



# 海上宽带

海上宽带(FleetBroadband)支持多种用途的同步数据流  
FleetBroadband supports simultaneous data streams  
for multiple applications

国际海事卫星组织(Inmarsat)于11月发布海上宽带(FleetBroadband)业务时称,它能够改变海员和近海工作者使用卫星通信进行船舶和平台操作的方式

## Broadband goes to sea

The November launch of FleetBroadband by Inmarsat promises to transform the way mariners and offshore workers use satellite communications to operate their ships and platforms

**自**80年代初以来,全球移动卫星通讯提供商Inmarsat公司的大名,已在海事领域如雷贯耳。该公司所创建的全球卫星系统旨在保证船员可以从海洋中央向海岸发送求救信号。多年以来,这一系统已拯救了很多人的生命。

安全问题仍是一个人们关注的焦点。Inmarsat公司的业务已超出了其创始阶段仅提供一系列业务与社会通信的范畴。该公司于2002年推出的Fleet服务,已被确立为从事全球贸易的深海船舶的标准通讯装置。2007年8月,该系列中最高端的Fleet 77突破一万次终端激活大关。

作为一项新的服务—FleetBroadband已成为Inmarsat公司海事产品系列中的新成员。它提供高达432kbps(千位/秒)的宽带数据能力,有望改变船员与海上作业人员的通信方式,这就如同地面宽带已改变人们的互联网使用方式一样。

Since the early 1980s, the name Inmarsat has acquired iconic status in the maritime sector. The company's global satellite system was created to guarantee that mariners could send distress signals to shore even from mid-ocean. Over the years many lives have been saved as a result.

Although safety remains a core concern, Inmarsat's business has grown beyond its founding remit to provide a range of operational and social communications. The company's Fleet service, launched in 2002, has become established as the standard communications installation for deep sea vessels engaged in global trading. Fleet 77, the top of the range, passed the milestone of 10,000 terminal activations in August 2007.

A new service, FleetBroadband, has joined the family of



在新型的Inmarsat-4 (I-4) 卫星支持下, FleetBroadband将Fleet服务的可靠性与一系列附加功能结合起来, 使其在该领域内独树一帜。用户可以在一次保持一条或多条高速数据链路的同时, 进行语音通话——这一特点将对船只和平台管理产生深远影响。

“FleetBroadband允许运营商以不同的角度思考如何经营他们的船只和海上平台,” Inmarsat公司海运业务主管Piers Cunningham说, “Inmarsat公司认识到, ‘标准的批处理和压缩’ 通信的应用, 将自然过渡到更为先进、处理能力更强的应用水平。这些应用是基于IP传输协议或web界面的那些访问协议的。” 这将最终改进船舶作业, 提高效率, 并与获取信息和数据交换的地面方式不相上下。

### 网络时代的通讯

在设计FleetBroadband时, Inmarsat公司的这一服务遵循互联网协议(IP), 使其与世界上增长最快的网络技术结为一体。尽管FleetBroadband用户可以在ISDN与3.1千赫语音/传真上运行各自的应用程序, 但该系统的核心的数据能力仍是IP。

同步实现语音和数据业务能力已促使BGAN(宽带全球区域网)取得了极大成功, BGAN就相当于陆上FleetBroadband。石油和天然气领域的勘探人员, 正在利用BGAN发送地球物理信息以及视频和静止图像, 并借助语音声道在同一时间向其总部通报。在海事领域, 这就相当于一位船长, 在利用FleetBroadband向港口管理局报告的同时, 下载海图更新资料, 以选择一个最优航路——这在一定程度上实现了以往在单个卫星系统内不可能实现的灵活性。

Inmarsat公司是船员通信的业内先驱, 其通讯技术可以让全体船员利用车载卫星系统打电话回家。FleetBroadband系统具有更大的容量和能力, 支持多种语音和IP网络, 允许船主和经营管理者为其船员们提供更广泛的通信选择, 如电子邮件和网上浏览等。此外, 与Fleet服务不同的是, FleetBroadband用户能够发送和接收多达160种文字的文本讯息; 很多船员在离船登岸时仍然习惯于查看GSM手机文本信息, 这足以证明FleetBroadband的受欢迎程度。

maritime products from Inmarsat. Providing a broadband data capability of up to 432kbps, it promises to alter the way mariners and off-shore workers communicate, just as terrestrial broadband has changed the way people use the internet.

Backed by the new Inmarsat-4(I-4) satellites, FleetBroadband combines the reliability of Fleet with a range of additional features that make it unique in its sector. For the first time, users can make voice calls while simultaneously maintaining one or more high-speed data connections – a feature with implications for the future of vessel and platform management.

