



The Capacity Crunch over the 2011 Med summer.

Did your demand for data go into critical overload last summer?

As last year's Mediterranean yachting season drew to a close, we decided to take stock and review whether our predictions and policies held true from the beginning of that year. At the beginning of 2011 we reasoned that the year would be the year of the Capacity Crunch – a term borrowed from the mobile phone industry referring to the fact that demand for bandwidth for data applications was far outstripping supply. We quoted some quite scary statistics showing the vertiginous growth in mobile 'apps' downloads, Facebook Mobile, instant messaging for mobile and – the best of all – the fact that there was more YouTube traffic on the internet, in 2010, than the entire internet in the year 2000.

We suggested that there was a direct correlation between the problems being experienced by mobile phone networks in managing capacity and those of yacht captains and managers managing networks on Super Yachts. Maybe this realization was not exactly road to Damascus stuff, but it certainly alerted a lot of management companies and captains to the issue of bandwidth provision and bandwidth management on board, and those who missed the message first time round certainly caught up during the summer when the internet did start to slow down or stop completely.

Internet habits have changed rapidly.

A couple of years ago bandwidth was considered adequate if a few people on board sharing a ship's computer and the odd laptop were able to view e-mail, weather and bank statements online. Only a few years ago the highest volume tariff available on 3G with SFR was 500MB per month. That is less than an average MacBook software upgrade today. Since the MacBook, iPad and iPhone are now as much standard crew issue as a pair of Ray-Bans and a hangover, it doesn't take long to work out how much more data is passing through the ship's network in 2011 compared to 2009 – the year of the largest number of

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VSAT installations on board Super Yachts.

Let's go back to mobile phones for a minute. The development of 3G has seen data speeds available on portable devices increase dramatically and they are due for another quantum leap with 4G (2012-2013). However speeds over 1 – 2Mbps are unlikely – unless you pay extra for it.

More affluent customers will pay more for mission critical extra capacity. A download maximum of 10GB resetting on a monthly basis used to seem like plenty. Not anymore. An HD movie download is about 4GB and takes hours to download so 10GB only lasts a couple of days. We have seen a tendency on some vessels to buy five or six 3G SIM cards in order to get 50 or 60 GB of data per month. We will explain what this means in real terms a little further on.

Unlimited tariffs will be history

Clearly the mobile networks must charge more to heavy users rather than the 'all you can eat' packages they have offered up to now. Why should casual website browsers pay the same as 24/7 downloaders? This is happening now. The Mobile World Congress and Exhibition in Barcelona in February not only parades the latest gizmos and gadgets, but also displays what the infrastructure providers are selling to the operators. Stepped tariffs, enforcement of fair use policies and an end to 'unlimited' tariffs (which never actually existed) are all on their way.

It is true 'unlimited' tariffs have never existed. Everything made by man has a limit. How do oil companies decide when and where to build pipelines instead of using tankers? And this is a good analogy. A resource, such as data, can appear to be 'unlimited' as long as the user consumes it efficiently and therefore never runs out. Unfortunately, in data terms, we have a whole bunch of users in the yacht business driving around in the data equivalent of a 70's gas-guzzler bang in the middle of an oil crisis. Uncontrolled downloading of movies and uploading of YouTube video, Facebook photos and video phone calls is sucking up all the capacity in a fraction of the

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time it took before. What is the solution? More resource is one idea that always works. But more resource means more cost every day, week and month that you use it. How about more efficient use of the existing capacity? Now we are getting somewhere.

Efficient use of the scarce resource 'data'

When a resource is scarce it keeps getting even scarcer. Economics 101. There is no sign that anything different is going to happen with the internet. Do you know anyone who is trying to use less internet? OK, even if you do, think China, India, Africa, South America and all the people there and those not yet born who in the deepest jungles and deserts of their homeland are learning how to implement internet based technology in their daily lives. Any extra capacity being planned will soon be swallowed up by increased consumption. It is an economic fact of life that if you do not increase your efficiency of consumption your costs will go up. And if you are under pressure to curb budgets while your consumption goes up to satisfy the demand of your users, there is even more necessity for efficiency.

How does a MB or GB translate to value?

Nothing is unlimited. So how does this work exactly in data terms? What is a MB or a GB? How many MB or GB do we get for a dollar? Well that is simple mathematics. How does that translate to value? That's different and depends on your measure of value.

Let's go back to the 3G dongle. What a beautifully simple and ruthlessly efficient device! We are able to connect to our wireless world when almost out of sight of land as if we were sitting in our living room. With the Vodafone Premium tariff, we can get 10GB of super-fast data transfer per month for less than EUR50.00. That's a cost of EUR5.00 per GB. What is a GB? One GB (Gigabyte) of data equates to around 1 feature length movie (not HD of course, which is about 4GB), or a few hours of using a Sling Box, or catching up with our friends' You Tube videos. On a yacht if several users are connected over the WIFI

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network to a single 3G dongle, the monthly allowance will be used up in an afternoon.

How do you control data abuse?

If this resource is well controlled and used efficiently, one reload could last the whole boat crew for a month. But how do you do that fairly, and how do you stop abuse, especially if the abuser, as is their nature, continues to abuse with impunity? How do you as the Captain or Yacht Manager set your own 'fair use' limits? Letting the crew do what they like is the lazy option and may even get you a nasty letter from a copyright lawyer as you are responsible for what they download, legal or not. They (the crew) can drink in moderation but if they are drunk they will face disciplinary action. The internet should be the same and on some vessels carries the same penalties and why not?

