

Captains Log

What's new in yacht communications?

If a yacht had all the very latest communications equipment installed, and it all worked faultlessly, then the “oceans could be your world”. Every single method of communication, which you use at home or in your office, is now available for installation on board a yacht, and can cover the complete globe. What other excuse could an owner need to spend even more time aboard his yacht?

So what's new? Communications equipment technology is developing at such breakneck speed that it is worth comparing what was available just twelve months ago for basic voice and data communications with what is available today for a yacht, whether it be moored up in a port or marina, cruising inshore or on ocean passage.

Voice communications one year ago: Old fashioned landline, GSM, cellular, Inmarsat, Iridium, Globalstar or Thuraya.

Voice communications today: VoIP - the ability to talk over data lines (the Internet) using either a broadband ADSL line on the dock or via a local Wi-Fi network, using a mini VSAT system and also now by using 3G.

Fast access to data has become a quintessential part of our business and leisure lives, and the technology available for transmitting data wirelessly has advanced tremendously.

Data transmission one year ago: A dedicated ADSL line on the dock, GSM, GPRS, insecure Wi-Fi networks, Inmarsat, Iridium, Globalstar, Thuraya or, at that time, recently launched mini VSAT.

Data transmission today: Secure Wi-Fi networks, 3G/GPRS, Inmarsat MPDS Accelerators, more mature mini VSAT.

New legislation

Over the last year, whilst our need for more and faster data has been growing, the authorities have been developing new legislation, which uses, old, but established and reliable data communication technology. For example, the ISPS (International Ship and Port Security) code has been launched.

Still not “one system” that does all

While there is now a vast range of equipment available for yacht communications, there is no single system that “does it all”. Each system available has limitations.

There are **coverage limitations**. The limitations on some are pretty obvious, such as an ADSL connection, which is only available if tied to the dock. GSM/GPRS and now 3G have limited coverage to close inshore waters. Wi-Fi is limited to a port, bay or marina. The different satellite systems have coverage limitations. Iridium is truly global, Inmarsat is almost, except for the poles. Globalstar does not cover the conventional Atlantic trade wind crossing. Thuraya is regional to Europe and the Middle East and does not cover the Caribbean, and the VSAT coverage is limited to main cruising grounds but not ocean crossings.

There are **purchase and usage cost limitations**. Any system, which is designed for domestic use by the mass market, is inevitably going to be cheaper than those designed specifically for the more limited marine market. Thus ADSL, GSM/GPRS and 3G are cheaper. Wi-Fi can be more expensive to use due to limited demand. Satellite systems vary enormously, both in purchase price and usage costs, due to the more expensive infrastructure required.

There is an **aesthetic limitation**. Some yacht owners don't like domes. Some do. And some domes are just too big for certain yachts.

Finally there are obviously **performance limitations** between equipment. For example, most convey voice adequately, but all have different data capabilities.

So what generally happens on today's most hi tech yachts is that they have a plethora of equipment installed to make sure they have coverage in all the yacht's anticipated cruising grounds; they use the equipment with the lowest usage costs in each particular area; and sometimes they have some very sophisticated technology available on board, but high usage costs mean it is only used when the owner is on board.

Switching between systems

This creates another technology challenge. How does the yacht switch seamlessly and reliably from ADSL or Wi-Fi in port, to GSM/GPRS and 3G inshore, and then to satellite when offshore? This can be a nightmare task for the crew. Again new systems have been developed since last year to ease the pain of this task.

Completely new technology

Since the advent of the mobile phone, every individual has his or her own unique telephone number. We have all our friends' and business colleagues' numbers stored on our indispensable mobile phones. The mobile phone has attained iconic status. It is now an organiser, camera, fashion statement, Dictaphone and status symbol for all ages and backgrounds. Wouldn't it be great if you could continue using your own mobile phone on the yacht anywhere in the world, without losing coverage whenever you move out of the GSM/GPRS or 3G cell? A new company to our market has just launched a product which, when installed,

makes the yacht the cell. This means that everyone on board can continue using their own mobile phones irrespective of the yacht's location.

So what's new?

This is not an exhaustive list and I apologise to those left out, but the following selection is based on our extensive front-line experience with over 1,500 fully crewed super yacht clients supported by our different offices. We see a huge cross section of communication systems and receive constant requests for more communications capability. We are also only too aware of which systems don't work well, individually or together, and which holes need to be plugged!

Faster Data Communication Systems

Cruise-IP from NSSL

Yacht owners who want a cost-effective solution for high speed internet and IP applications are now being offered a viable alternative to VSAT from satellite communications service provider **NSSL**.