“FleetBroadband allows operators to think differently about how they run their vessels and offshore platforms,” says Piers Cunningham, head of maritime business at Inmarsat. “Inmarsat recognises there will be a natural move from standard ‘batch and compress’ communications applications, to more advanced and capable applications based on IP transmission protocols or those requiring access to web based interfaces.” This will ultimately improve vessel operations and efficiency, paralleling terrestrial methods of information access and data exchange.

### Comms for the internet age

When designing FleetBroadband, Inmarsat based the service on Internet Protocol (IP), aligning it with the world’s fastest growing network technology. Although FleetBroadband users can run their legacy applications over ISDN and 3.1 kHz voice/fax, the core of the system’s data capability is IP.

Simultaneous voice and data capability has already helped to make BGAN, the land equivalent of FleetBroadband, a success. Exploration crew in the oil and gas sector are using BGAN to send geophysical data, as well as video and still images, at the same time as briefing their headquarters on the voice

FleetBroadband在“发送”和“接收”的双向最高数据速率均为432kbps，这比Fleet77最高可用速率高出三倍以上，可与准入级的地面宽带网相媲美。但是，正如Inmarsat公司的解决方案工程师ManojMohindra所言，速度并不是商船队和海上经营者被FleetBroadband折服的唯一因素。

“该服务的一个主要特点，是体现在用户可以选择期望的数据传输速率方面，”Mohindra说，“对于许多例行任务而言，竞争型服务固然很好，但是，也会出现船长希望设置保证速率的情况，其目的也许是通过最佳速率，为先进的解决方案——如根据具体条件的引擎监控、远程维护和管理或转移重要的位置数据以及传输大型视频文件等，提供高质量的数据。FleetBroadband拥有独特的设备，方便用户选择32、64、128或256kbps速率下的流数据。这种选择数据传输速率的能力在海事卫星通信领域尚属首次，并使得这项服务成为性价比最优的服务。

Inmarsat-4s (I-4s) 卫星使FleetBroadband和BGAN的IP能力得以巩固，这是该公司的第四代卫星和有史以来最先进的商业通信卫星。每个卫星约为双层巴士大小，处理能力比它的前身I-3高出60倍以上；I-4s提供了强大动能和灵活性，在其位于赤道上空35786公里的相对地球静止轨道的位置上，对地球往返发送IP数据和语音信号。

channel. In the maritime sector, the equivalent of this would be a captain using FleetBroadband to talk to a port authority while simultaneously downloading chart updates to select an optimum route – a degree of flexibility not previously possible in a single satellite system.

Inmarsat is a pioneer of crew communications as it allows crew members to make calls home over the vessel's satellite system. With its greater capacity and ability to support multiple voice and IP networks, FleetBroadband allows shipowners and managers to offer their crews a broader range of communications options, such as email and web surfing. Also, unlike Fleet, FleetBroadband has the capability to allow users to send and receive text messages of up to 160 characters, a feature that should also prove popular with crew who are used to having to text from their GSM mobiles while on shore.

FleetBroadband has a top data rate of 432kbps in both “send” and “receive” directions, which is more than three times the highest rate available over Fleet 77, and compares well with entry-level terrestrial broadband. However, as Inmarsat solutions engineer Manoj Mohindra explains, speed alone is not

Half-Page  
AD  
By



迄今为止，已有两个I-4s卫星投入运行，为地球表面85%的地区提供覆盖，但不包括南北两极地区。第三个I-4s卫星预计在2008年4月前后发射升空，并为Inmarsat公司的三重宽带服务完成全球覆盖。三重宽带即FleetBroadband、BGAN和最近推出的航空服务SwiftBroadband。

### 船载FleetBroadband

Inmarsat公司已通过构想的直接安装与集成，将FleetBroadband设计成型。起初，有两大天线类型：JRC公司和Thrane&Thrane制造的FB500、FB250。Furuno公司明年有望推出自己的FB250版本。前者是“八类”的高增益天线，雷达天线屏蔽器基座测量长度大约55厘米；而后者则是“九类”低增益天线，测量长度大约为25厘米。对于Inmarsat公司Fleet服务的现有用户而言，他们与现有的F55s上出现的组件几乎相同。在下方，雷达天线屏蔽器是高品质的全向、稳定式EIPP(有效等向辐射功率)天线。