The internet is increasingly seen as an essential tool for maintaining crew morale and team spirit. Someone hogging the bandwidth on board is monopolising a resource that is meant to be available for all and if that is allowed to happen at the expense of guest traffic, a surprisingly frequent reality on an alarming number of vessels, it is endangering the commercial success of the vessel. Nothing will freak out an owner or guest more than finding out the internet access on their expensive luxury cruise has been hijacked by unmonitored crew (ab)use.

What about 'unlimited' VSAT?

If that were not bad enough, what about the same scenario but changing a 3G USB dongle for a maritime VSAT connection! This is where we have to apply the mathematics to the 'unlimited' data concept. Many VSAT operators offer 'unlimited' data tariffs. But that isn't quite true. There is only so much data the satellite connection can transfer in any given period of time and this can be affected by several factors such as the type of data, signal quality, and equipment specification. A typical super yacht VSAT price plan in today's market would offer a 256/1024Kbps uplink/downlink on a shared service for between USD3000-4000 per month. This level of service is

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much slower than 3G, in fact about 25-50% of 3G speed would be achieved. So the same amount of data used in the example above would probably take your whole day's allowance (I won't show all the calculations here) and cost about USD100-130 per day. In order to get to the constantly useable bandwidth level (internet speed in other words) over VSAT that is available with 3G, you need to pay upwards of USD6000 per month.

This season, captains and yacht managers have been paying this, and indeed much more, but they have not been doing it gladly. There is a sense of 'we are going to (seriously) review this in the low season' as many have been astounded by the huge difference in costs this year compared with last.

It has not quite sunk in yet that the shiny, harmless looking iPad could turn into such a malevolent beast with such a measurable and immediate effect on their bottom line. But look how many are on board. Every member of the crew, every guest and the entertainment systems rely on this device. Some people use two, for work and private use. Many guests now arrive with Sling Box TV already set up from home chewing up your precious GBs at rate of knots from the second they step on board. It is only going to get worse. The new Apple operating system, ominously named Lion (it will be a man-eater) is only being distributed from the Apple Apps store and is a 4GB download. What is the potential for that to bring your internet to a grinding, crunching halt?

This is just the beginning!

In fact the numbers that we have used in the example are quite conservative. We spoke to one ETO recently who told us he was measuring about 2GB per day through his network and paying a tariff of around USD9000 per month for his VSAT package. The data usage went up to 6GB per day when the owner was on board using his Sling Box and the tariff he was paying tripled. Another ETO managed to find a slightly better deal pushing out 4GB per day for an outlay of around USD14000. Some captains and many managers are expecting the price to come down. This will happen but only by better efficiencies being achieved or in the form of special

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promotions. The price of satellite bandwidth from the operators is not falling at all, quite the opposite. New technologies such as Ka band are there to help satellite operators lower overhead and attract more customers. The price to the user per unit is unlikely to drop very much if at all.

That can only lead to business failures and mergers, which in turn will lead to a stabilisation of prices, not a fall in prices. There are so many deals available because the (satellite) operators realize that if they get a client and look after him/her, the rewards will be great when the offer ends and the usage and therefore the invoices start to grow. We are seeing this already. So it will be important to pick winners if you don't want to end up paying twice for the same thing. Every time a VSAT contract is signed up there is less capacity in the market place and the new capacity is allocated to the highest bidders on long-term contracts. Many operators have speculated on a more rapid growth than has actually taken place and are therefore stuck with bandwidth they are trying to offload any way they can. This creates a lively spot market, but is short lived and precarious to rely on.

The future is an integrated communications solution

The challenges this phenomenon raises for the communications infrastructure on board a super yacht are considerable. But hope is not lost. The secret to keeping all these opposing forces pulling in the same direction is no secret at all. It is the professional planning and implementation of an integrated communications system taking the application as the starting point. If you calculate how much data your vessel is using – and you can – then you can work out how much it costs. The solution already exists and by combining hardware, software, know-how and communications services across the full range of available technologies - VSAT, Inmarsat, 3G, WIFI – it is possible to create a solution tailored to your needs within a predictable annual budget. When you know what the end user – your owner, guest, 'yacht' or customer – wants and expects, instead of the 'gas-guzzler' you can create an accurate integrated communications budget in exactly the same way you build a modern, fuel efficient high performance car. That

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way, you can have all the fun you want without worrying about the fuel bill or whether you will run out half way around the track!

Live report from the front line – by Tony Holland, Contracts and Airtime Director of e3 Systems
27th October , 2011, edited 14th February, 2012.

About e3 Systems

e3, as one of the leading Communication Integrators in the yacht market, has a mission to redefine the way communication services are sold and provided to yachts. e3 has made the process easy by simply asking a client, “what they want to do and where”. Then from their diverse portfolio of communication services, including VSAT, Inmarsat, Iridium, 3G and WiFi their sales and technical personnel will guide the client through the selection process so that the yacht ends up with the service, or combination of services, which is best suited to the needs of the vessel.

e3’s communication services include as standard their bandwidth management system using the eDSC that enables the simultaneous control and monitoring of the data communications on board using an iPad, PC or Mac. The services offered by e3 have all been tested and recommended by their super yacht clients.

Whether your priority is high performance, price, flexibility, ease of use or quality of support, e3 have a product to suit and the largest, independent, most experienced and best qualified team of technical support and customer service personnel in the business.