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**The Journal of  
Horsham Amateur Radio Club**

October 2009

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**Cover photo: Cafe in Vejle, Denmark**

# Editorial

I have been busy erecting a new HF antenna which needs a bit of adjustment in order to tune up on all bands and also an unusual satellite dish. Details of these will appear in a future edition. A little while ago several Harc members asked me when I would be visiting Denmark again. Well I have been and come back! I travelled out on August Bank Holiday Monday via Stanstead Airport to Billund in Jutland.

Around 40% of the trip I enjoyed sunshine and the rest shall I say was typical English/Danish weather! However we had several dinner parties with various acquaintances which was very enjoyable but unfortunately there was no radio! We also went on excursions in and around the area of Odense including a tour of one of the local swimming pools where I was introduced to an English lady who had lived in the country for 14 years!

My FT1000MP went for repair whilst I was away since it refused to transmit or receive anything above 14.5MHz. This turned out to be dodgy connections with several oscillator coils. This month's club meeting is another Junk Sale so it's time to clear out your attic once more. I look forward to seeing you there. Circulated this month to club members is the 2009 Membership list.

David G4JHI

## Jota 2009

The 52nd Scouts Jamboree on the Air takes place over the weekend of 17th and 18th October. Scouts from all over the world will be operating from worldwide locations. Scouts exchange contacts with Scout and other amateur stations on HF and VHF bands.

Horsham District has been represented over the years from GB0HDS with the help of Jackie M0CUR, Pete G4LKW and Steve G4TPO.

# HARC September Meeting:

## Private home Networks

### Raul Abreu & Alan Troup From Stanley Associates

This article has some additional information to that presented.  
(Written by Steve G4TPO)

All computers and/or devices are identified by TCP/IP addressing. Each computer must have a unique IP address. TCP/IP was designed as a Wide-area-network ("WAN"), able to continue to function, even if part of the network was not operating. This was to ensure the network could continue to work even if some damage or failures took place.

TCP/IP is the communication protocol for communication between computers on the Internet or network. TCP/IP stands for Transmission Control Protocol / Internet Protocol. TCP/IP defines how computers or network devices (like computers) are connected to the Internet, and how data is transmitted between them.

TCP/IP uses IP-addresses, IP addresses are normally written as four numbers separated by a period, like this: 192.168.1.50. These are expressed as 4 x 8-bit or 32-bit number. One computer byte is 8 bits so TCP/IP uses 4 computer bytes where each of the 4 numbers is within the range of '0' to '255'.

A computer byte can contain 256 different values:  
00000000, 00000001, 00000010, 00000011, 00000100,  
00000101, 00000110, 00000111, 00001000 .....and all the way up to 11111111.  
This amounts to 4.3 billion addresses.

Inside the TCP/IP standard there are several protocols for handling data communication:

- TCP (Transmission Control Protocol) communication between applications
- UDP (User Datagram Protocol) simple communication between applications
- IP (Internet Protocol) communication between computers
- ICMP (Internet Control Message Protocol) for errors and statistics
- DHCP (Dynamic Host Configuration Protocol) for dynamic addressing

On a private home network or subnet each computer or device is identified using an IP address in the same format as above. There is a range of IP-addresses, which are reserved for private networks by using these it makes it possible to connect your private network to the Internet without having to re-configure anything. The reserved IP-addresses are in the range 192.168.n1.n2, n1 is the same number for all devices on a subnet, n2 is a unique number for each device.

An example of a small private network of 3 systems could use:

Computer 1 = 192.168.10.1

Computer 2 = 192.168.10.2

IP addressable device (printer) 192.168.10.3

And so on.

## **Subnet Mask**

For a subnet to work you also need a subnet mask this neither works like an IP address, nor does it exist independently from them. Instead, subnet masks accompany an IP address and the two values work together. Applying the subnet mask to an IP address splits the address into two parts, an "extended network address" and a host address.

Like IP addresses, a subnet mask contains four bytes (32 bits) and is often written using the same format which is typically shown in the equivalent, more readable form: 255.255.255.0 or in its binary representation: 11111111 11111111 11111111 00000000

A subnet allows the flow of network traffic between hosts to be segregated based on a network configuration. By organizing hosts into logical groups, subnetting can improve network security and performance.

As mentioned above there are certain numbers reserved for private networks private uses. The default subnet masks associated with these private networks are listed below.

Network address range	Default mask
10.0.0.0 - 10.255.255.255	255.0.0.0
172.16.0.0 - 172.31.255.255	255.240.0.0
192.168.0.0 - 192.168.255.255	255.255.0.0

### **Router:**

To connect a TCP/IP local-area-network to another TCP/IP LAN which could be the Internet or via a Wide-Area-Network (WAN), you need a device called a Router. When using a home network that connects to the internet via a router, the computer has to communicate with the router. On bootup, the computer sends out a call on the network to find a DHCP-server, DHCP (Dynamic Host Configuration Protocol) this is located in the router and assigns an IP-address to such a system.

