

# Maritime Broadband via SAT-TV

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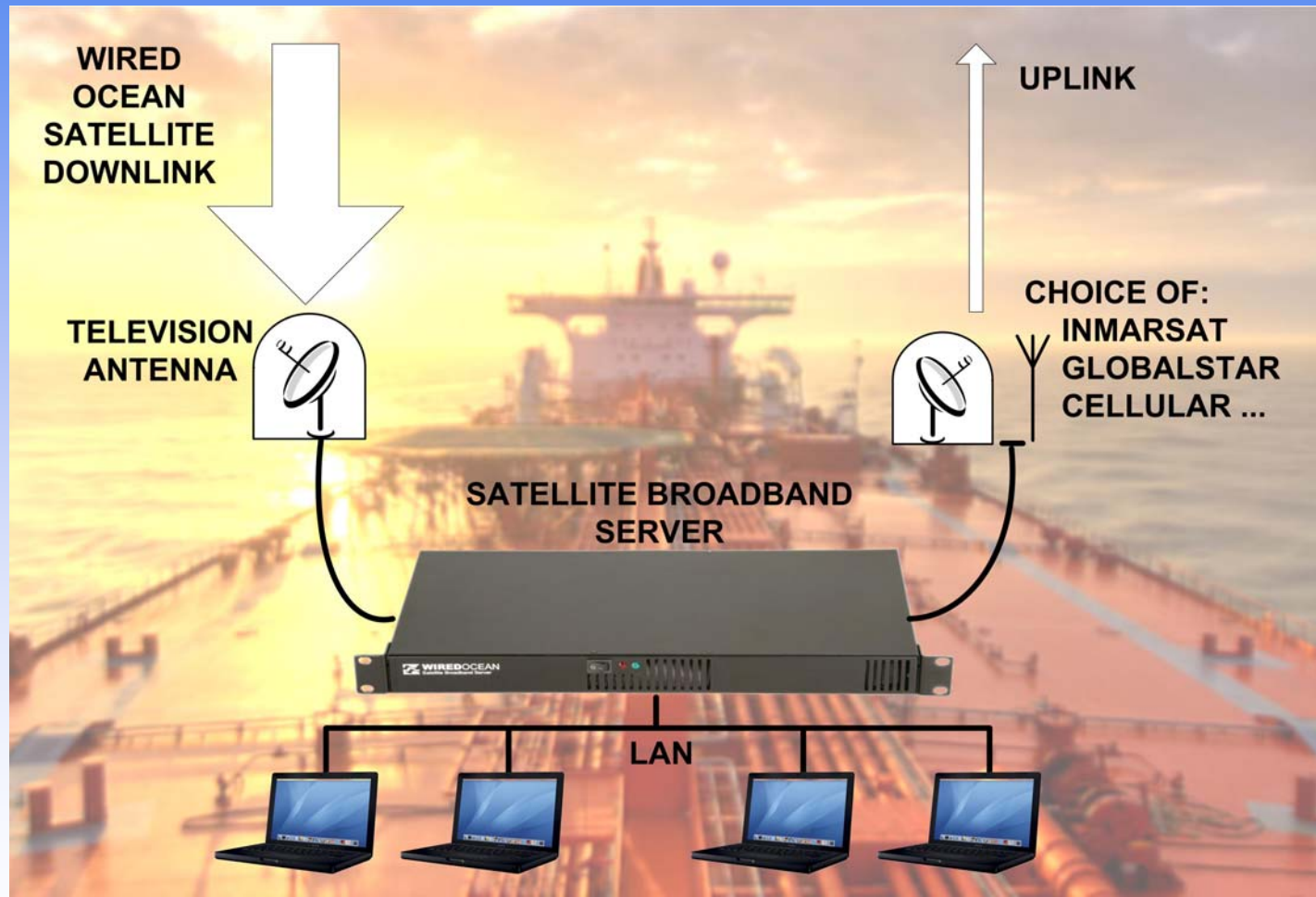


# Overview

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- ✦ How It Works
- ✦ System Overview
- ✦ Why It Works
- ✦ Suitability to Applications
- ✦ Service Positioning
- ✦ The Future and Global Ships

