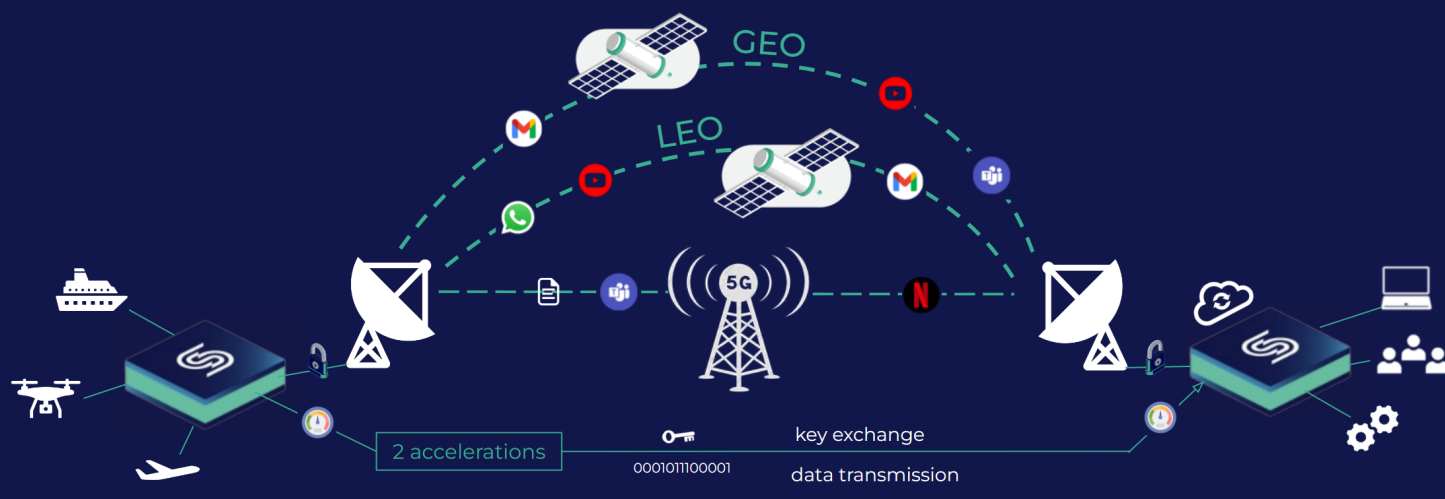# ARCA SATCOM

Securing multi-orbit satellite communications

CYSEC is a European cybersecurity company, headquartered in Switzerland with offices in France, providing innovative software products to protect critical infrastructures on ground and in space.

Today, many commercial satellite broadband services are unencrypted and vulnerable to eavesdropping attacks. **Up to now, the significant reduction of the link performances has been the blocking point preventing the adoption of end-to-end encryption of satellite communications.**

To solve this issue, CYSEC developed ARCA SATCOM, the first Performance-Enhancing Proxy (PEP) with built-in-encryption and authentication. ARCA SATCOM implements end-to-end TLS-based cryptography over TCP while doubling the link throughput compared to a standard VPN.

✔ File transfer ✔ VoIP ✔ Web-Browsing ✔ Video streaming

OVERVIEW OF ZERO-TRUST SATCOM CONNECTIVITY WITH ARCA SATCOM

✓ Protects against eavesdropping attacks to guarantee data confidentiality

✓ Sustains major improvement of performances compared to state-of-the-art VPN services

✓ Fully compatible with existing equipment and no modifications required on terminal or gateway

✓ Relies on encryption standards TLS 1.3 with FIPS-certified hardware-based Key Management
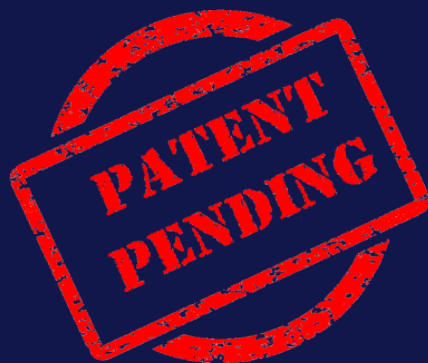
The goal of ARCA SATCOM is to reach an attractive trade-off between link performances and data protection.