The IP-addresses are usually assigned permanently. The settings within the router including firewall settings can be accessed using the web based management user interface of the router. This is done through the internet browser and typing the address "192.168.2.1" for example (the actual address may vary depending on the manufacture of the

router. The settings within the router can be protected by use of a password.

One of the problems in setting up a network can be when different versions of windows are used; in this case you will need to check the subnet/workgroup name as different versions of windows uses a different subnet/workgroup name by default, for example; windows XP uses "workgroups" while Vista home uses "MSHome".

Each computer must have an IP address before it can connect to the Internet. Each IP packet must have an address before it can be sent to another computer. A name is much easier to remember than a 12 digit number. Names used for TCP/IP addresses are called domain names. website.com is a domain name.

When you address a web site, like <http://www.website>, the name is translated to a number, TCP/IP address by a Domain Name Server (DNS). DNS servers all over the world are connected to the Internet, when a new domain name is registered together with a TCP/IP address, DNS servers all over the world are updated with this information. Domain names configure it as part of the TCP/IP-properties.

### IP Configuration [ipconfig] Command

Ipconfig is included with Windows. This utility provides you with diagnostic information related to TCP/IP network configuration. Ipconfig also accepts various Dynamic Host Configuration Protocol (DHCP) commands, allowing a system to update or release its TCP/IP network configuration and can provide you with diagnostic information related to TCP/IP network configuration.

### Example

ipconfig [/?   /all   /release [adapter]   /renew [adapter]]	
/?	Display this help message.
/all	Display full configuration information.

/release	Release the IP address for the specified adapter.
/renew	Renew the IP address for the specified adapter.

The default is to display only the IP address, subnet mask and default gateway for each adapter bound to TCP/IP.

## Firewalls

This is a basic description of the term “fire wall” taken from the term ‘fireproof wall’ intended to prevent the spread of fire from one room to another etc. The Internet can be an unsafe environment with regard to computer-security; therefore a “firewall” is a must for network security. It can be either a simply software program or hardware device that filters information.

Most routers contain a hardware firewall which can be customised. This means that you can add or remove filters. In this way you can allow or block communication by selecting specific IP addresses - Domain names - Protocols – etc. or set it to the highest level of security, ‘simply block everything’. Then begin to select what types of traffic you will allow. Most of us will work with the defaults set by the firewall developer.

The most important aspect of a firewall is that it is at the entry point of the networked system it protects. This means essentially that the firewall is the first or primary program or process that receives and handles incoming network traffic, and it is the last to handle outgoing traffic.

So, what do firewalls do?

- The most basic type firewall performs Packet Filtering.

All Internet traffic travels in the form of packets. A packet is a quantity of data of limited size, kept small for easy handling. When larger amounts of continuous data must be sent, it is broken up into numbered packets for transmission and reassembled at the receiving end. All your communications,

file downloads, Web page retrievals, emails etc. are broken up into packets. A packet being a series of digital numbers.

- The data, acknowledgment, request
- The source IP address and port
- The destination IP address and port
- Information about the protocol
- Error checking information
- Usually, some sort of information about the type and status of the data being sent

In packet filtering, only the protocol and the address information of each packet is examined. Filtering consists of examining incoming or outgoing packets and allowing or disallowing their transmission or acceptance on the basis of a set of configurable rules, called policies.

The firewall pays no attention to applications on the host or local network and it “knows” nothing about the sources of incoming data.

Packet filtering alone is very effective as far as it goes but it is not foolproof security. Its main advantage is: its simplicity and ease of implementation. Its weaknesses are: Address information in a packet can potentially be falsified by the sender and the data contained in allowed packets may ultimately cause undesirable impact.

You can test the effectiveness of your firewall, one site to visit to do this is: [www.grc.com](http://www.grc.com) where there is a free Shields Up! security test. Which provides instant feedback on how secure your system is!

## **Home Networks**

The two most popular home network types are wireless and Ethernet networks. In both of these types, the router does most of the work by directing the traffic between the connected devices. By connecting a router to your phone line you can

also allow multiple computers to share one connection to the Internet. If you're going to connect your network to the Internet, you'll need a firewall.

Many software firewalls installed onto your computer block all incoming information by default and prompt you for permission to allow the information to pass. In this way, a software firewall can learn which types of information you want to allow into your network. Symantec, McAfee and ZoneAlarm are popular companies that produce such firewalls.

Ethernet and wireless networks each have advantages and disadvantages. Wired networks provide users with plenty of security and the ability to move lots of data very quickly. The easiest, least expensive way to connect the computers in your home is to use a wireless network. The disadvantages of wireless connections are generally slower than Ethernet connections and they are less secure unless you take measures to protect your network.