# How it Works



# System Components

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- ✦ Satellites
- ✦ Ground Facilities
- ✦ Shipboard Server
- ✦ Service Enhancement Systems
- ✦ Operations Support Systems

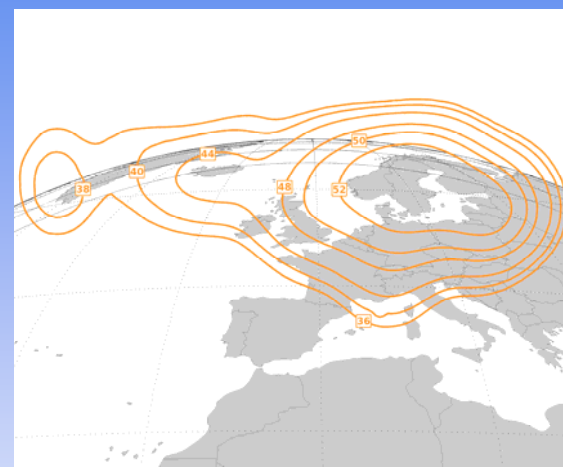
# Ku-Band Satellites



Hotbird @13°E



Eurobird @ 28°E



Thor2 @ 1°W

- ✦ Capacity at the two most viewed European television locations allows customers to simultaneously access the internet and watch popular programming
- ✦ Potential for geographical expansion

# Ground Facilities

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## ✦ Master hub in North London

- System control and monitoring
- Authentication, accounting and support systems
- Service enhancement systems
- Excellent connectivity to London Internet Exchange (LINX)
- Eurobird uplink

## ✦ Remote hubs

- Integrated into the Wired Ocean network and managed from the master hub
- Telemar Scandinavia (Stockholm) operational - Hotbird 7, Thor 2

## ✦ Features

- Full hardware redundancy at all hubs (auto-failover)
- Automatic SMS & email alerting on fault identification
- Scalable for geographic expansion

# Shipboard Server

Connects the ship's computers or network to the Wired Ocean service and seamlessly initiates, manages and terminates connections.

Managed through a web page interface which is accessed from any connected computer, so no software is installed on ship computers.



# Service Enhancement Systems

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- ✦ Negative Acknowledgement
- ✦ Lossless Compression
- ✦ Web Prefetching
- ✦ Web Caching
- ✦ Domain Name (DNS) Caching

# Operations Support Systems

Over the air upgrade system for SBS software and user's service profile.

Live SBS monitoring and diagnostics for enhanced customer support.

Usual back office functions.

## Wired Ocean Intranet

Traffic stats

Container Ship

SUMMARY:	
total time connected	4301 minutes
total connections	737
average time online	6 minutes
total outgoing return channel	71.92 megabytes
total incoming return channel	19.71 megabytes
total dialup	91.63 megabytes
total dvb	1.32 gigabytes

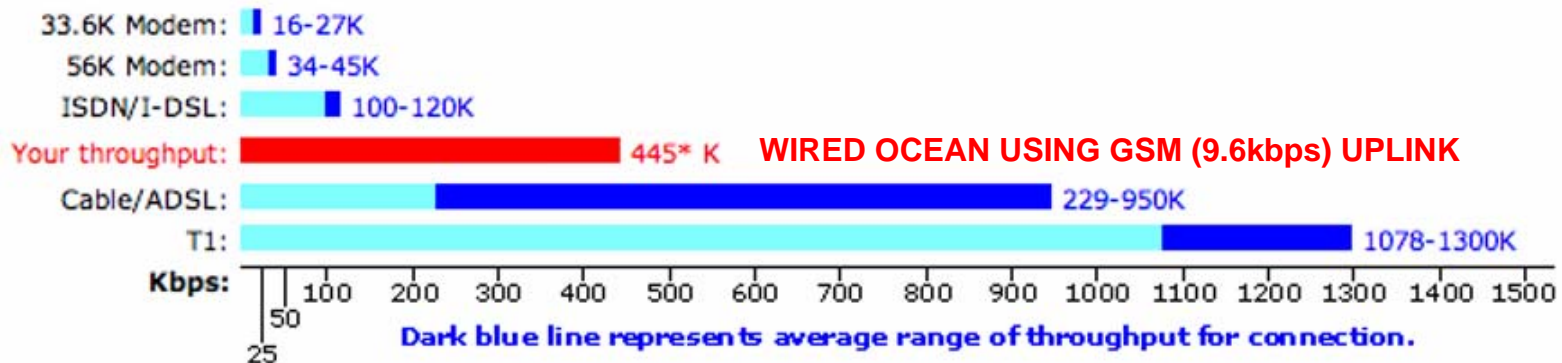
[Show details for last 20 connections](#)