BENEFITS

Reduction of the number of round-trips and acknowledgment messages (ACK) by an innovative PEP

Protection of the data as well as the metadata, similar to a VPN service

Storage and generation of cryptographic keys in a FIPS-certified hardware
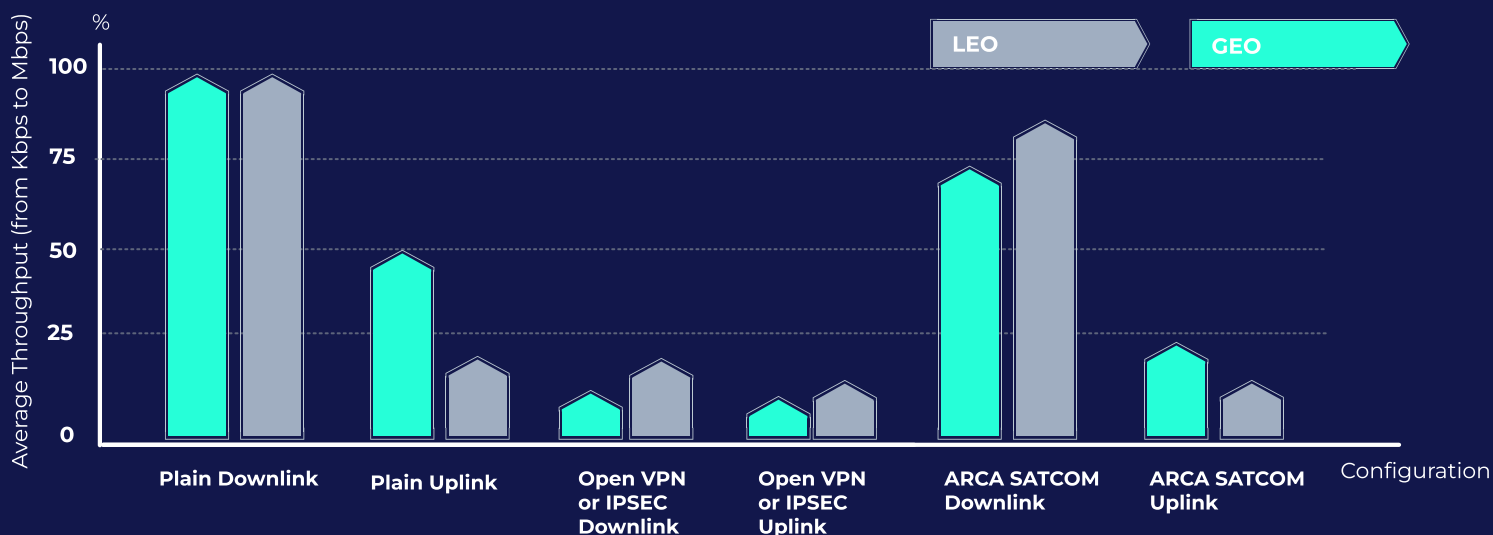
Multi-orbit deployment (GEO - LEO-MEO)

End-to-end encryption based on the TLS 1.3 and AES-GCM standards

2-fold increase the link throughput compared to a standard VPN

PATENT PENDING

USE-CASE - SPECIFICATIONS & PERFORMANCES OF ARCA SATCOM

LEO   GEO

Average Throughput (from Kbps to Mbps) — %

100 / 75 / 50 / 25 / 0

Plain Downlink | Plain Uplink | Open VPN or IPSEC Downlink | Open VPN or IPSEC Uplink | ARCA SATCOM Downlink | ARCA SATCOM Uplink

Configuration

IMPLEMENTATION

A plug-and-play solution on both ends of the link with ARCA router and ARCA server.

ARCA SATCOM SOFTWARE

- Includes the PEP as well as the cryptographic service and Key Management System
- Runs on the ARCA Trusted Operating System: a hardened Linux OS

ARCA ROUTER

- Plugged to the ethernet port of the satcom terminal
- Hosts the ARCA SATCOM software
- Integrates a FIPS-certified Trusted Platform Module (TPM)

***SPECIFICATIONS**

ARCA Embedded: hardened Linux-based OS with strong access control, TPM-based secure boot and system files encryption.

Hardware is FIPS (FIPS 140-2 22) and Common Criteria (CC EAL4+) certified.

ARCA SERVER OR
CLOUD

- Plugged to the destination server
- Hosts the ARCA SATCOM software
- Integrates a FIPS-certified Hardware Security Module (HSM)
- Can be deployed on premises or in the cloud

***SPECIFICATIONS**

High processing power with secure container orchestration capabilities (Kubernetes) . The same ARCA cluster can be used to manage several isolated ARCA SATCOM instances.

High-availability : assured redundancy

Off-the-shelf cryptographic API with strong access control using a FIPS 140-2 L3 certified Hardware Security Module (HSM) as crypto back-end

Cloud deployments : AZURE, GCP, AWS

For more details, request our documentation "specifications and performances"

CYSEC