SKYLAB

SKYLAB MCC

Maritime Control Centre

Digitisation for Maritime Industry

What is SkyLab MCC?

SkyLab MCC (Maritime Control Centre) is an integrated communication platform that focuses on digitalisation for the maritime industry. We digitally deliver data collected through IoT with built-in Cybersecurity protection that enhances operational efficiency & securing the vessels' business, crew and IoT networks.

- An **integrated communication management platform**
- **Digitalization** for the **maritime industry**
- Delivering **IoT with built-in Cybersecurity** protection

With the focus on digitization, there is a need to embrace digital and IoT technologies for cost savings and improved efficiencies.

Digitalisation is about enhancing business models, growing revenue opportunities and enabling service innovation. Industrial internet of things (IIoT) is set to play a deep role providing end-to-end transparency, increasing efficiency and improving health & safety.

Improved Efficiency

Revenue Growth

Improved Health & Safety

Accuracy & Reliability

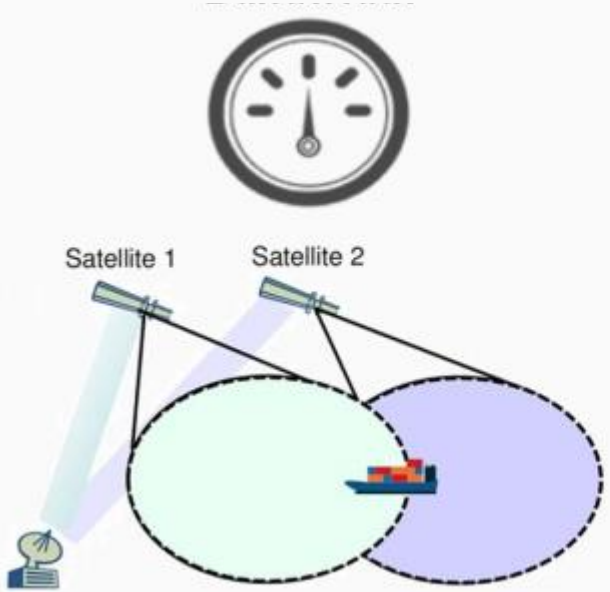
Security & Compliance

Actionable Insights

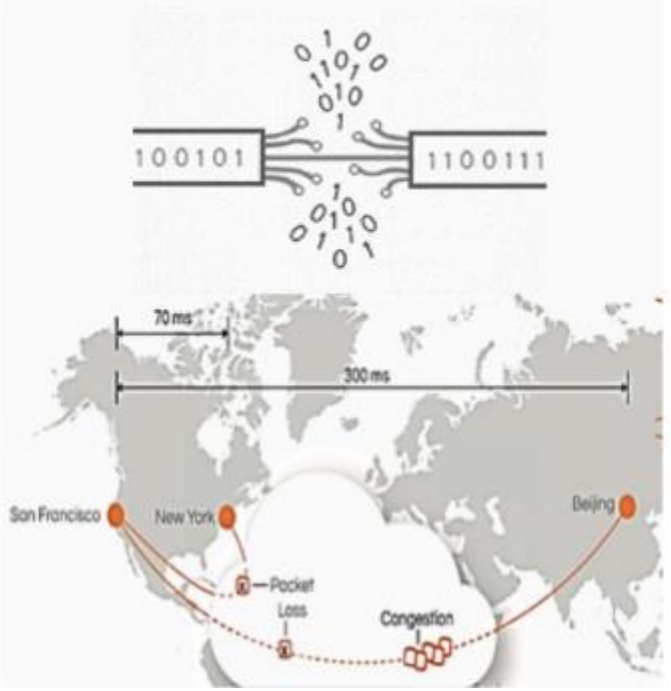
What Challenges does SkyLab MCC Address?

Connectivity, Satellite, Latency, Distance, Networks, Traffic, Protocols, Weather…..

Changing Bandwidth



Packet Loss



Congestion & Retransmission

SKYLAB MCC

Key Benefits

Automatic Network Connection Switching

- Seamless transition between different network types
- Automatic failover to redundant network type
- Connectivity cost option for downloading large files

Quality of Service & Class of Service

- Bandwidth limitation on individual client connections
- Control of bandwidth to network traffic connections
- Central management of device bandwidth

Transportation Acceleration Protocol

- Data delivery traffic acceleration and optimisation
- Reduces TCP's handshake and excessive transmission
- Prevents packet loss, congestion and coalescing

VDR Data Collection

- Vessel-to-cloud collection of equipment parameters
- Selection of various parameters as required
- Customized shore portal display of data

Fully managed Firewall with Web Portal Management

- Multi-stage firewall rules setting capability
- Network interface monitoring and real-time statistics
- Vessel positioning & Crew pin management function

Cyber Secure Shipping

- Secured end-to-end encryption
- Encrypt protocol header and payload
- Cryptographic way of authentication of every packet

Key Features of SkyLab MCC

Network Switching

- Allows for seamless transition between different network types (fixed line, LTE, satellite, etc) with ***no interruption or connection loss***.
- Automatic failover to redundant network type in case of disruption.
- Thresholds can be configured to control when the switchover will take place (signal degradation, loss of connection).
- Switchover can also be configured as a manual intervention, requiring user input to control.

FusionWire (Bandwidth Bonding)

- Use multi-number of networks simultaneously for multi-path delivery – Maximize utilization of available capacity
- Support for various Load Balancing algorithms for all connected networks – RR, WRR, Hash, Dynamic, etc.