ID	START	STOP	DURATION	RC IN	RC OUT	DVB IN	DIALUP	DVB	RC TYPE
633	2006-05-16 09:36:21	-	11 mins	75,129	265,338	5,093,016	1	1	Inmarsat MPDS
632	2006-05-15 23:08:26	2006-05-15 23:18:09	10 mins	80,029	358,642	4,274,574	1	1	Inmarsat MPDS
631	2006-05-15 07:38:35	2006-05-15 07:49:29	11 mins	112,602	492,871	7,908,300	1	1	Inmarsat MPDS
630	2006-05-14 18:40:14	2006-05-14 18:46:32	7 mins	61,570	180,106	2,608,597	1	1	Inmarsat MPDS
629	2006-05-14 09:32:01	2006-05-14 09:50:09	19 mins	85,048	391,621	4,894,711	1	1	Inmarsat MPDS
628	2006-05-14 09:07:15	2006-05-14 09:08:04	1 mins	6,294	4,888	0	1	1	Inmarsat MPDS
627	2006-05-13 20:09:14	2006-05-13 20:18:47	10 mins	74,132	248,254	5,064,144	1	1	Inmarsat MPDS
626	2006-05-13 11:11:44	2006-05-13 11:19:54	9 mins	46,312	184,109	3,568,233	1	1	Inmarsat MPDS
625	2006-05-13 11:10:43	2006-05-13 11:10:45	1 mins	70	140	0	1	1	Inmarsat MPDS

# Why It Works – Good Service Performance

## ToAST net Mars Rover Test Results

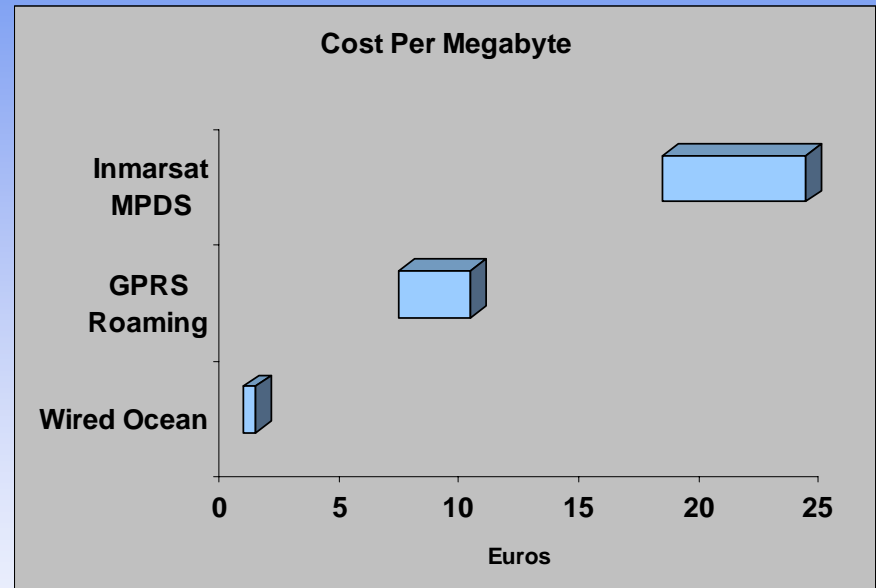
Loaded 877,885 bytes in **15.786** seconds from 1&1 server.



# Why It Works – Economical Usage Costs

Monthly subscription from €200 including 200Mbytes.

Usage costs between €0.50 and €1.00 per Mbyte.



