency faced a significant hurdle: the continuous monitoring of TCP/IP data traffic between astronauts and mission control.

The existing infrastructure was no longer sufficient. Legacy monitoring systems were cost-prohibitive for high data volumes, delayed critical analyses, and offered limited security integration. The agency required a solution that could continuously and securely capture 10 GbE traffic within a strict budget, ensuring that growing mission data wouldn't overwhelm the network.

The environment was based on a 10 Gb network with continuous telemetry capture and high security requirements.

The agency's core challenges included:



Latency: Sluggish evaluation of time-sensitive telemetry.

Security: Rigid requirements for encryption and access control.

Scalability: Insufficient infrastructure to handle expanding mission parameters.

Budget: A need for high-performance tools without a total infrastructure overhaul.




Solution: Mission Control Meets Next-Gen Packet Capture

To bridge the gap, Allegro Packets implemented the Allegro 810. This portable, high-performance appliance - equipped with a 4 TB SSD - was deployed to analyze ISS network traffic in real time. Its modular architecture allowed for a fast, cost-efficient initial setup with the flexibility to expand storage and performance as mission requirements evolved.



Allegro 810

The Allegro 810 enabled:

-  **Instant Visibility:** Real-time and forensic traffic analysis, featuring precise pattern detection and automated alerts.
-  **Hardened Security:** Advanced encryption, role-based access control, and two-factor authentication (2FA).
-  **Operational Simplicity:** An intuitive, multi-user interface designed for rapid collaboration between onsite teams.

With the Allegro 810, teams can now visualize telemetry data instantly, pinpoint anomalies, and make informed decisions—crucial for the safety of the crew and the success of the mission.

Practical Insight: Troubleshooting at the Speed of Light

During a live mission, astronauts reported performance issues with a critical video application. Previously, diagnosing such an issue would have taken over 24 hours.

Using the Allegro 810, the network team analyzed the live traffic and identified significant TLS server delays within minutes. This rapid diagnosis allowed the agency to immediately route the issue to the correct server team, drastically reducing the „Mean Time to Repair“ (MTTR). Experienced analysts praised the Allegro architecture for its high-resolution analysis and its ability to adapt to the dynamic environment of a space mission.

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Results: Packets Captured, Mission Secured

The deployment of the Allegro 810 delivered immediate operational advantages:



- Continuous Monitoring:** Uninterrupted real-time visibility into sensitive telemetry.
- Rapid Resolution:** Faster analysis led to fewer internal escalations and less downtime.
- Future-Proof Design:** Modular hardware allows for seamless capacity expansion.
- Compliance:** Full transparency and adherence to stringent aerospace security protocols.

Conclusion: Ready for the Next Mission

By investing in modular, smart analysis tools, the space agency has secured a foundation for all future ISS missions. Allegro Packets has ensured that mission-critical data remains visible, processes remain scalable, and every decision is backed by reliable, real-time information.

This case study demonstrates how modular analysis tools drive safety and efficiency far beyond daily operations. By providing real-time visibility and scalable processes, Allegro Packets ensures every mission-critical decision is backed by reliable data—a vital asset for modern space flight.

About Allegro Packets

Allegro Packets, a German-based company, offers portable and rack-mount solutions for network analysis and packet capturing. The brand is setting new benchmarks by combining high performance, reliability, active development, relentless support, and fair pricing in its all-in-one proposition. Allegro Packets' solutions are recognized and utilized by service providers, government organizations, healthcare institutions, and enterprises worldwide.

Website: www.allegro-packets.com