Thrane & Thrane

ACCREDITED SOLUTION

SAILOR 60/90 Satellite TV – Wired Ocean S-Box

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Introduction:

This document describes how the Wired Ocean S-Box can be interfaced with a SAILOR Satellite TV antenna and a SAILOR FleetBroadband or Fleet terminal to provide ships with fast, cost-effective broadband. Wired Ocean's services make broadband at sea affordable.

As ship communications move into the broadband era, the usage pattern changes from email to internet. Typical internet use consists of relatively small amounts of data (such as webpage or search requests) being sent, with much larger amounts of data (for example web pages and internet content) being received. While mobile satellite services are suitable for transmitting the relatively small amounts of sent data, they are not so well suited for transmitting the much larger amounts of received data. Their limited capacity (bandwidth) results in high usage costs and relatively slow transmission speeds.

Wired Ocean uses a 'hybrid' technology that integrates mobile satellites and television broadcast satellites to deliver high speed maritime internet. The broadcast satellites are used to deliver data to ships at increased speeds and greatly reduced costs, while mobile satellites continue to be used to send data from ships. Equipment costs are minimized by making use of the communications and television equipment on board vessels.

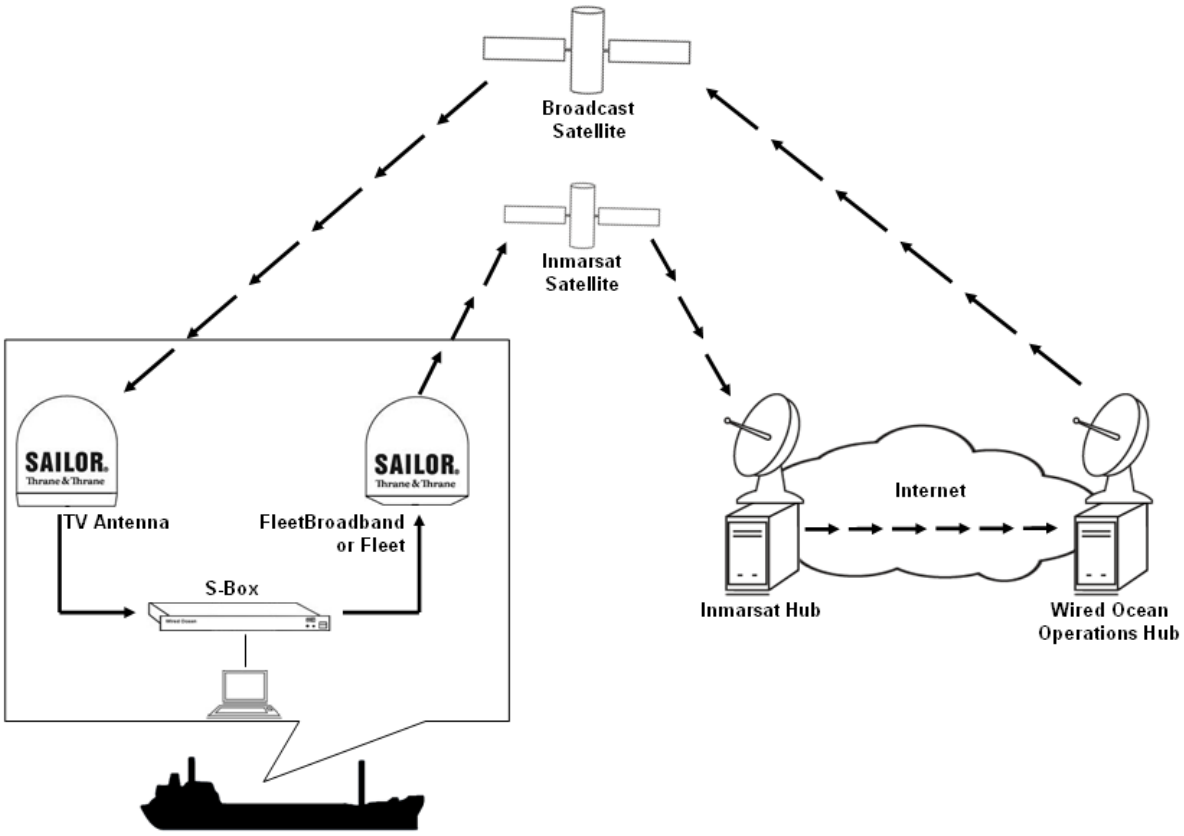


Figure 1: Wired Ocean Broadband System Overview

Typical Users:

