

Broadband emerges from the shadows

Technology developments are moving at such a pace that broadband services are now beginning to emerge. At 37,000 km altitude, geostationary satellites are using spot beams to communicate with Very Small Aperture Terminals (VSAT). V-SAT services require fully stabilised antennae that point with great accuracy at the satellite. This requires sophisticated controls to cope with the vessel's motion, making the antenna typically larger and more expensive than those required for e.g. Inmarsat. Telenor the Norwegian telecommunications group and the largest shareholder in Inmarsat, recently launched 'Sealink', its V-SAT services to shipping, an "always on" ship-to-shore satellite service offering simultaneous multiple phone, fax and data access at transmission speeds up to broadband rates of 2 Mbps. The service requires an antenna of at least 145 kg. Shipowners buy the service at a fixed monthly subscription.

Telenor's VSAT development was originally driven by the requirement of the offshore industry for a seamless and powerful communications system and its first installation was on the floating production unit Petrojarl-1 in 1991. Telenor's acquisition of Comsat in 2002, allowed it to offer global coverage through its own earth stations. Sealink has made progress in the shuttle tanker market, getting its first installation on board in late 1999. As well as supporting communications between management, vessel and operator, the system makes life better for the crew. 24-hour access to telephone-/fax-lines, data, e-mail, the Internet and radio/TV reception are provided through the same antenna, covering the need for on board entertainment as well as communications.

Another provider of VSAT is TISC, which operates a Ground Earth Hub Station (GHES) in Leiden in Holland. The D-SAT 160, which works through a Ku-band, has satellite bandwidth availability from 8 kbps up to 2 Mbps per channel. Area coverage includes Europe, North Africa, North Sea, Middle East, Persian Gulf, and Central Asia. The second service operates on a C-band for the continent of Africa and the surrounding sea routes. TISC offers the option of leasing the VSAT hardware in combination with an airtime subscription.

Inmarsat is now responding to the growing demand for high-speed Internet access and multimedia connectivity and is now building its fourth generation of satellites. The new satellites, which will be built by European spacecraft manufacturer Astrium, will support the new Broadband Global Area Network (B-GAN). This will be introduced in 2005 to deliver Internet and intranet connections, video on demand, videoconferencing, fax, e-mail, phone and LAN access at speeds up to 432k bit/s almost anywhere in the world. B-GAN will also be compatible with third-generation (3G) cellular systems. The satellites will be 100 times more powerful than the present generation and B-GAN will provide at least 10 times as much communications capacity as today's Inmarsat network.

In the meantime, Inmarsat is already offering its Regional B-GAN, a wireless packet data service, based on the Internet Protocol (IP), which offers mobile, high-speed access to the Internet and corporate computer networks via a small, lightweight portable Satellite IP Modem. The satellite modem weighs 1.6 kg and supports Internet connection speeds of up to 144 kbps. The maximum bandwidth of each channel is 144 kbps, meaning that although the instantaneous bandwidth stays at 144 kbps for each user, the average bandwidth available is shared among several connected users if they transmit data at the same time, reducing speed for each user. The channel is particularly suited to applications where data is sent in bursts, such as e-mail, file transfer and web browsing.

While technology improves, prices are falling. Inmarsat prices have dropped in the last decade from over US\$ 10 per minute to current off-peak prices lower than US\$ 1

per minute from some providers. There is every reason to suppose that this trend, reflected throughout the high technology markets, will continue. The days when setting sail meant cutting all links with the shore are clearly gone for good.