QoS & CoS (Quality of Service & Class of Service)

- Allocate bandwidth limits on each MCC device and allocate limits on individual client connections
- Centrally manage all MCC device maximum permitted bandwidth

Automatic Network Switching

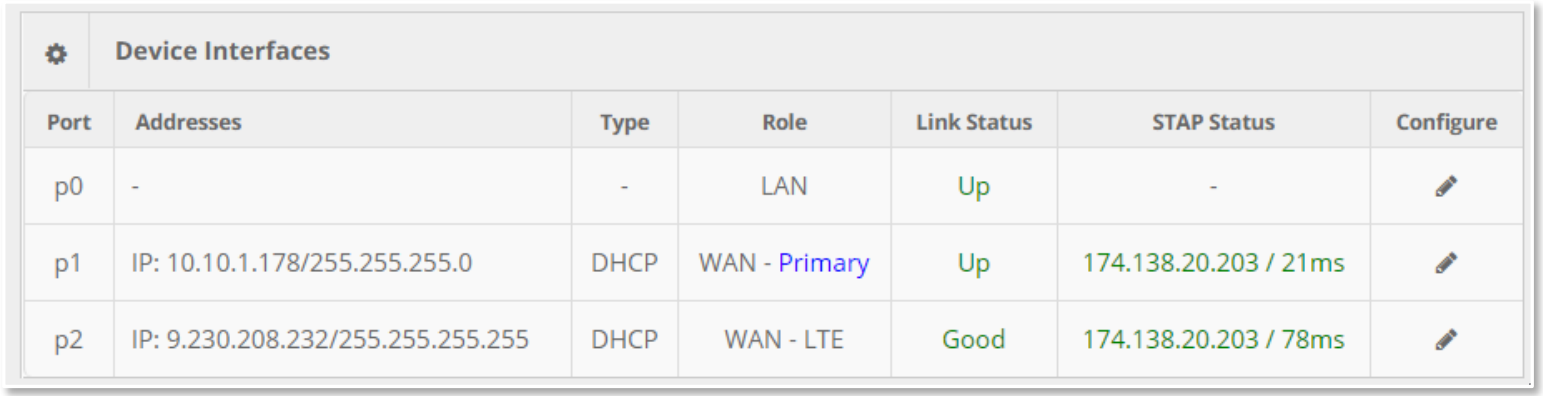
In automatic network switching mode, the network will be switched instantly when the primary interface is down and will return to the primary interface as soon as it is restored. The automatic switch to failover network is seamless with no interruption or loss of connectivity.

SkyLab MCC allows you to set the conditions, parameters and thresholds by which automatic network switching is triggered:

Priority: user defined priority applied to each network interface.

Signal Strength: user defined threshold to automatically switch to failover network interface once threshold value is crossed.

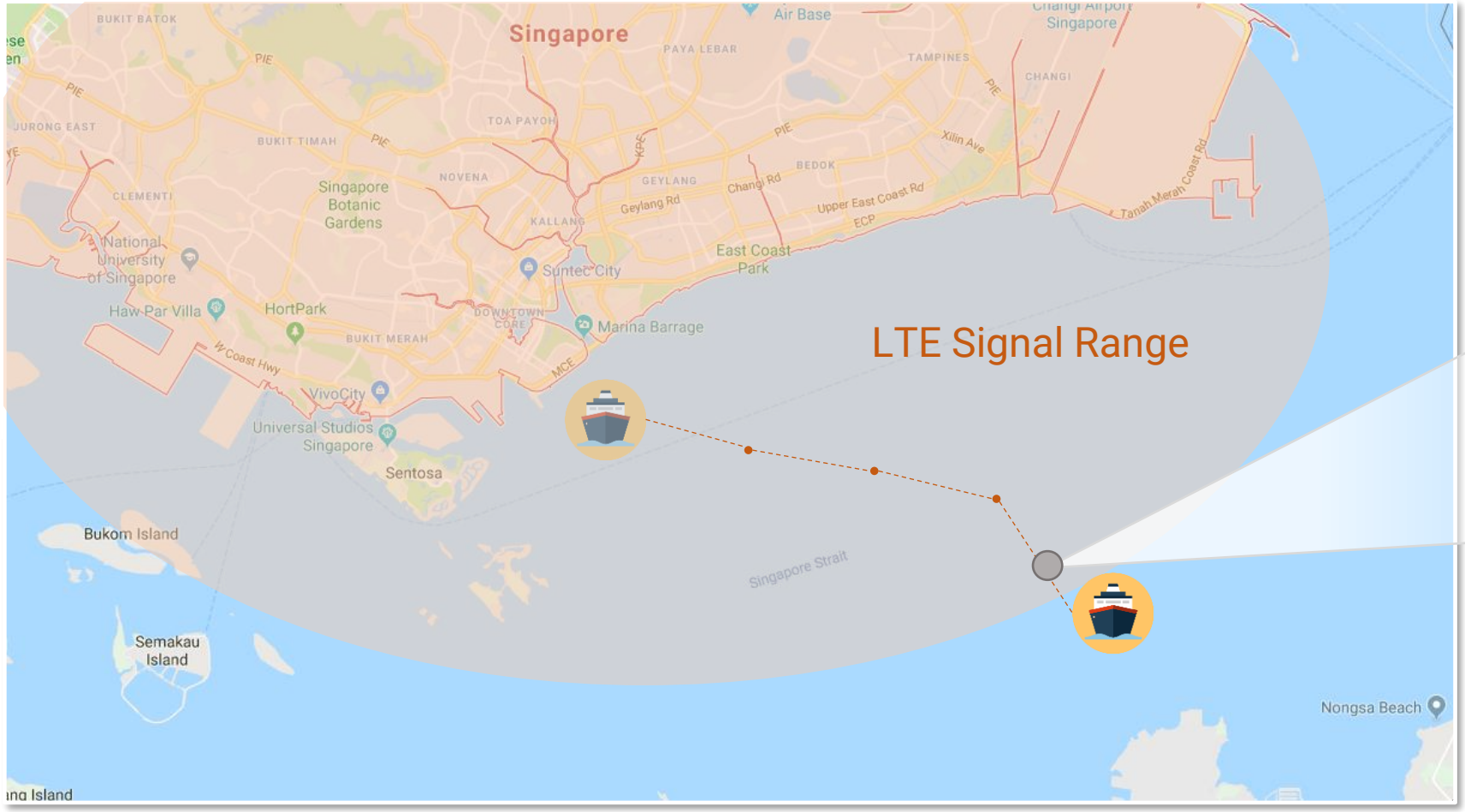
Latency: user defined threshold to automatically switch to failover network interface once threshold value is crossed.