位于甲板下方的FleetBroadband，与所有主要的通信系统和端口实现了兼容，其中包括RJ-11、RJ-45与ISDN RJ-45。Mohindra指出，这种“即插即用”的兼容性并非偶然的巧合。“Inmarsat公司不希望船上的IT经理望着FleetBroadband摸不着头脑，并苦恼于‘我们如何将它与我们的全套工具实现整合’的问题。它的设计意图实际是与所有的标准系统互联，像网络中的一个简单的路由器或交换机那样运作。它支持网络地址转换和动态主机配置协议，这将有助于网络兼容和整合，因此，它应该与船载网络实现整合，几乎就是一个插墙式、类似于DSL的服务”。

整个系统由FleetBroadband LaunchPad实施控制。这是一个定制设计的电脑程序，在每个终端均安装了该程序——不论谁是制造商，以确保船员在任何一种船只上，都可以毫不费力地配置和使用FleetBroadband。基于成功的BGAN LaunchPad，它使用户能够通过一台笔记本电脑或台式电脑，实现掌控系统配置、选择IP数据链

what makes FleetBroadband attractive to merchant fleets and offshore operators.

“A key feature of the service is the way in which users can select the data rate they want,” says Mohindra. “For many routine tasks, the contended service will be fine, but there will be occasions when captains want a guaranteed rate, perhaps to optimally achieve high quality data exchange for advanced solutions like condition-based engine monitoring, remote maintenance and management, or to transfer important position data or large video files. FleetBroadband has the unique facility to enable the user to select streaming data at 32, 64, 128 or 256kbps. This ability to select data rates is a first in maritime satellite communications, and makes the service extremely cost-effective.”

The IP capability of FleetBroadband and BGAN is underpinned by the Inmarsat-4s (I-4s), the company's fourth generation of satellites and the most advanced commercial communications satellites ever launched. Each is roughly the size of a double-decker bus and 60 times more capable than its predecessor, the I-3. The I-4s provide the power and flexibility to beam IP data and voice signals to and from Earth from their locations in geostationary orbit 35,786km above the Equator.

To date, two I-4s have been brought into service, providing coverage for 85 per cent of the world's surface, excluding the extreme polar regions. A third I-4 is scheduled for launch around April 2008, completing global coverage for Inmarsat's trio of broadband services: FleetBroadband, BGAN and SwiftBroadband, the recently launched aeronautical service.

路、综合业务数字网ISDN、语音、文本及其他选项。系统的软件更新和补丁，可于Inmarsat公司网站下载。

### 节约成本

FleetBroadband对商业领域最深远的影响可能体现在经营成本方面。Mohindra估计，通过利用系统来下载天气数据和新式海图：船长可以设计一条港到港的最短、最省油的路线。这样一来，一些运营商可以在每一航次中节省数千美元的燃料成本。他将这与汽车的全球定位(GPS)导航系统相比——“如果你有一个全球定位(GPS)导航系统元件，在漫长行程前请它告诉你最佳路线，免行交通事故多发区，并经由路况最好的道路，让你节省时间，能够以轻松、省油的方式享受旅行的乐趣。FleetBroadband提供的这一便利，不仅使先进的应用软件能够以同一方式为各类船只服务，而且还实现了更大规模的应用，因为船长在选择其他诸多优化解决方案之外，还可以下载信息，避开恶劣的天气并确定最佳进航速度”。

船员通过船上的卫星系统，能够向家里打电话、发送短信息、聊天并在互联网上冲浪  
Crew members can call home, send text messages, chat, and surf the Internet over the vessel's satellite system



### FleetBroadband on board

Inmarsat has designed FleetBroadband with straightforward installation and integration in mind. Initially, there are two antenna types: the FB500 and the FB250 manufactured by JRC and Thrane & Thrane; Furuno is expected to launch its own version of the FB250 next year. The former is a "class 8" high-gain antenna measuring approximately 55cm across the base of the radome, while the latter is the "class 9" low-gain version, measuring approximately 25cm. To current users of Inmarsat Fleet, the units will appear almost identical to their existing F55s. Underneath, the radomes are high-quality directional, stabilised EIRP (effective isotropic radiated power) antennas.

Below deck, FleetBroadband is compatible with all major communications systems and ports, including RJ-11, RJ-45 and ISDN RJ-45. This "plug-and-play" compatibility is no accident, says Manoj Mohindra. "Inmarsat didn't want ships' IT managers looking at FleetBroadband and scratching their heads, thinking 'how are we going to integrate this with our existing kit?' It's actually been designed so that it interconnects with all standard systems, operating like a simple router or switch in the network. It supports network address translation and dynamic host configuration protocol, which helps with network compatibility and integration, so it should integrate with ships' networks pretty much out of the box as a plug-in-the-wall, DSL-like service."

