

Remote Support Your own virtual Marine-IT specialist on board

Gone are the dark days when a yacht's skipper had to rely on sightings of the stars to navigate from A to B. Nowadays, a blistering array of devices are on hand to provide a wealth of information. Technology is advancing at a great pace, noticeably in the field of computing, and ever more complex networks are being installed that interface and interact with the yachts' on board systems.

However, this extra knowledge has come at a price as the skills needed to use and understand these systems have dramatically increased. Many captains and crew have adapted remarkably well to the additional workload, though there comes a point when they cannot be reasonably expected to know what to do - the point at which things go wrong.

This article focuses on the data and communications systems fitted on board modern yachts, and the way in which those systems can be remotely supported by specialist Marine-IT engineers from anywhere in the world.

Data and Communications

Data is information, and communications is the means of passing that information from a start point to an end point. If an owner has the need to contact somebody onshore, this can be done via, for example, a satcom terminal. The communications portion is the satcom, the data is the message passed from one party to another.

The satcom can also be used to connect to the Internet, providing written data in the form of an email. However, the same satcom terminal can be used by a shore based engineer to connect to the ship's computer systems and remotely control them.

The Yacht Based Network

Once a yacht network is installed, the system is in a state of constant change as a **yacht moves** around and reconfiguring the network is necessary.

Several yachts have the luxury of a high speed **ADSL** line provided by the local telephone company while in port. Once at sea, the connection to the Internet (and therefore data) is made by a variety of different methods depending on the yacht's location. Within range, **GSM/GPRS** is used, though the throughput is slow. Higher budget vessels can and do make use of 64k ISDN on the **Sat B**, though the costs are high. New on the scene last year was the **F77**, giving both packet data and ISDN, though again the cost is high. This year we have the **Sea Tel 4003** VSAT with 256k/512k data speeds. The boat then arrives at its

destination and can then connect via the port exchange again or local wireless network, getting much cheaper connections at reasonable speed.

Each time the connection method is changed, the basic way the network functions can also change. The nature of these connection devices means that they sometimes require quite a bit of troubleshooting establishing a link to allow data to flow.

The requirement for the Marine-IT engineer is to have a very broad range of knowledge and the ability to set up, configure and troubleshoot a very diverse amount of data and communications equipment.

The Skill Set of the Marine-IT specialist

Let us start by examining the skills required by the ubiquitous Marine-IT specialist.

Hardware:

Hardware is the term used to describe the physical devices. Here's a list with a basic description of the function:

Server: This is the main computer in the network, storing files and handling user logon. The server will also perform anti virus and mail delivery control for the yacht network. Additionally, the server is often used to connect to the Internet via communications devices.

Workstation: The computers used by the captain and crew for word processing, email and Internet access.

Dedicated Computer: This is a computer that handles a particular function, commonly chart plotting software for navigation.

Printers: As space on board is limited, printers are usually compact and multi-function, with built-in fax and scan capabilities.

Wireless Devices: Wireless networking is convenient as there is minimal cabling to install, yet it can require careful consideration to set up correctly.

Routers: Routers are devices that handle network traffic that is destined for a location outside the local network. A router would normally be connected to a Sat B or F77 terminal and would provide an Internet connection for all computers on the network. A router will inspect network traffic and decide whether to connect to the Internet via its interface to the communications equipment.

Communications Equipment: Basically, anything that allows a connection to the Internet is in this category. From landline modems to satcoms to VSAT to GSM and GPRS phones. A connection made this way will usually involve a dial up connection initiated by the server.

Data Equipment: Any piece of equipment that is interfaced to a computer and that sends data into the computer is in this category. GPS input to a chart plotter program, ARPA input for radar overlay, Sat C messaging terminals or monitoring devices.

Cabling: Network cabling needs to be installed and terminated in a particular way. If it isn't, it won't work, and it's not uncommon to have to re-terminate the cabling on a boat, as it wasn't done correctly by the yard.

Software:

Software describes the programs that are installed on the computers. A good Marine-IT engineer will have experience and knowledge with:

Operating Systems software:

Microsoft Windows:

Windows 3.11

Windows 95

Windows 98 (First and Second edition)

Windows ME

Windows 2000 Professional

Windows XP (Home and Professional)

Windows NT. 4.0 Workstation

Windows NT 4.0 Server

Windows 2000 Server

This alone is often enough for a corporate office based IT engineer to build a career on. The yacht's engineer cannot be expected, under any circumstances, to have this knowledge. However, Marine-IT specialists need to know all of these operating systems.

Application Software:

Office applications (Word, Excel, database etc)

Mail Server Software

Email readers: Microsoft Outlook and Outlook Express

Security Software:

Anti Virus

Firewall

Encryption

Backup Software and Strategies:

System Backup
System Recovery
Disk Mirroring
Disk Imaging

Communications Software:

Third party dialer programs
Dial up interface software
Router software (for shared Internet connections)
Router operating system software (i.e. Cisco)

Peripheral Software:

Chart Plotter (eg. Transas, Navmaster, Maxsea)
Sat C Messaging
Management software
Printers

The main point – Supporting the installation

It's plain to see that even a small onboard network will need a wide range of skills to set up correctly, due to the huge amount of different hardware and software options available.

It's commendable that the crews who run these vessels have managed to embrace this technology and integrate it into their every day operations. However, things can and do go wrong, and it's at that point that the on-board network needs support.

- However, the ship is at sea and the Marine-IT engineer is back at base. So how can support be obtained?

Most problems can be fixed with a phone call back to the engineer ashore. However, if this doesn't provide a solution, there are other options available.

Remote Support

With the improvement in communication devices and their ability to provide an Internet connection from almost anywhere, there exists the possibility for a shore-based engineer to remotely connect to and control any computer on the boat's network. In doing so, the engineer can remotely view the computer's screen on his own desktop and make any changes necessary.

Remote support has been around for many years, though it's a fairly recent addition to the yachting scene. The reason for this is that communications to and from the boat have got better, and so too has the software that allows the remote

connection. The whole set up is now more reliable and is starting to be implemented with great success.

Here's how it works...

The main remote viewer program is installed on the communications computer. The user on the boat requiring assistance would initiate a connection to the Internet via the communications computer, and in doing so; the computer becomes a part of the huge network that is the World Wide Web. As such, it has a unique address on the network, the IP address. This IP address is then communicated back to the shore based engineer.

The engineer also has a computer connected to the Internet, also with a unique IP address, and here exists the method to route traffic back and forth between the two computers. The viewer program then listens for incoming connections, while the engineer runs his version of the program, which sends out a request to the communications computer to show its screen to the engineer. Once the handshake period is finished, the engineer has full access to the communications computer.

This technology works best at high speed using 4003, F77, F55 or Sat B ISDN, though it can also function on GSM/GPRS connections, and in an emergency, may work efficiently enough on Sat M or Mini M.

Obviously, there are security implications to be considered, though correctly set up, the software will require user logon to gain access, and all traffic between the two points is encrypted.

Remote support is a very efficient tool for troubleshooting software problems, though clearly has no value if the operating system is corrupt and the computer will not start, or if the server hardware has failed.

When that happens, it's time to get out your backup devices and disaster recovery plans.

You do have disaster recovery plans, don't you.....? Don't you ?

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