



**Islander May 2009
Technology Update White Paper**

**Data Roaming Issues in Yacht Communications and New
Legislation**

“Bill Shock”

Everyone knows that GSM roaming on voice or data is expensive. Every communications service provider is acutely aware of this issue and is at pains to look for solutions to avoid unwanted high roaming costs. Perversely, the issue has become more prominent in the last couple of years due to the availability of cheap high speed 3G connections and unlimited data tariffs in most European countries. Users get used to ‘all you can eat’ facilities in their home territory, then either forget to restrict access when they go roaming or are victims of abuse or negligence. Either way, ‘Bill Shock’ has affected a small number of vessels directly and made the rest very wary, so it makes sense to look at ways of avoiding this unpleasant eventuality.

E3 Systems probably has more experience in this field than any other company in the yacht sector and has developed a number of products and procedures which can help to guard against this problem. At the same time new Euro laws are about to enter into force which will further limit the danger for the unwary, as this is not just an issue for the yacht industry, but for any European traveller. However, it should be borne in mind that vessel communications is a running cost like any other that the Captain needs to have under control. All the advice in the world is useless if there is unrestricted access to a variable cost communications channel.

Crew welfare?

Some readers will be of a generation where the Captain would stand behind a crew member with a stopwatch when they made phone calls using the ship’s phone, before extracting the amount used from wages at source. Nowadays it is considered almost a civil rights infringement if the crew do not have access to a ‘free of charge’ unlimited internet service in their place of employment. There are therefore vastly differing regimes on board governing access to and accounting for internet services. There are also many different types of connection including satellite broadband, Inmarsat, WIFI, 3G ‘unlimited’ or 3G Roaming options.

Often the method of switching between one connection and another is automatic leading to cases where the Captain is not aware that he has switched from a fixed price connection like VSAT or 3G unlimited data to a variable price connection such as Inmarsat or 3G roaming. With 3G, this can be further aggravated when the boat accidentally alternates between a home network and a roaming connection, as sometimes happens in border areas such as Porto



Cervo, Monaco, and so on; or when the boat moves from a home network to a roaming network location and does not take this into account.

So what happens then? Well, first of all, let's remember that there are a huge number of internet users who just need access to get the weather, pick up emails and browse through their bank details and the restaurant guide. These users will pick up the roaming tab with a few disgruntled comments, but will realise that there is often no cheaper way to stay in touch. Acquiring 'unlimited data' SIM cards in each cruising location is possible, and, indeed is a service offered by E3. But it does have a 'break-even point', as in any cost calculation, whereby the user needs to consider whether the cost of a new service will be less than they will potentially spend on roaming.

Of course, if you have a half dozen crew who live their lives vicariously through YouTube, Facebook and the like, then even one day's roaming cost will justify a year's subscription to whichever local service you can get your hands on. It is this unfettered all day long use of Peer to Peer applications or 'streaming' which eats up data and is a relatively recent phenomenon. It is nearly always crew use and this is where the anxiety starts as it is realised that the cost incurred will not be automatically signed off.

Prepay not ideal for paying guests

Nearly all the European 3G operators sell prepay SIM card kits which can be topped up and have the often desirable feature that once they are used up, that's it. You have to go and top them up. This may be OK for crew use and indeed, instead of offering free access to the vessel communications on the owner's account, Captains should look at providing this option for crew. If internet is to be offered free, then the boat can buy the first one and after that the crew pays to top it up. Just an idea!

For the paying guests though, this may not be a good solution. They run out or have Fair Access restrictions or configurations which make them unusable. They are only usable in one network and someone has to buy them, change them, and top them up from place to place. And when there is only 3G available on board, the guests will expect to be able to use it, roaming or not. In that case, the Captain needs to know how much is being spent so that he can pass the cost on to the charterer, and the management company has to examine whether or not there are more cost effective communications platforms available.

So use of 3G roaming data produces a not so simply solved management conundrum.



How to avoid high bills, but how to avoid high bills that no one wants to pay!

Let's look at the options just as far as 3G roaming implications are concerned.

1. Don't offer internet access via 3G on board.
2. Offer 3G with ROAMING deactivated.
3. Offer 3G with ROAMING activated, but with restricted access.
4. Offer 3G with ROAMING activated, access unrestricted.

Option 1 – Don't offer internet access via 3G.

This method is infallible in achieving the 'No Bill Shock' aim.

Option 2 – Offer 3G with Roaming deactivated.

This will give you fixed price unlimited data, but you will need a SIM card for each country you visit to continue using the 3G services, which are now available in most cruising locations. This will keep your costs down, but will limit flexibility. One idea could be to keep one connection for crew use and one for guest use. This would require strict control of access to usernames and passwords to avoid abuse.