- Commercial shipping
- Fishery
- Offshore
- Yachts

Product Description:

- WIRED OCEAN S-BOX

Ship communications can be upgraded for affordable broadband by installing an S-Box with a SAILOR Satellite TV antenna and FleetBroadband or Fleet terminal. The S-Box seamlessly integrates Wired Ocean's shore to ship service with the vessel's communications systems. The S-Box has everything needed to make internet connection easy, safe and secure, without installing any software on the vessel's computers.

- WIRED OCEAN SERVICE

Wired Ocean's services are 'always on' and are designed to enhance 'always-on' mobile services such as Inmarsat FleetBroadband and MPDS. At 512kbps Wired Ocean's shore to ship service is many times faster than most mobile satellite services. To complement this outright speed, Wired Ocean also incorporates state of the art data optimisation at its network operations hub and in the S-Box, so that data can be delivered even more quickly and cost-effectively.

The service is ideal for high volume applications such as internet browsing, downloading email with attachments, obtaining electronic manuals and weather and navigation data for bridge and critical systems. It's also well suited for crew internet needs such as email, news, sport and web browsing.

Wired Ocean offers a range of fixed price and volume based service plans. Advanced optimisation systems compress, accelerate and cache data so that the actual volume of billable data is reduced. Furthermore, since internet users are typically receiving much more information than they are sending, the majority of the ship's broadband is using Wired Ocean's economical service. Ships can now benefit from significantly increased broadband usage without breaking the budget.

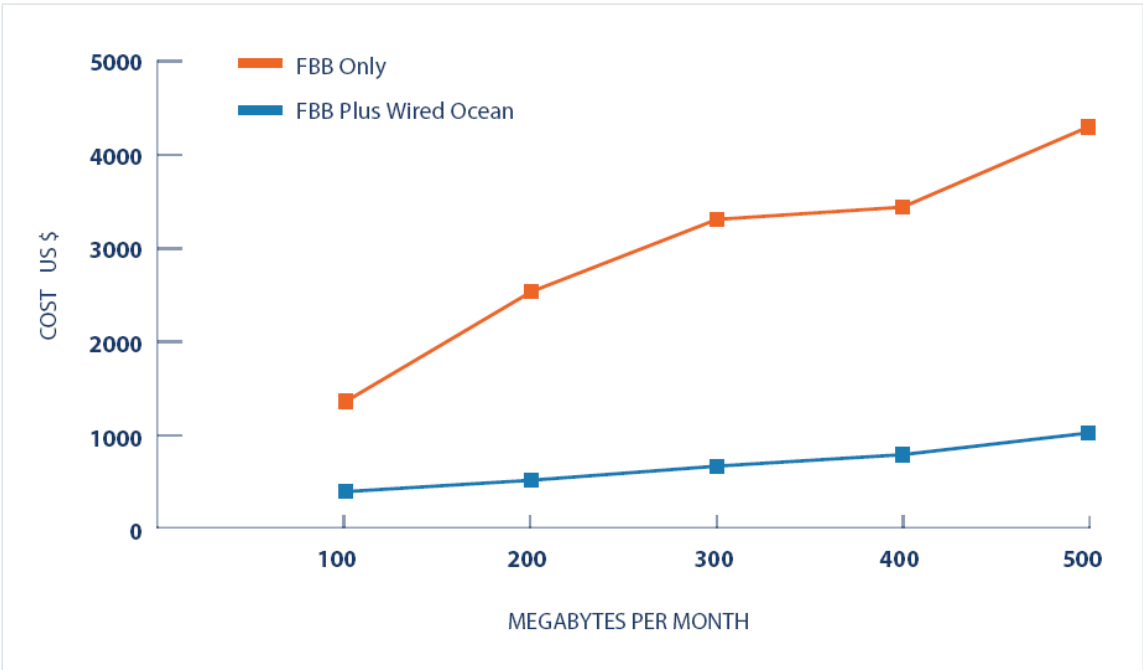


Figure 2: Data Usage Cost Comparison

'Always on' service, combined with fixed price service plans, means that ships don't pay by the time connected or the volume of data received. This makes budgeting easier and relieves concerns that large downloads or unexpected software upgrades will lead to unacceptable costs.
NOTE: Your ship to shore communication will be billed separately by your Inmarsat Airtime provider.