# Why it Works – Low Upfront Costs

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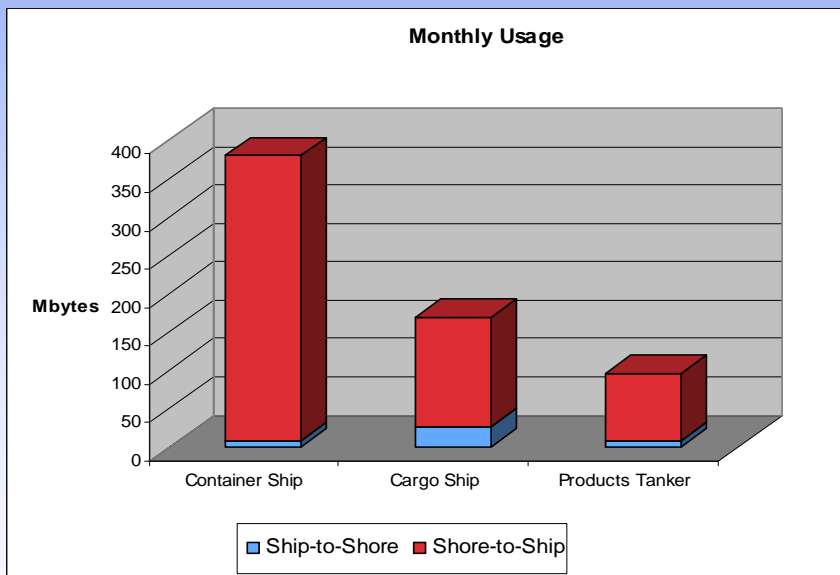
Many ships already have an Inmarsat terminal and/or a TV antenna.

The ship server to receive broadband via Sat-TV costs around €3,500 and installation is minimal.



# Why it Works – Case Studies

Asymmetric traffic amplifies the benefits of the low cost downlink.



Combined Monthly Cost	Container Ship	Cargo Ship	Products Tanker
Ship-to-Shore (MPDS)	€188	€596	€184
Shore-to-Ship (Wired Ocean)	€372	€143	€88
<b>Total Cost</b>	<b>€560</b>	<b>€739</b>	<b>€272</b>
Megabytes Used	380	170	96
<b>Cost per Mbyte</b>	<b>€1.47</b>	<b>€4.35</b>	<b>€2.84</b>

# Suitability to Applications

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- ✓✓✓✓ Information Downloads
- ✓✓✓ Web Browsing
- ✓✓✓ Online Database Access
- ✓✓ Email With Attachments
- ✓ Email
- ✗ Video Conferencing, Telemedicine
- ✗ VoIP

Asymmetric

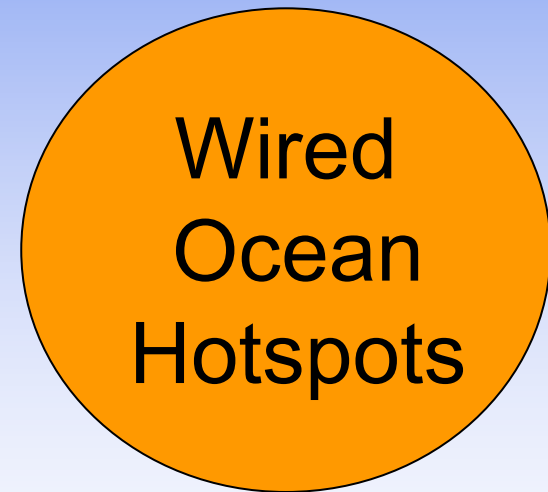


Symmetric

# Service Positioning

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- ✦ Enhancement service for ships with asymmetric traffic requirements
- ✦ Augments existing maritime communications systems
- ✦ High bandwidth shore-to-ship applications are faster and cheaper in Wired Ocean hotspots
- ✦ Fallback to mobile satellite service in both directions when outside Wired Ocean coverage
- ✦ Wired Ocean's system is designed for multi-region operation with a master hub supporting regional hubs



# Thoughts on the Future and Global Vessels

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- ◆ Inmarsat FleetBroadband enhanced by Wired Ocean hotspots
- ◆ Uniform service offering everywhere within Inmarsat coverage (Inmarsat based)
- ◆ High bandwidth shore-to-ship applications are faster and cheaper in Wired Ocean hotspots
- ◆ Fixed price, unlimited use downlink with fair use policy
- ◆ Issues around the availability of Ku-band television antennas on the merchant fleet and availability of suitable programming



Wired  
Ocean  
Hotspots

# Wired Ocean

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ADD ON

TURN ON

LOG ON