NSSL's new Cruise-IP service is a broadband service, which uses the latest Digital Video Broadcasting (DVB) technology to provide on-demand data and voice services from the Caribbean, US Coast, North Atlantic and the Mediterranean.

NSSL state the service, with unlimited data usage at USD 1,450.00 per month (excluding hardware costs), is significantly cheaper than a dedicated VSAT link.

The **NSSL** service offers 3 options, Economy, Standard and Premium with data rates outbound from 128kbps-512kbps and inbound from 512kbps- 2Mbps. Voice over IP is also available with 8 dedicated voice channels.

NSSL have more than 100 of the world's top super yachts as clients already using their Inmarsat services. Thus they have a proven track record of integrating satellite systems with on-board networks.

Inmarsat Easy Accelerator from Xantic

Browsing the Internet via satellite can be an expensive exercise. **Xantic** have recently launched a new service called Easy Accelerator. This service is available from **Xantic** and is supplied to the yachting sector, **free**, by **E3 Airtime**.

Easy Accelerator makes browsing the Internet via satellite fast and cheap. It optimises your browsing by reducing the size of selected web page content (pictures, audio and text). Browsing is faster and satellite costs can be reduced by up to 90%.

The Easy Accelerator service can be used for Internet and Intranet access, from any Inmarsat service (RBGAN, GAN/Fleet 77 and MPDS, Fleet33/55, B, M or Mini-M).

3G/GPRS from Vodafone

3G (UMTS) is a new land based communications network that supersedes GSM and GPRS. It is important to understand that this is a revolution not an evolution. The significance of this advance must not be underestimated.

In layman's terms, it provides a connection speed of up to 384kbps, which is up to ten times faster than the current mobile GPRS data communications (38.4kbps) and the old GSM data speed (9.6kbps).

With optimal transmission rates of 384kbps, this completely new technology will enable yachts to access their usual yacht and office applications such as email, weather and Internet at up to ten times the speed of GPRS.

This fabulous data connection speed will allow further applications such as routing voice calls over the Internet (Voice over IP), moving images, audio, monitoring, connection of yacht to office network (VPN), networking, etc.

As with any new technology, coverage is limited initially, but it is expanding fast and it is planned that within a year it will provide the same coverage as GPRS.

At the commercial launch, **Vodafone** introduced a 3G/GPRS Datacard which automatically switches to **Vodafone's** GPRS network, should the 3G network not be available.

Vodafone is represented in the yacht market by **E3 Airtime** for both **Vodafone Spain** and **SFR** (Vodafone in France) in the French Riviera.

New ISPS Code Compliant SSA Systems

Over the last year the new ISPS code requires vessels that need to be compliant to install an AIS (Automatic Identification System) and a SSAS (Ship Security Alert System). There is a general feeling amongst many sections of the industry that AIS should fall under safety requirements, possibly ISM, and not the new security code, as AIS publicises your name and identity to the world around you within VHF range, whereas the SSA System covertly transmits an alarm to a designated location should there be an emergency on board, such as piracy.

There have been a number of recently launched Iridium based SSA Systems. The difference between these and Inmarsat D+, C and mini C is that, by using Iridium with their constellation of 66 low-earth orbiting satellites, they include coverage at the poles thus providing 100% global coverage.

MariTrack from WCC

MariTrack offers a suite of advanced software features consisting of GPS fleet tracking, web-base crew calling including unique caller ID codes and call history access, alarm notification via email, fax and pager and the facility for simultaneous emergency alert while the phone is in use. The web browser based software is provided in conjunction with Ontec. **WCC** and Ontec have a combined on-line security that encrypts the data transmitted, detailing the position of the vessel, with Ontec's permission-based web software.

SSAS for Sailor SC4000 from Sailor

Sailor, with a well established track record for robust communications equipment in the harsh conditions at sea, has launched a dedicated Iridium Box to connect to their **Sailor** SC4000 Iridium terminal as specified in the amendments to SOLAS, chapter XI, Annex 6.

When one of the four alert buttons is activated, a SMS based alert message is generated and transmitted through the SAILOR SC4000 Iridium terminal. The SMS includes the identification of the vessel and its position, as well as time and date. The alert is delivered as an email or an SMS (to another Iridium terminal) to pre-defined recipients, typically the ship's owner or his agent.