Device Interfaces

Port	Addresses	Type	Role	Link Status	STAP Status	Configure
p0	-	-	LAN	Up	-	
p1	IP: 10.10.1.178/255.255.255.0	DHCP	WAN - Primary	Up	174.138.20.203 / 21ms	
p2	IP: 9.230.208.232/255.255.255.255	DHCP	WAN - LTE	Good	174.138.20.203 / 78ms	

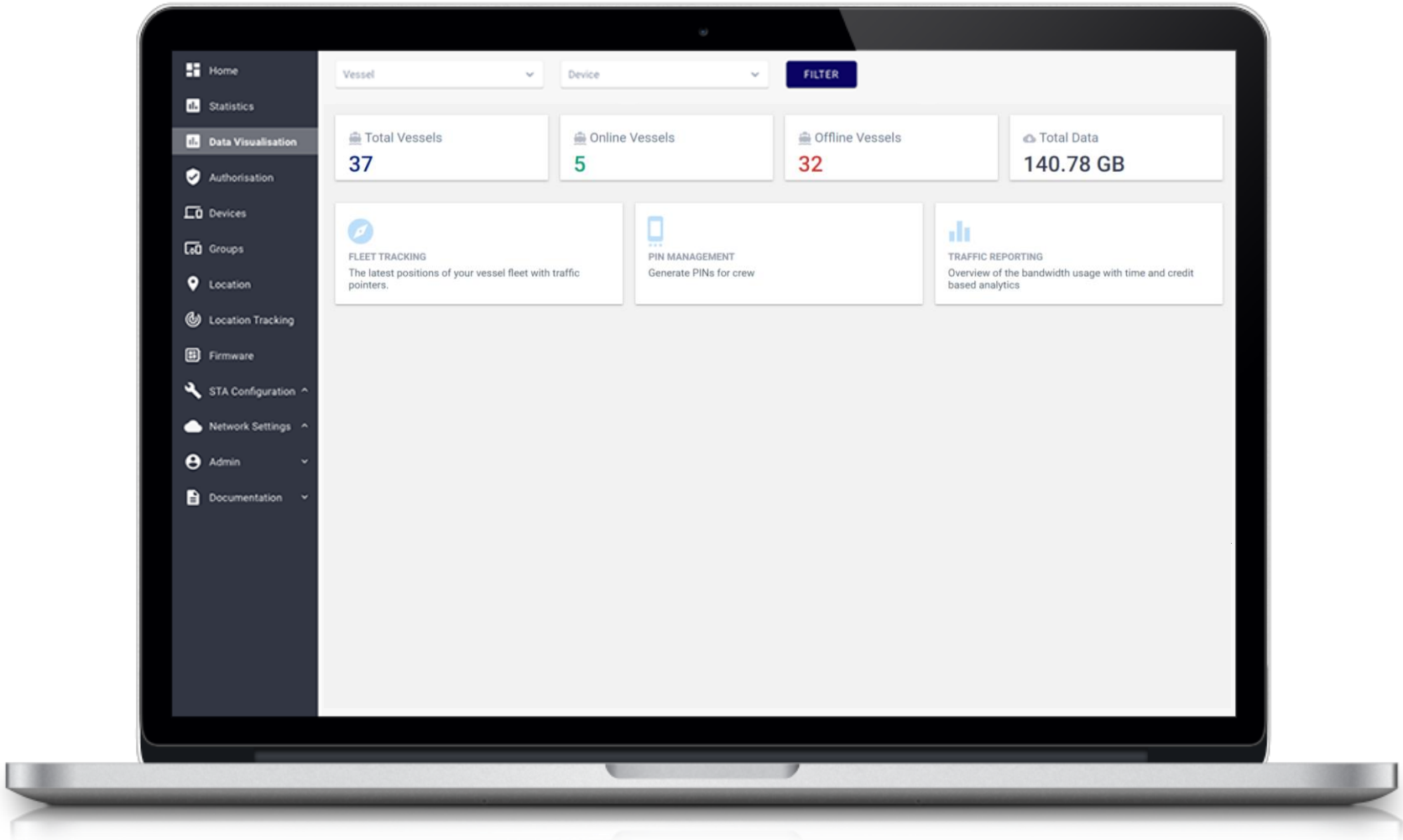
As the vessel moves out of signal range for the LTE modem, SkyLab MCC automatically switches the network to the secondary satellite interface in order to preserve connectivity and avoid any interruption of service.



At the point the LTE signal strength falls below the set threshold, the satellite connection (secondary) will be automatically switched to.

As the LTE signal strength returns to above the threshold, the connection will switch back from satellite

With SkyLab MCC you can digitally monitor machines and equipment remotely, using real-time and historical data to optimize the performance of systems and processes; and in preventive maintenance.



