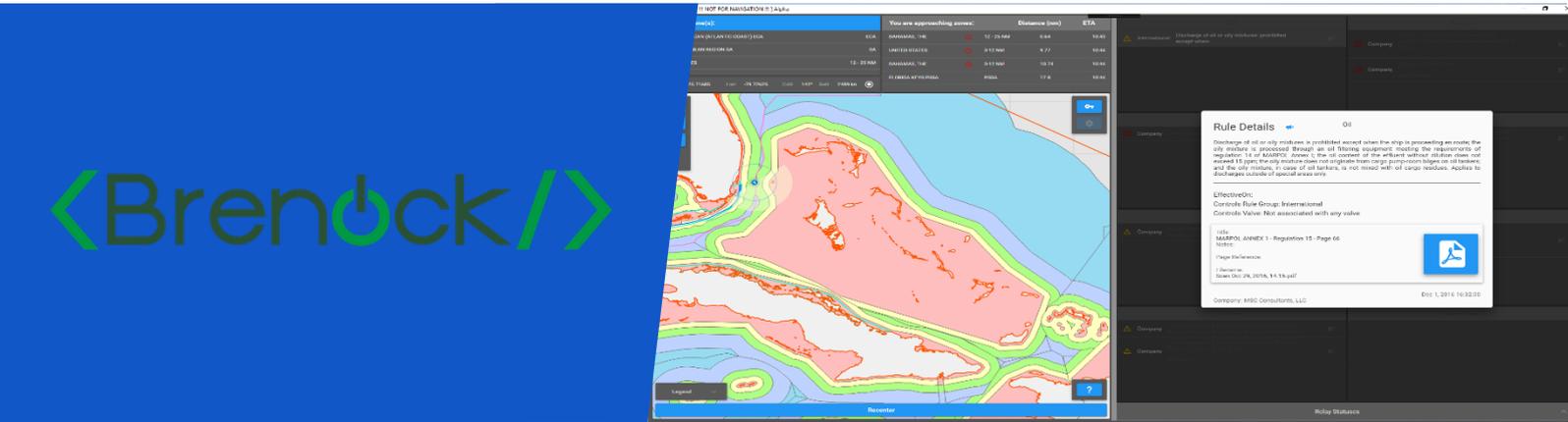**DIFFUSION DATA**
Data Distribution Framework

OCEAN GUARDIAN

Ocean Guardian, Powered by Diffusion® Protects the World's Oceans

How Brenock used Diffusion to send only data changes as a ship's GPS location changes - optimizing operating efficiency and system reliability.

<Brenock/>

Sector

Transportation.

Software applications and consulting services for the marine / cruise / hospitality

Company Profile

Brenock Technology, LLC is a U.S.-based software development and consulting firm founded in 1995 and headquartered in North Bay Village, Florida. The company specializes in delivering cloud-based, mobile-ready software solutions tailored for the marine, cruise, hospitality, and transportation industries. Over the past three decades, Brenock has established itself as a trusted technology partner for leading global cruise lines, including Virgin Voyages, Norwegian Cruise Line Holdings, Royal Caribbean Group, Holland America Line, and P&O Australia. Its flagship platform, the Integrated Management System (IMS), provides an end-to-end solution for port cost management, voyage planning, crew tracking, and operational oversight.
https://brenock.com/

Executive Summary

Brenock, a software company specializing in shipping industry applications, needed to assure the Total Marine Solutions Ocean Guardian system obtained maximum operational efficiency and reliable delivery of the critical environmental data compliance for ocean vessels. Diffusion helped Brenock to…

Assure international environmental regulatory compliance

Deliver timely & reliable information worldwide

Maximize operational efficiency

"When Kafka is used within an Enterprise, edge communication is less reliable and scale, data types, complex operations are big issues for RabbitMQ - Diffusion simply works"

Ben Rogers

CTO, Brenock

Challenge

When developing the Ocean Guardian system, Brenock's technical team had to address three areas of concern:

1) Assure efficient, cost-effective, and reliable delivery of information from a shore-side server to each individual vessel via sometimes difficult satellite connections, in a Microsoft Windows environment.

2) Synchronize and integrate the changing Ocean Guardian system data including vessel GPS location, international regulatory data, port proximity data.