The whole system is controlled from the FleetBroadband LaunchPad. This is a custom-designed computer programme, installed on every terminal regardless of manufacturer that ensures the crew can easily configure and use the FleetBroadband service no matter what vessel they are on. Based on the successful BGAN LaunchPad, it enables a user on the bridge to configure the system via a laptop or desktop computer, selecting IP data connections, ISDN, voice, text and other options. Software updates and patches for the system are available for download from the Inmarsat website.

### Cost savings

FleetBroadband's biggest long-term impact in the merchant sector is likely to be in the area of operational costs. Mohindra estimates that some operators will be able to save thousands of dollars per voyage in fuel by using the system to download weather data and up-to-date charts to help the captain plot the shortest and most fuel-efficient route from port to port. He compares this with GPS-based navigation systems for cars. "If you have a satnav unit, before a long journey you will ask it to tell you the optimal route, avoiding traffic blackspots and using the best roads, so that you save time and can travel in a relaxed and fuel-efficient way. FleetBroadband provides this kind of facility and much more by enabling sophisticated software

目前，市场上没有其他海事卫星解决方案能以同样的灵活性、同样高的性价比提供如此大的带宽——这一价优物美的组合，可能使商船和远洋领域实现最新的、赢利更高的工作方式，使Inmarsat公司在迈入第二个25年的历史过程，继续保持海上通信领域的市场主导地位。

## 运作效率

FleetBroadband具备多种使用同步数据流的支持能力，这对运作效率以及管理人员和船员的工作便利性具有积极的影响。以下情形表明了若干个人如何能够同时使用该服务：

1. Inmarsat公司网络上的FleetBroadband终端寄存器默认开放的一个标准IP链路（这在任何时候均可改变）。
2. 大副现在访问网络，并利用这一标准IP链路，发送一些网络电子邮件或进行网络聊天。
3. 与此同时，船长借助速率达4kbps的分组语音服务，接听总部来电。
4. 工程师要求离船登岸时有专家检查引擎，所以船长开放了128kbps直播视频会议系统的同步专用数据流信道。
5. 同时，该船的文件交换服务器为与总部往来FTP传输的批处理文件，建立了另一条64 kbps的同步链路。
6. 同时，一位船员看到网络语路正忙，就在另一条32kbps的专用链路上建立了一个VoIP互联网语音传输呼叫。
7. 当以上所有这一切在发生时，船员们能够使用FleetBroadband发送和接收文本讯息。

## FleetBroadband服务包

- 实现全球覆盖（在第三个I-4卫星发射后），但不包括南北两极地区
- 性价比最高的IP数据宽带选择
- 以Inmarsat公司无可匹敌的卓越记录技术为基础，为用户提供可靠的服务
- 可靠的通讯，包括对远程网络的安全访问
- 安装简单快捷
- 直观的FleetBroadband LaunchPad用户界面
- 易于与现有的船载系统整合



applications to work in the same way for vessels, but on a much bigger scale, because captains can download information that enables them to avoid bad weather and make the best headway besides many other optimisation solutions."

There are no other maritime satellite solutions on the market that provide such a large bandwidth in such a flexible and cost-effective package – a combination that is likely to open the merchant and offshore sectors up to new and more profitable ways of working, maintaining Inmarsat's reputation for leadership in maritime communications well into its second quarter century. ■

## OPERATIONAL EFFICIENCY

FleetBroadband's capacity to support simultaneous data streams for multiple applications has positive implications for both operational efficiency and the convenience of officers and crew. The following scenario shows how several people can use the service at the same time:

1. A FleetBroadband terminal registers on the Inmarsat network, by default opening a Standard IP connection (this can be changed at any time).
2. The first lieutenant now accesses the web and sends some web-emails or i-chats using this Standard IP connection.
3. Meanwhile, the captain takes a call from HQ over the 4kbps voice service simultaneously.
4. The engineer asks to have an expert on shore check the engine, so the captain opens a simultaneous dedicated 128kbps streaming channel for live video conferencing direct from the ship's engine room.
5. Meanwhile, the vessel's file exchange server sets up another simultaneous 64kbps connection for its batch FTP transfer to/from HQ.
6. At the same time, a crew member, seeing that the voice circuit is busy, sets up a VoIP voice-over-internet call on another 32kbps dedicated connection.
7. And while all this is happening, crew members are able to use FleetBroadband to send and receive text messages.

## THE FLEETBROADBAND PACKAGE

- Global coverage (after the launch of the third I-4 satellite), excluding the extreme north and south polar regions
- Cost-effective IP data broadband options
- Reliability, backed by Inmarsat's unequalled record for technical excellence
- Secure communications, including secure access to remote networks
- Simple and quick to install
- Intuitive FleetBroadband LaunchPad user-interface
- Easy to integrate with existing onboard systems