Core Features

Portal Features

- Centralised portal for device management
- Secure device enrolment process
- Secured end to end connectivity
- Encrypted traffic between devices and portal
- Real time location tracking of vessels
- OTA device firmware updates
- Real time device monitoring and statistics
- Device configuration orchestration for pushing and synchronising config across multiple devices
- API support for further integration
- Visualize specific data collected from devices

Device Features

Hardware

- LTE modem for cellular backhaul
- 2x RJ45 ports for local and WAN connections
- 2x RS-232/485 dual purpose serial ports
- In-built BLE

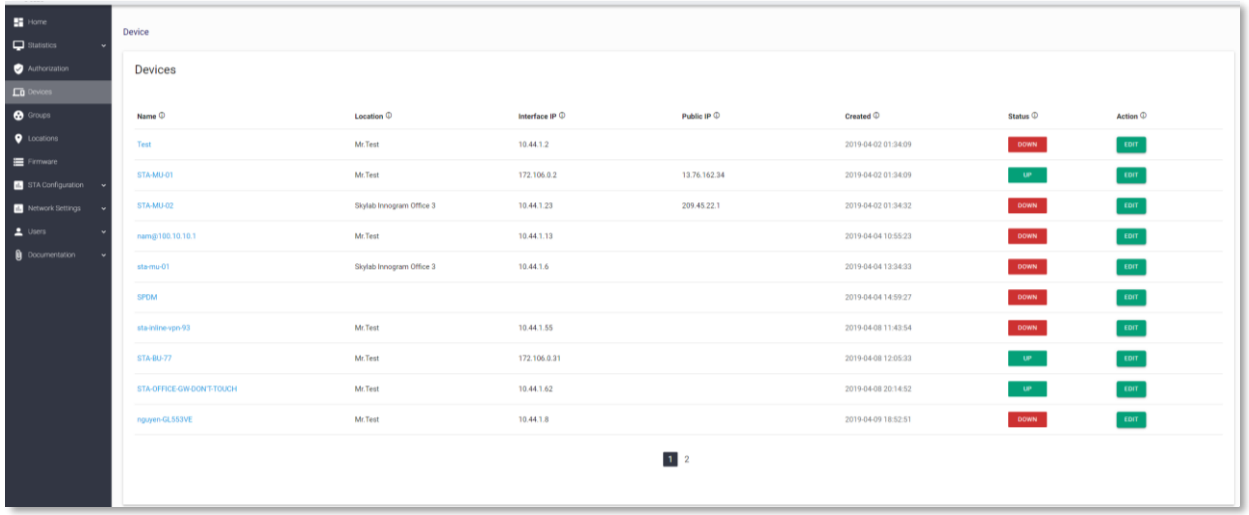
Software

- Automatic network switching between available connections
- Multi-protocol support for both M2M and M2C
- 1:N commit - 1 message to many destinations
- Data acceleration via STAP
- Firewall and QoS

Device Management

All authorized devices are shown for simplified management and user can drill down to specific devices for full information and configuration

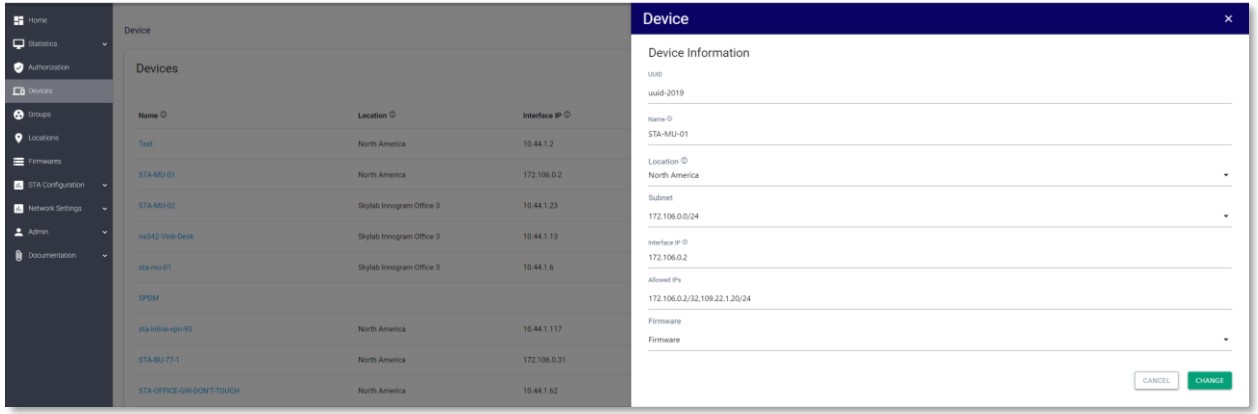
- View all devices and statuses in real-time
- Set locations and groups for devices
- Edit specific device configuration



Secure Device Enrolment

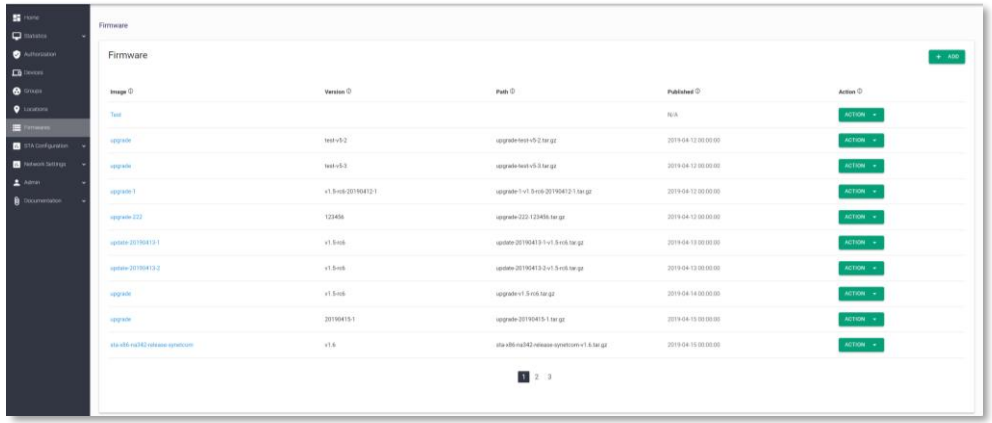
Ensure only authorized devices are approved via administrator action during device on-boarding.