The Wired Ocean Broadband system is currently supported on three satellites:

- Hotbird 13°E
- Eurobird 28°E
- Thor 1°W

See the Coverage Areas for the satellites in Figure 3 below:

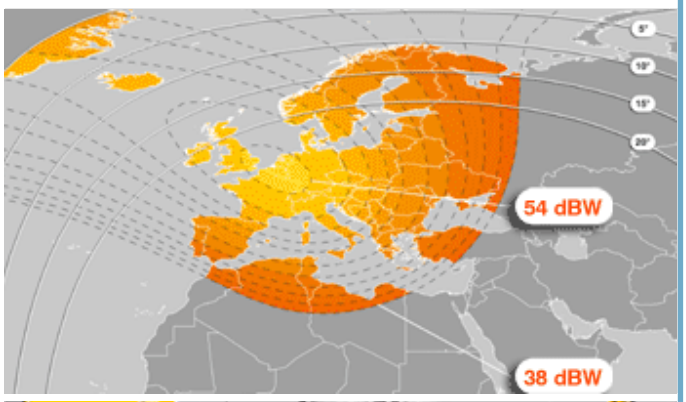
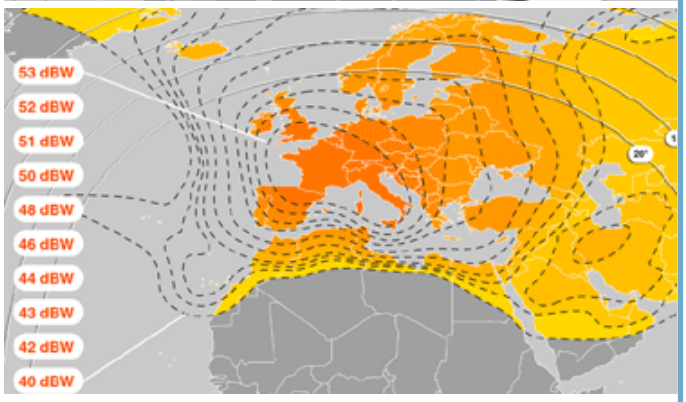
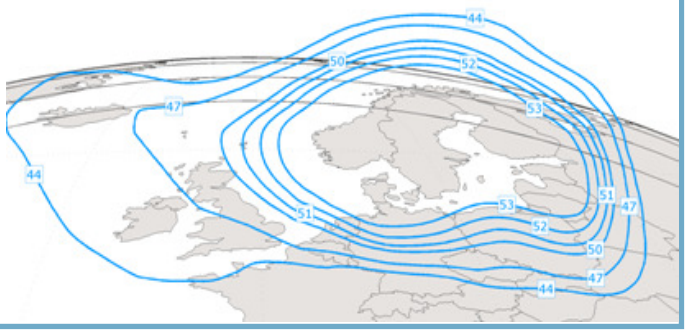
Location	Simultaneous Television	Coverage
28° E	Astra & Eurobird Variety of English language & Middle Eastern Channels	
13° E	Hotbird Variety of European and Middle Eastern Channels	
1° W	Thor Variety of Nordic channels	

Figure 3: Coverage Areas

Wired Ocean contact details:	E-mail	mailto:sales@wiredocean.com
	Phone	+44 (0) 20 7060 1049
	Web	http://www.wiredocean.com
Thrane & Thrane contact details:	E-mail	mailto:solutions@thrane.com
	Thrane & Thrane Distributors	http://www.thrane.com/Contact/Distributors.aspx
Tested on products and satellites:	SAILOR 60	Software version: 1.5.2
	Satellites	Hotbird at 13°E, Eurobird at 28°E (Co-located with Astra) and Thor at 1°W

Instructions:

The tests of the Wired Ocean Broadband were conducted using a SAILOR 60 Satellite TV antenna for downlink. And the uplink was tested both with SAILOR 500 FleetBroadband (with Standard Data service) and SAILOR Fleet77 (with MPDS service). See Figure 4 below showing the system overview of the Wired Ocean Broadband Ship Installation with the SAILOR FleetBroadband.