3) Seamlessly scale and manage usage for hundreds of ships per fleet operator.

"Ask anyone on our development team, and they will tell you that we made the right choice using Diffusion. The performance is great. Error handling and connection monitoring are well-defined and allow us to check for connectivity and to reconnect to the server reliably. Support is fast and helped us get up and running quickly."

The Analysis

The Brenock development team examined a variety of options to address the data synchronization, management, and delivery challenges for the Ocean Guardian system. The team began by analyzing the pros and cons of using two open-source options - Kafka and RabbitMQ - versus Diffusion. In the words of Brenock CTO, Ben Rogers, the technical team's conclusions were clear.

Diffusion can handle an Ocean Guardian server with many devices connected via the Internet - not just within an organization. *"We must manage when a shore-side user is on a tablet or laptop connected to a hosted instance of the server showing the locations of hundreds of ships via GPS feeds. With respect to Kafka as an option, it runs in Apache and is difficult to configure in Windows environments. Kafka was designed to run on Linux and only runs on Windows by installing a 3rd party helper application."*

Rogers went on to say*, "With RabbitMQ, scalability and data types are an issue. RabbitMQ is fine for sending strings and messages, but it does not handle the more complex operations like JSON serialization, error handling, and reconnection strategies that Diffusion manages. We have used RabbitMQ in the past for simple data sets and strings but sending something like a set of rules for a port is too challenging and time consuming to unpack and de-serialize."*

The Solution

"We determined that Diffusion is powerful and also gives us ease of setup, multiple message types including Binary and JSON, which speeded our development, and a support desk that is unavailable with the open source products." He explained additional high-value functionality saying, *"Diffusion's broad feature set is a perfect match for the challenges that Ocean Guardian had to address to be successful."* Rogers further commented*, "Diffusion has unique features including only sending message deltas and compressing messages. This maximizes efficiency both when the regulatory rules don't change when a GPS changes, and with the size of our messages when the regulatory rules do change when a GPS changes."* Rogers stressed the importance of high quality and timely product support to shorten the development cycle and time-to-market. The Brenock team integrated Diffusion into Ocean Guardian and demonstrated the system in a week.

"Without Diffusion, the Ocean Guardian system would be performing unnecessary, repetitive work for every shipboard device connected, wasting valuable memory and CPU processing power - increasing operational costs."

Ben Roger
CTO, Brenock

Diffusion in a Nutshell

Distributes time-critical data feeds at speed, on a global scale, saving our customers time and money.

- **Patented Innovation:** Transforming data delivery with patented technology

- **Edge Optimised:** Empowering industries with real-time edge ready solutions

- **Feature-Rich Excellence:** Empowering powerful applications with a feature-rich platform

- **Cost Efficiency Without Compromise**: Save egress costs by up to 80%+ whilst improving application performance

- **Reduce time to market:** Drastic reduction in development, days instead of months

- **Scalability and Power:** High performance, reduced bandwidth by up to 90%+, and delivery of scalable, future proofed, solutions

- **Security**: Precise role-based access control and data filtering that enables hyper personalisation of data streams

Results and Future

Rogers said, *"DiffusionData's support is fantastic and every technical hurdle we faced with handling Ocean Guardian data and connectivity is addressed. The DiffusionData support team also helped us to plan for an environment of one ship scaling to hundreds of ships on a single server."*

Diffusion's unique benefits are a boon to Brenock's busy development team. With Diffusion powering Ocean Guardian by reliably and efficiently synchronizing, managing, and distributing the data, the Ocean Guardian server application, written by Brenock, only needs to retrieve and format the data once, when a ship's GPS location changes. Diffusion gathers all the data and distributes the pertinent information to the shipboard devices when they connect. The Diffusion platform sends only data changes as a ship's GPS location changes - optimizing operating efficiency and system reliability.

DIFFUSION DATA
Data Distribution Framework

Try Diffusion Cloud for free!

About Us

DiffusionData are pioneers in the world of real-time data distribution. The company provides infrastructure software to customers that use fast-moving data streams. The software is delivered as a cloud, on- premise or hybrid solution to companies worldwide, in sectors such as financial services, iGaming, retail, transportation, health and digital media