- Authorization through x.509 certificate exchange
- Administrator to approve or reject new device requests
- On approval, automatically encrypt all device communications



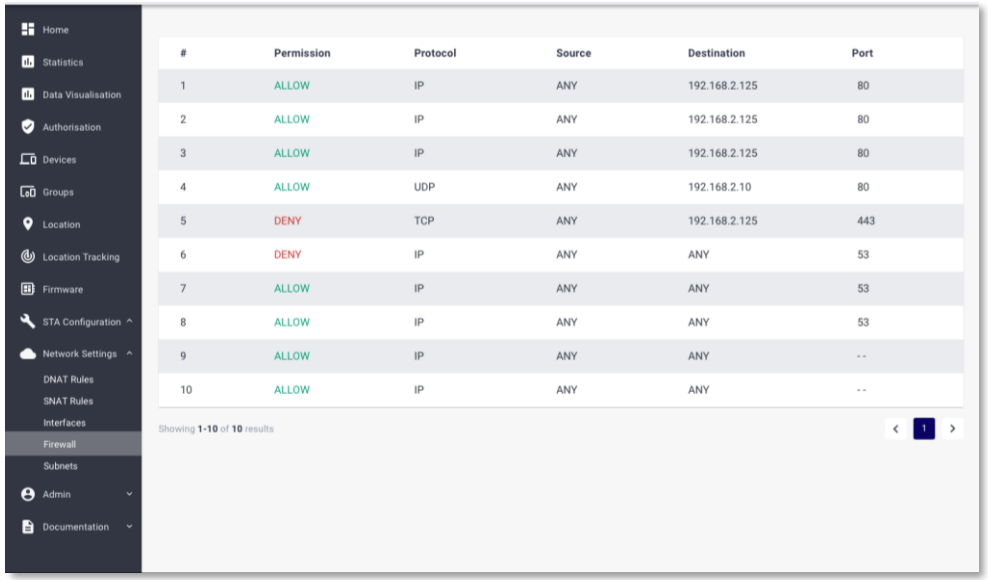
OTA Device Firmware & Configuration

- Upload and push firmware remotely from the portal to selected devices
- Manage multiple versions across any number of devices
- Reports on firmware push and automatic rollback in case of problems
- Update global configuration options across all devices.



Firewall Configuration

- Remotely update firewall rules for every device with a single click via the UI
- Configure advanced NAT rules for connectivity between locations



Data Visualization

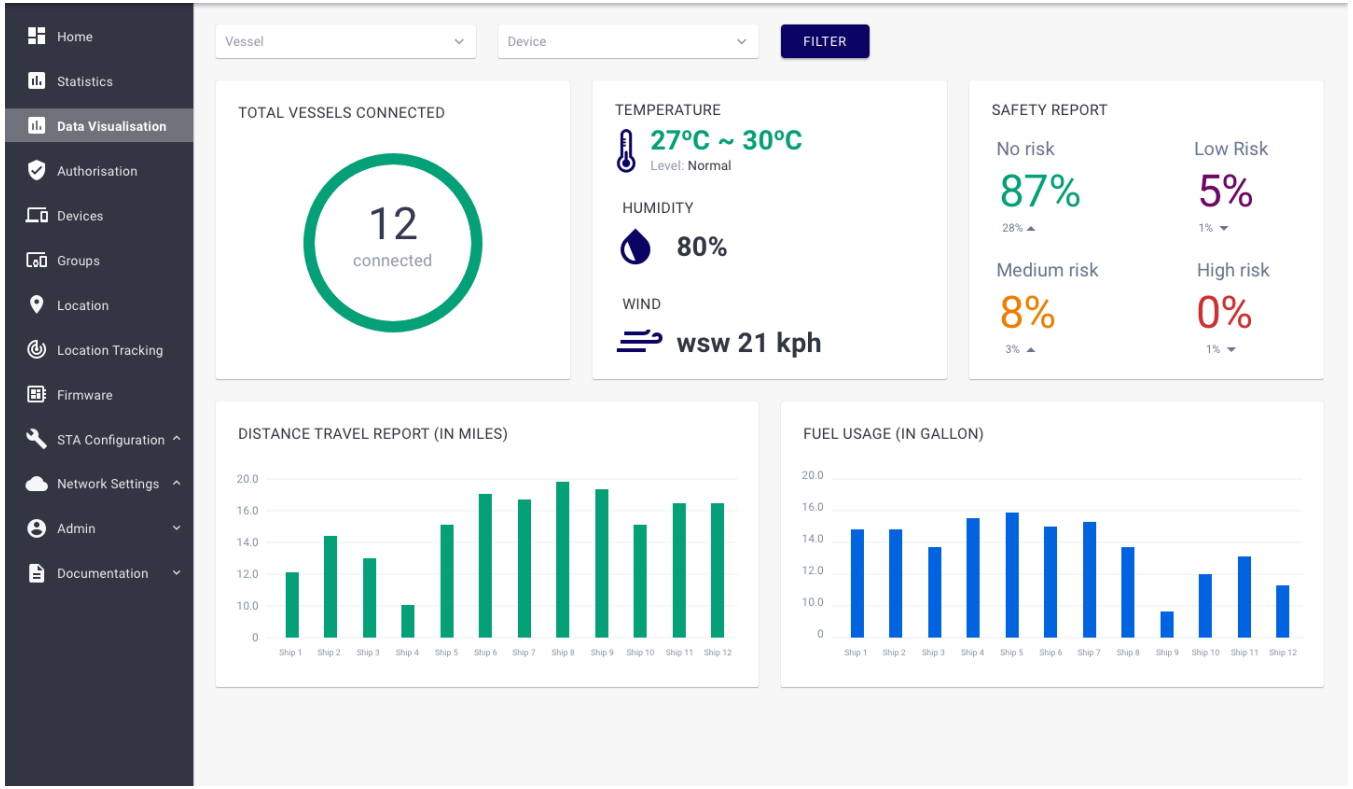
- Collect and visualize data from connected “black box” on ships
- Real-time and historical data reporting for quick insights into ship operations and health
- Option to further stream this collected data to 3rd party systems for further analysis and preventative maintenance