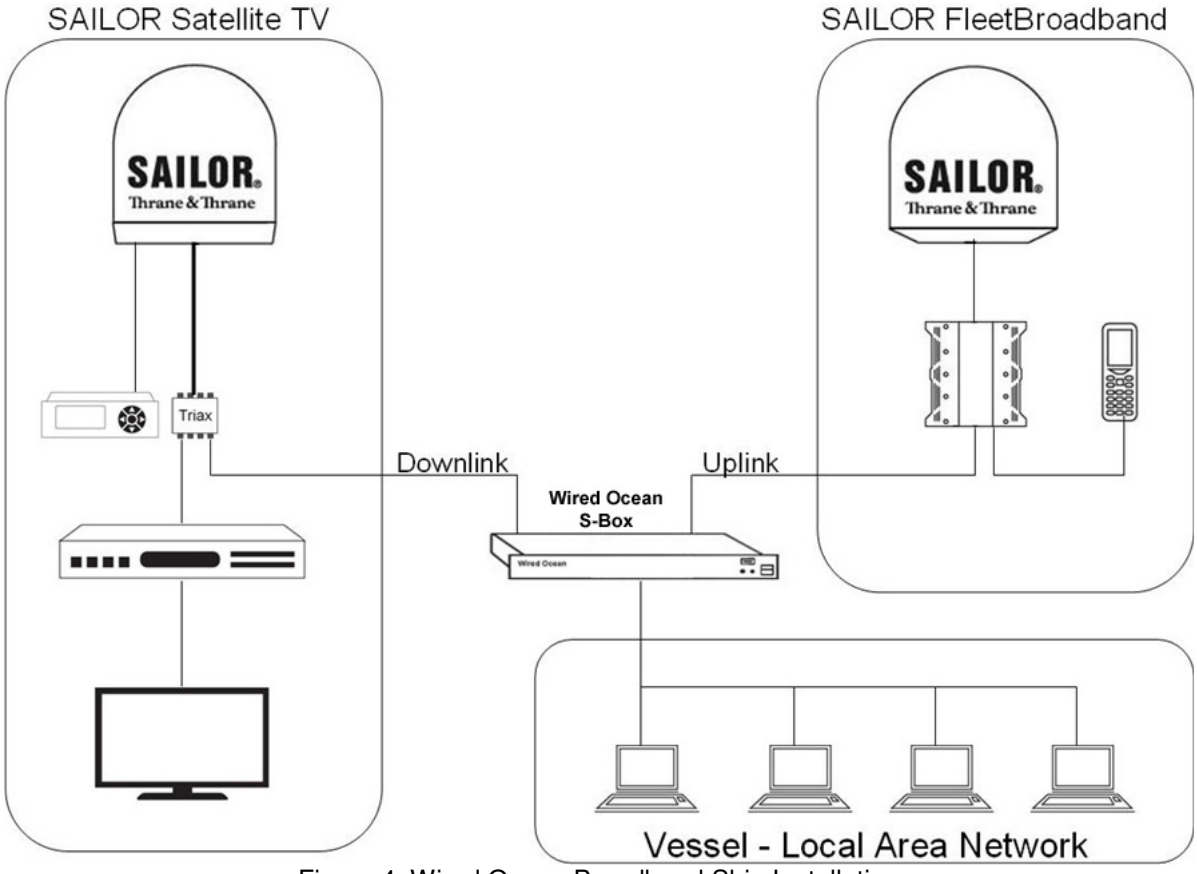


Figure 4: Wired Ocean Broadband Ship Installation

The SAILOR Satellite TV antenna was configured to receive signal from one of the supported satellites using the keypad and display on the SAILOR TV Control box.

The Wired Ocean S-Box was configured using its built-in web application. The S-Box web application was reached by entering the IP address of the S-Box (default http://192.168.1.1) in the web browser. See Figure 5 below showing the main page of the web application.

The Wired Ocean Broadband S-Box downlink (shore to ship) was configured to use the same TV satellite as the SAILOR 60 Satellite TV antenna was pointed to. See Figure 5 below.