SSAS for Skanti Scansat-7701 Iridium Terminal

Denmark-based **Skanti** has developed an add-on SSAS-box for their well proven Iridium terminal. Again, this is as specified according to the amendments to SOLAS, chapter XI, Annex 6. The function is identical to the Sailor system above.

One of the key features of both the **Sailor** and the **Skanti** Iridium system is that, because it is an add on box to an existing Iridium system, there are no extra subscriptions or signing fees apart from the existing Iridium subscription.

Inmarsat C and mini C SSAS solution

There are many Inmarsat C solutions from **Thrane & Thrane** and **Furuno**, to name but a few, plus various Inmarsat D+ system from manufacturers such as **MarineTrack**.

Thrane & Thrane

One of the leading players of well-respected satellite communication systems is **Thrane & Thrane**. Yet another Danish marine electronics company which, over the last year, has launched two solutions for SSA Systems. Both are based on the Inmarsat C service. The first uses **Thrane & Thrane's** Inmarsat C terminal and the second their Inmarsat mini-C terminal.

The Inmarsat C add-on solution should be an interesting proposition for many of our clients who need or want to comply and who already have the **Thrane & Thrane** 3020C satcom C. The add-on is only a one-off cost, as the start up and subscription fees are already being paid for the existing 3020C satcom C.

Switching between systems

SmartCom from Marine Computing

SmartCom offers a complete solution to on-board communications via Inmarsat and other communication systems. It is modular, with a dialler and email software forming the core.

The SmartCom software offers an easy to use dial-up manager that allows the user to select the most suitable means of connection, dependant upon coverage, data rate and costs. Connections are made in a very robust manner, with more extensive error checking and reporting than is offered by Windows dial-up networking. It is also easy to configure the dialler to have different access points in different countries or regions, a choice of access numbers, and similar features.

The email software sits between your email client (such as Outlook or Outlook Express) and the Internet, offering many improved features to improve the robustness of the connection and to minimise your communications bill:

- Emails are sent and received simultaneously, minimising connection time.
- If the connection is dropped, SmartCom automatically resumes where it left off.
- If you are sent large emails, you can preview the header and decide if you want to leave them on the server or delete them before downloading
- Outgoing emails are stripped of unnecessary data from the mail header and optionally by converting messages to plain text, removing multimedia content and attachments.

As an optional service, data can be compressed and incoming emails minimised in size.

Completely new ideas.

Use GSM SMS on-board a yacht anywhere in the world from Altobridge

Wireless SMS on yachts allows owners, guests and crew to send and receive SMS message on their own GSM phones anywhere on the world's oceans.

The **Altobridge** unique technology, the Aeronautical & Maritime Gateway Platform, enables standard GSM coverage on yachts at sea, at affordable rates. Charges for the SMS communication appear on the user's own GSM phone bill as standard roaming charges, just like any world GSM phone traveller.

The onboard cellular network connects back to the land based cellular network via the yacht's existing satellite system. The **Altobridge** gateway supports all major satellite bearers and the architecture does not necessitate permanent (and therefore expensive) satellite connections. Satellite activity is minimised to revenue generation periods.

The benefits are unique:

- The only remote GSM system that does not require a permanent, costly satellite connection to land.
- Owners, guests and crew can send and receive messages as on land.
- SMS messages can be sent in private instead of a telephone in an open area.
- By using your own GSM you have access to your own mobile phone book.
- The system automatically avoids interference with any nearby land based networks.
- Optimisation techniques allow multiple simultaneous users.
- The system is compatible with all leading satellite bearers.

I have also heard a rumour that voice capability will be available next year.

As you can see from the above, the world of yacht communication technology is constantly evolving. Sometimes the level of improvement between the existing and the new equipment may appear minimal, but there are a few new developments around which provide a really valuable service to owners, guests and crew, allowing us all to keep in touch more easily and more cheaply, wherever and whenever we are at sea.

Notes:

Roger Horner is the MD of the E3 Systems Group. The E3 Systems Group is the largest front-line electronics company in the Mediterranean dedicated to the super yacht industry. E3 provide solutions in every field of electronics with a specialist team for each area of technology.

Contact list:

Altobridge	www.altobridge.com
E3 Airtime	tony@e3s.com
Furuno	mail@furuno-ebo.com
Marine Computing	kw@marinecomputing.com
MarineTrack	sales@marinetrack.com
NSSL	www.satcom-solutions.com
Sailor	sailor@sailor.dk
Skanti	skanti@skanti.dk
Thrane & Thrane	info@tt.dk
Vodafone	tony@e3s.com
WCC	www.ssassolutions.com
Xantic	tony@e3s.com