API Support

- APIs available for 3rd party integration for retrieving data and statistics

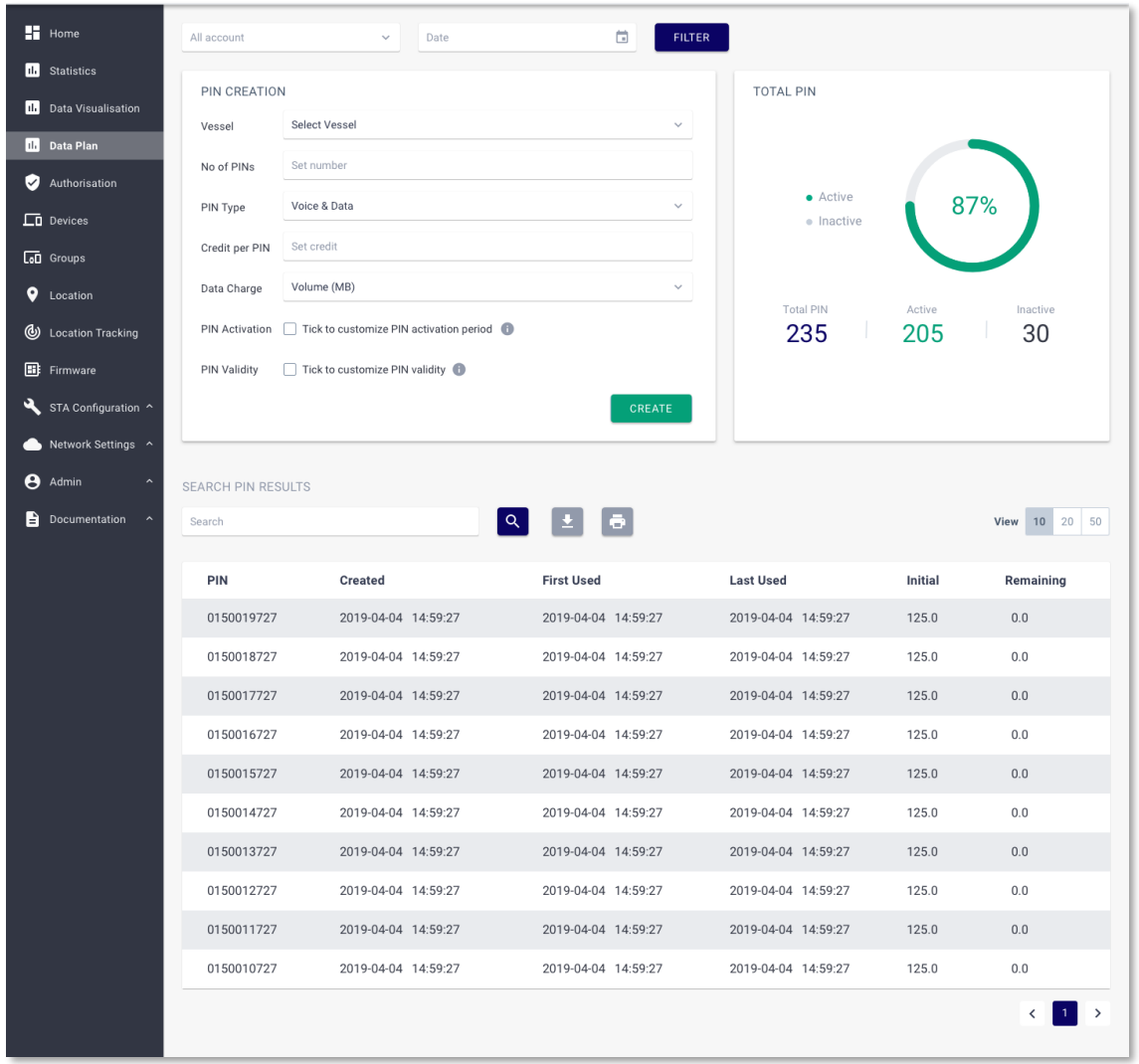
Data Mirroring

- After ingestion of device data into the cloud, data can be streamed to other destinations via various protocols (MQTTS, HTTPS, etc)
- IGX+ also offers 1-N message sending, meaning 1 connected device data can be sent to multiple locations