Figure 5: Connect Page

The Wired Ocean S-Box has built-in uplink (ship to shore) drivers for both SAILOR FleetBroadband and for Inmarsat MPDS. The SAILOR FleetBroadband driver uses Ethernet interface of the SAILOR FleetBroadband terminal and the Inmarsat MPDS driver uses the serial interface of the SAILOR Fleet77.
The selection of the uplink driver was easy to select from the **SETTINGS > UPLINK** page. See Figure 6 below showing settings for the SAILOR FleetBroadband:

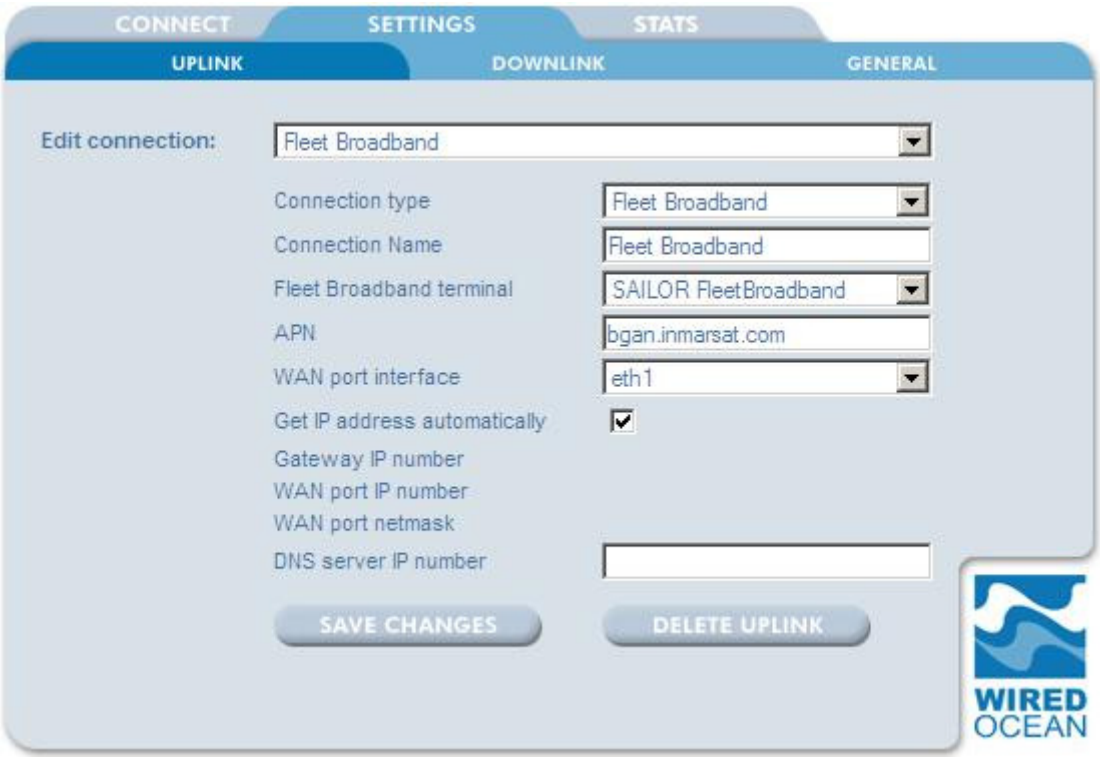


Figure 6: Uplink Configuration for SAILOR FleetBroadband

Please configure as shown on Figure 6 above, but enter the right APN supported by your Inmarsat Service Provider for the SAILOR FleetBroadband.
The SAILOR FleetBroadband profile can be used with all the SAILOR FleetBroadband terminals such as: SAILOR 150, SAILOR 250 and SAILOR 500 FleetBroadband.

See Figure 7 below showing settings for the SAILOR Fleet:

Figure 7: Uplink Configuration for SAILOR Fleet

The Inmarsat MPDS profile can be used with all the SAILOR Fleet and Fleet+ terminals: SAILOR Fleet33, SAILOR Fleet55 and SAILOR Fleet77.

After configuration of the uplink and downlink the Connect button on the Connect page was pressed and registering on the Inmarsat network was initiated by the Wired Ocean S-Box.
The whole registration process takes about 15 seconds to complete and the system is then online on the Internet.

Tested:

Many tests were performed on the three currently supported satellites and the downlink bandwidth was verified to be >400 kbps.
Tests were performed with FleetBroadband (Standard data) and SAILOR Fleet77 (MPDS).

Following tests were performed:

- Web browsing
- FTP upload and download
- SMTP
- POP3
- Cisco VPN