# Enhancing FleetBroadband with Wired Ocean

WIREDOCEAN

Making **broadband at sea** affordable

# Background

As on-board internet use continues to evolve, the demand for additional downlink (shore-to-ship) bandwidth becomes increasingly evident, particularly where crew welfare is a priority. Adding the Wired Ocean service to FleetBroadband boosts downlink performance and allows a significant step increase in broadband usage, at incremental cost.

Key benefits of the Wired Ocean Service include:

- Faster service performance
- Generous service packages with effective costs measured in cents, not dollars, per Megabyte
- Fixed price service plans to simplify budgeting and eliminate the unacceptable costs associated with large downloads
- The Wired Ocean S-box manages seamless internet service to one or multiple networked computers on board
- A FB150, combined with a Wired Ocean S-Box and a satellite TV antenna can be more economical than a FB500, meeting both crew welfare and operational needs.

# Enhanced Bandwidth

## Faster Service

As web sites become more content-heavy, FleetBroadband (and similar services) may be unable provide a fast enough service, especially with multiple users on a vessel. Wired Ocean boosts FleetBroadband performance in two ways: It delivers faster outright service speeds and increases efficiency through performance enhancement technology. Wired Ocean's downlink is about 20% faster than FB500 service, almost twice as fast as FB250 and more than three times faster than FB150.

## Performance Enhancement

At more than a second, FleetBroadband's 'latency' (the delay between requesting data and getting a response) is high. To receive a typical web page requires many individual elements to be sent, and 'receipt' of each element must also be acknowledged (TCP-IP) before the next can be sent. Hence, it can take more than a minute to receive a web page via FleetBroadband alone. Wired Ocean, however, uses a 'modified UDP protocol' in both the S-Box installed onboard and the network operations hub. When data is sent, no 'receipt' is required unless a data packet is not received. This technology increases download speed and minimizes the effects of latency. Additional features such as 'lossless compression' and 'HTTP caching' further improve performance.

The performance enhancements systems offered by Wired Ocean are fundamental to improving the internet experience of FleetBroadband users. In the example below, addition of the Wired Ocean service reduces the download time of the BBC News 'home' page from well over a minute (using FleetBroadband alone) to less than 15 seconds.

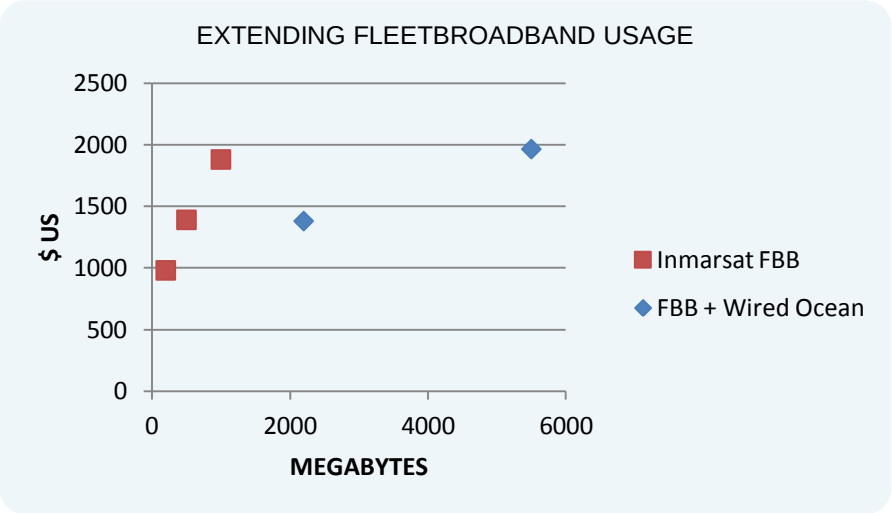
| Elapsed Time | FleetBroadband 500 | FleetBroadband 500 + Wired Ocean |
|---|---|---|
| 10 seconds |  |  |
| 15 seconds |  |  |
| 60 seconds |  |  |
| 105 seconds |  |  |

Unlike some products, Wired Ocean's performance enhancement systems speed up web browsing but do not impair the content or quality of the web page in any way. Moreover, there is no need to install software on computers, fiddle with compression settings or use a different browser.

# Affordable Broadband Usage

Wired Ocean's monthly service packages start at a Gigabyte, with subscriptions from about $300 per month. The effective cost per megabyte is measured in cents, not dollars. A range of Wired Ocean service packages can be matched with FleetBroadband subscriptions to economically extend broadband usage.

Adding a Wired Ocean subscription can extend usage by a factor of 10 with only an incremental increase in cost. For example, a 200MB FleetBroadband monthly subscription can be extended to over 2GB, or a 500MB subscription to over 5GB. The monthly FleetBroadband allowance is used for 'ship to shore' (uplink) data and the Wired Ocean downlink adds a further 2GB or 5GB of 'shore to ship' (downlink) data.




The benefits of Wired Ocean's 'shore to ship' service depend on the applications being used. A file download or software update may involve 100 times as much information being received as that which is sent, since small data requests may yield a large volume returned. Information downloads (navigation, weather, news, pricing, etc), web browsing and software upgrades are all downlink intensive and benefit greatly from Wired Ocean's downlink service.

## Fixed Price Service

All Wired Ocean downlink service packages are fixed price. Because exact monthly costs are known, there is no need for concern about large downloads, unexpected software upgrades or receiving multimedia content.

## Always On

No matter which Wired Ocean service package is chosen, the service is ‘always on’ and benefits from a ‘Minimum Information Rate’. If a monthly volume threshold is exceeded, there will be no loss of connectivity, just a reduction in speed to levels that remain comparable to mobile satellite services. Monthly volume thresholds are used to match vessels with the best service package, and can be upgraded if additional capacity is required.

# Crew Internet

The provision of economical crew internet has proved challenging for traditional maritime service providers since it requires large downlink bandwidth. Wired Ocean’s downlink service is ideally configured to meet this challenge. Every 5GB of data enables crew to view 25,000 web pages (at 200kbytes per page) or hear 330 hours of streaming radio (at 64kbps) or download 1200 music clips (4MB each). At around US$0.50 per hour for the downlink, web browsing is also surprisingly inexpensive (based on 5MB per hour).

Wired Ocean’s S-Box can be installed and configured so that all crew internet is downlinked via the Wired Ocean service keeping it independent of operational downlink traffic on the FleetBroadband terminal.

# Equipment

Wired Ocean’s downlink is managed by the Wired Ocean ‘S-box’, and is received by a satellite television antenna (TVRO). For vessels that don’t already have a TVRO antenna, installation of a low-cost TVRO antenna can provide the dual benefits of Wired Ocean service and satellite TV for crew. Different FleetBroadband terminals and TVRO antennas can be combined to suit the specific requirements of a vessel. Moreover, with Wired Ocean’s faster downlink an FB150 may be all that is required. The cost of an FB150, a satellite TV antenna and a Wired Ocean S-Box can be less expensive than a FB500 while meeting crew welfare as well as operational needs.

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