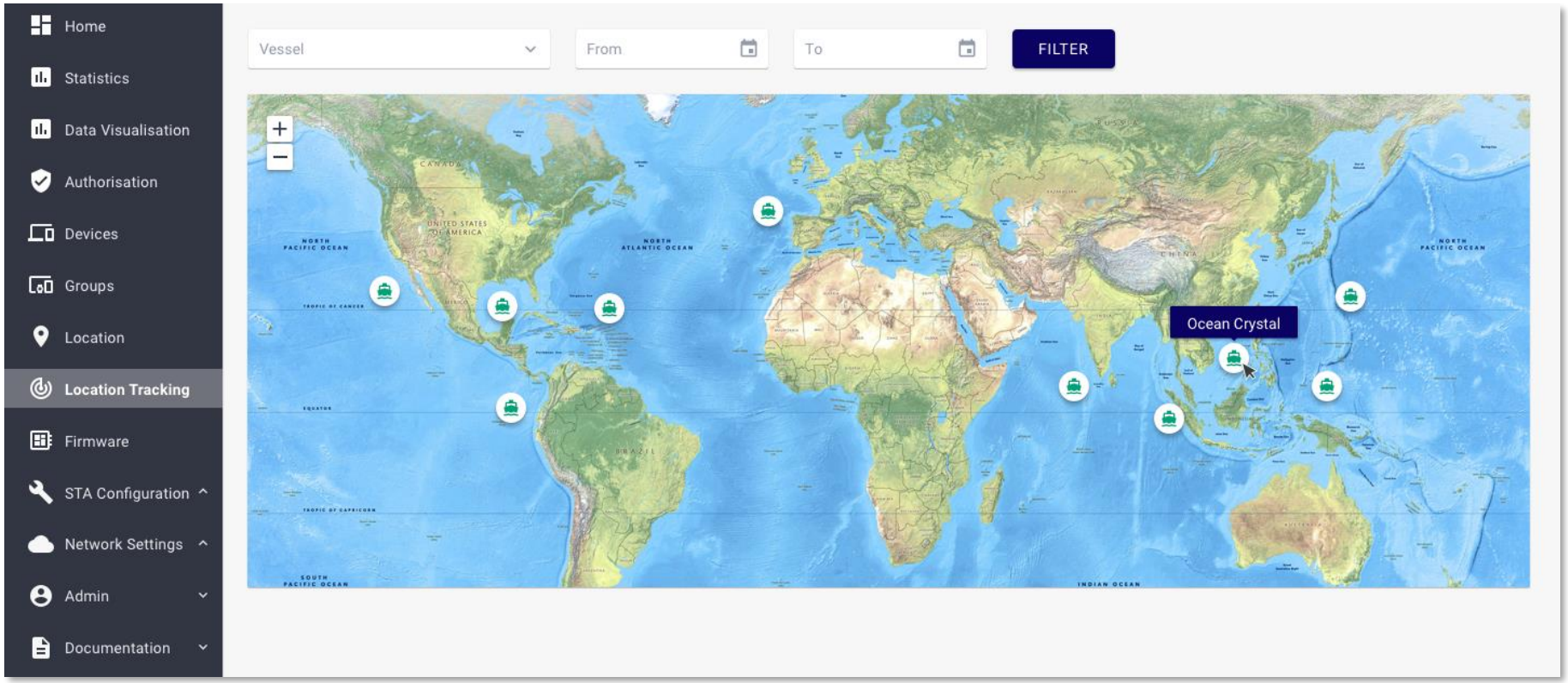
Data Plan Management

- Create and issue access tokens (PINs) for use with onboard WiFi and backhaul connectivity
- Set usage limits based on pre-defined data plans
- Search and filter active plans and usage
- View historical reports for data usage across devices