The question of abuse is a thorny one. The first defence of an abuser of any system is 'it wasn't me'. E3 (and others) can advise Captains on equipment and software which can be installed to control access to shared connections and to indicate exactly who used what, when and how much. The dilemma is often that the boat that wants the cheapest connection available does not usually want to spend any money on safeguards. It is not even an issue of abuse of trust. As we indicated earlier, vessels can wander in and out of roaming coverage by accident and marinas are a hacker's paradise where on board systems often do not even employ the most basic password protection. But Captains could do much more to help themselves.

This leads us nicely on to the next option.

Option 3 – Offer 3G with roaming activated, but with restricted access.

With this option we start to move away from the basic premise of the 3G solution as a user installable cheap internet access option. However, it is a well known fact that you can spend an awful lot of money on a cheap solution. As mentioned earlier, a 3G device used in a well managed environment, free of malicious intent can be used very cheaply and literally thousands are. However, when trying to adapt this service for multiple users with differing profiles - owner, guest, captain, crew across varying cost structures in many locations and in vastly different on board configurations, the intervention of a professional maritime communications service provider is highly advisable.

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At E3 we recommend that a configurable 'service selector' (there are various on the market) is installed to help manage external connections. The vessel management can then decide how the external connections can be accessed, by whom, what they can connect to, when and for how long, set priorities, blacklists and whitelists so that all the factors mentioned above can be taken into account. The consultation and installation of these devices can save the vessel a fortune in the long run at a cost around the same as one month of a VSAT subscription.

Option 4 – Offer 3G with roaming activated, but with unrestricted access.

The big problem with this is that the roaming data user has a blank cheque that in the rarest of cases is cashed without protest. But because of the way roaming data is accounted for, once unrestricted access is given, it is very difficult to stop a potentially large invoice from being generated. When roaming, a local account is created in the host country. There are currently no standards limiting the size of account this connection can generate. Most operators have a system for sending warnings when a large invoice is building. However, delays in reporting from one operator to another can mean that the notification arrives in the home network days or even weeks later. Current price plans for roaming data users were set up a couple of years ago when it was anticipated that a roaming user only needed to make short daily connections to read emails and do a bit of browsing. Network operators did not expect that any users, knowing they were on a roaming tariff, would connect to down- or upload massive amounts of streaming data.

New European Legislation

The consumer has been championed by the European law makers in the form of a 2007 legislation package which restricted the amount mobile phone operators could charge for roaming voice calls. This was followed up this year with a set of amendments further reducing the upper limit for voice calls and limiting the cost of SMS messages, roaming data, and making recommendations to avoid 'Bill Shock'. As a result the following measures will soon become law:

1. Euro SMS tariff – Mobile phone operators will not be able to charge more than 11c for an SMS message anywhere in the EU.
2. Improved transparency – Customers travelling to another member state should receive an automated message telling them the charges that apply for data roaming services. On 1 March 2010, operators must provide customers with the opportunity to determine in advance how much they want to spend before the service is cut off. One of these options (the default financial limit) shall not exceed EUR50.00.



3. Roaming Data – The wholesale price of data roaming will be capped at EUR1.00 per MB from 1 July 2009, falling to EUR0.80 from July 2010 and EUR0.50 from July 2011.

These measures in themselves will be welcomed by every roaming user. Service providers such as E3 will benefit too. The inexorable demand for more data will carry on regardless and it will be a lot easier to collect a lot of small invoices than it would to collect a few big ones. But we are not resting there. Item 2 above will be open to interpretation, may be linked to operator produced software which is not installed on yacht communications systems, and there will still be the potential for large invoices.

Vodafone UK offer for a Roaming Free Summer in Europe

Many will have noticed the Vodafone UK offer that is heavily advertised in the Sunday papers and on Sky TV. They are trying to position themselves based on the announcements about the drop in roaming tariffs by the European Union. This means that customers travelling in Europe will be able to make and receive calls at the same tariff as they have in the UK. This offer ends on August 31. This does not apply to data and is not a Europe-wide offer by other Vodafone networks, only voice calls from Vodafone UK.

Intelligent devices to control roaming costs

At E3, as well as the 'service selector' mentioned above, we are developing our own software to count all the data passing through any connection, which will recognise when a roaming connection is being used and will offer the user the opportunity to continue or suspend the connection and send an email notification of the usage level reached to the captain, management company or other financial controller. This will be independent of the operator's billing mechanisms and configurable by the Captain so that all usage will be acknowledged in real time and an approximate cost recorded.

Human error responsible for Bill Shock

The unfortunate incidents which have led to large disputed roaming bills in our experience were all avoidable. Going back to the opening line of this editorial, everybody knows that roaming is expensive. Unless they have been particularly unlucky, most vessel Captains know when they are roaming and have a responsibility to take appropriate steps – whatever 'appropriate' means under the particular set of unique circumstances that exist on that particular luxury yacht. Companies like E3 exist to provide expert advice in the management of those requirements to get maximum performance at the lowest possible cost. What we cannot guard against is human error!

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