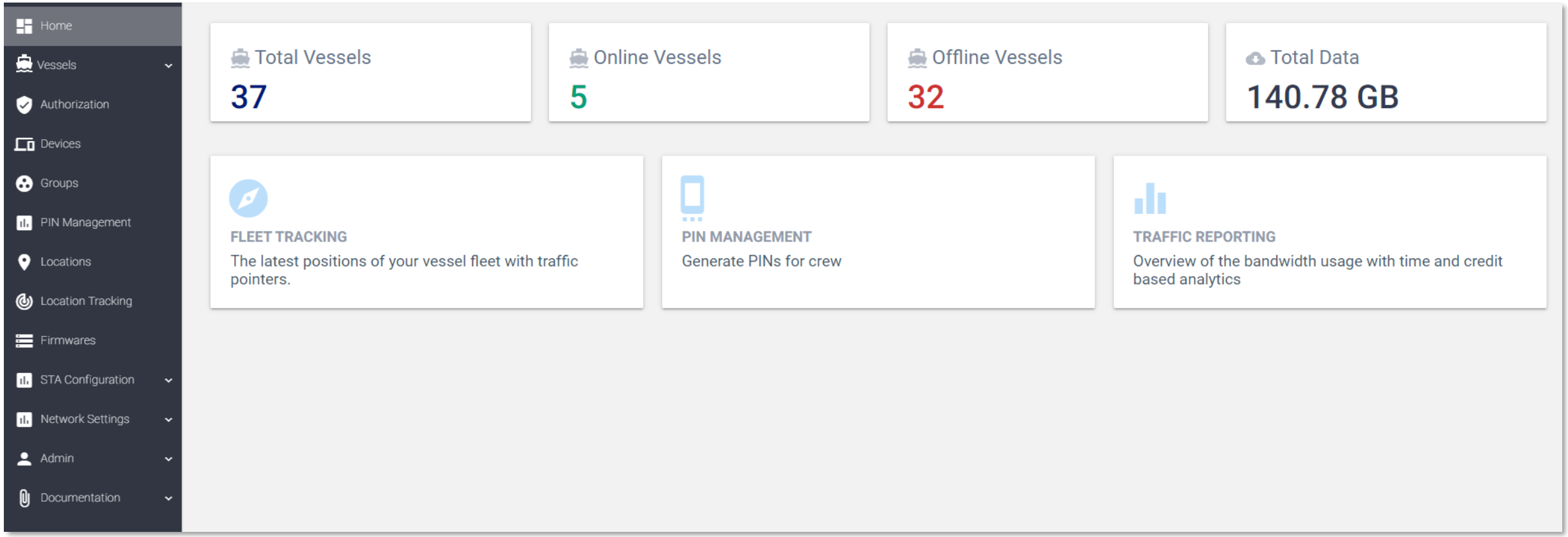


Real-Time Vessel Location Tracking

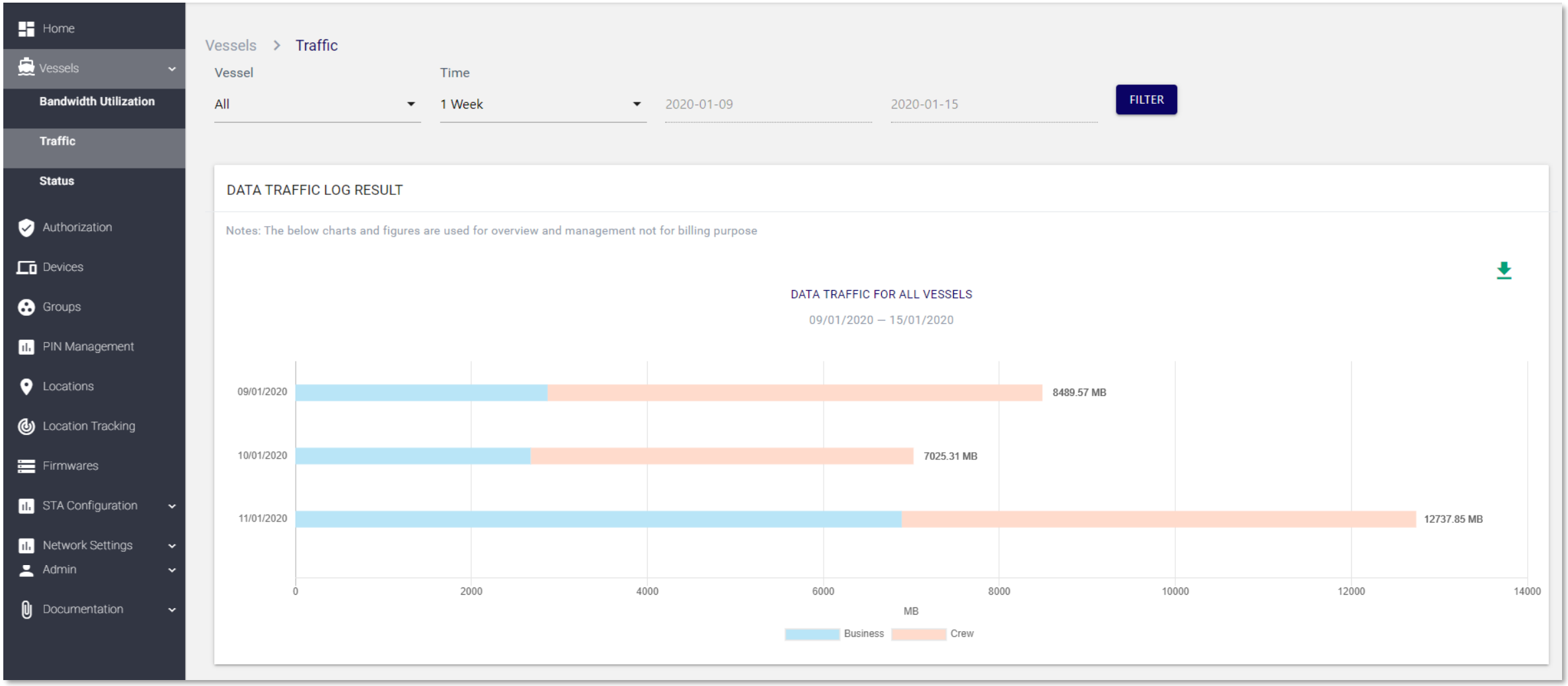
View and track all real time device location information via dashboard and map view and location history.



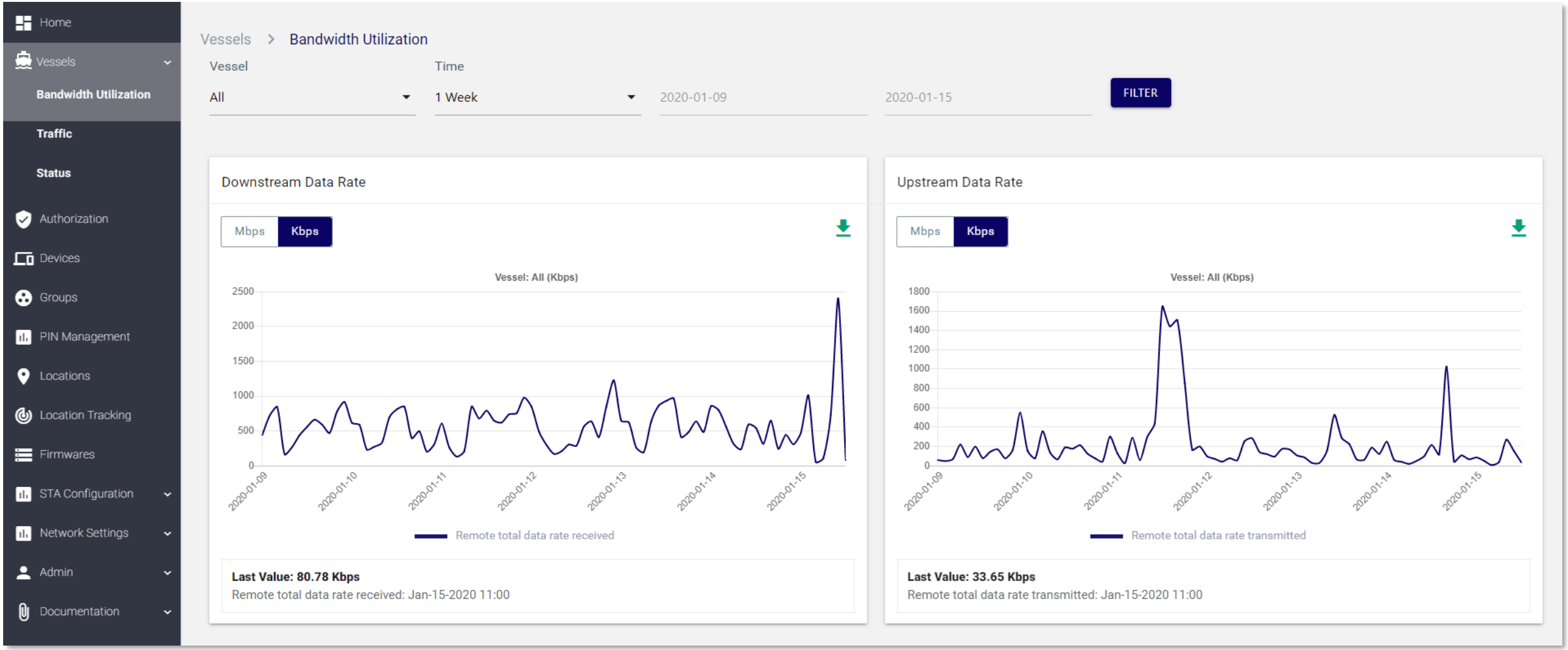
Dashboard Overview



Traffic Reporting Features



Bandwidth Utilisation Features




SKYLAB
A Digital Performance Company that optimizes the delivery of Content, Software and Machine Data for mission critical applications globally.
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