**Faster Wireless** the latest wireless standard is 802.11n, most users will still be using 802.11g as this has been the standard in most service provided routers to date as the ratification of 802.11n by the Institute of Electrical and Electronics Engineers (IEEE) was not complete until earlier this year. The 802.11g wireless networking transmits data at 2.4 GHz with a speed of 54 megabits.

One of the problems with wireless connections is due to the router transmit being stronger than a laptop transmit so you may see the router as a good signal on your laptop but the laptop may not be able to communicate with the router.

## **Other wireless connections**

Any devices that use the Bluetooth standard can also connect easily to each other within a range of about 10 meters (32

feet), and most computers, printers, cell phones, home entertainment systems and other gadgets come installed with the technology.

If you use a wireless network, you will need to take steps to protect it. If you leave it open then others will be able to log on and use your bandwidth. Wireless security options include:

**Wired Equivalency Privacy (WEP)**

64 & 128 bit encryption

**WiFi Protected Access (WPA)**

**Media Access Control (MAC) address filtering**

You can choose which method (or combination of methods) you want to use when you set up your wireless router. However studies have proven that WEP can be broken into very easily, therefore you be advised to use WPA.

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Thanks to Steve G4TPO for providing the notes for this very informative talk.

## HARC Autumn Junk Sale

- When: 1st October
- Venue: Guide Hall, Denne Road  
Horsham
- Viewing: 7.30pm
- Start Time: 8pm
- Parking: Denne Road Car Park  
Normandy  
or Denne Road itself

# Broadcast News

by  
David G4JHI

On September 30th all Freeview set top receivers will need a retune in order to continue to receive all services. Five along with ITV and Channel 4 will be moving some of their services around. Also the BBC will be clearing some space to make way for HD channels. Talking of High Definition TV this is starting to become a big thing all over Europe and Scandinavia.

This sounds good but has given the broadcasters a chance to make some money by charging a subscription in most cases! Free HD channels on satellite currently include BBC, ITV, Luxe TV, ARTE, Das Erste and ZDF. Fans of TV from Germany will be (or perhaps would be) delighted to know that several favourite channels which include Pro7 and RTL will also be in HD but viewers in the UK wont be able to view them as they will be encrypted into a new package starting in January.

The good news is they will be broadcast alongside the existing FTA services. On 31st October Denmark switches off all analogue terrestrial TV services operating on VHF and UHF frequencies in favour of a digital platform. This will effect 2 Million households, the other 3.5 Million watch via cable or satellite.

A handful of public service channels are already available free to air in MPEG-2 format changing to MPEG-4 in 2012. Viewers will then need to purchase a new set top box to continue viewing unless their TV can receive the new format. A pay TV service called Boxer which is already in existence broadcasts only in MPEG-4.

Sky are currently sending out new viewing cards coloured white. When it arrives you simply make sure the set top box has been switched on for at least 24 hours, turn it on to

receive any channel and swop the card over and wait a few seconds for it to be authorised. It does not need to be connected to the telephone line.

The dark blue cards which have been around for sometime are being switched off. If you don't actually subscribe to Sky but use one of these to provide reception of Sky 3 and the correct regional BBC and ITV channels you will need to contact Sky for a new one.

It should be noted that if a Sky box is used without a card BBC1 on (101) defaults to London region and ITV1 on (103) defaults to Central West. Also Five does not appear on the EPG! This channel can be added to the 'Other channels' list by inputting the following parameters through the Services menu: Frequency 10773, Polarisation H, Symbol Rate 22000, FEC 5/6.

## Nevada Open Evening

Nevada Radio is holding an "Open Evening" at their headquarters in Portsmouth for a few Amateur Radio Clubs in the region, and would like to invite Horsham club Members to attend their little soiree. It is anticipated that Icom will be there with their Amateur Radio "van", and rumours are that Yaesu will be donating a handheld to be given away in a raffle.

There will be some goody bags and Mike (G3SED) has promised some special prices as well. The date for the Open House is Wednesday 25 November just right for Christmas! Opening time has been set around 1830-1900h. Timings and event details will be firmed up around the end of October.

Have a think about it and let Adrian G4LRP or any other committee member know if you want to come along then the transport can be worked out. By the way you could get a good pint in the Churchillian pub on top of Portsdown Hill last time Adrian was there...

## Coming Soon

Fireworks may be flying on November 5th but down at Horsham Amateur Radio Club you are invited for another great talk by John Narborough. "Electrical Oddities" is an extended version of a short presentation that he did for the Friends of the Chalk Pits Museum.

It may include a few exhibits you have seen before, but is basically a look at some bizarre electrical appliances produced in days gone by and certainly before there was 'elf and safety!

## National Hamfest Lincoln 2nd/3rd October

Ian M0FRH would like to confirm that he will be in attendance at this new show. Anyone who would like to join him please contact on telephone 01903 717997 for further details.

## G3NPF Celebration

Since the announcement of Tony's 50 Years of Radio a celebration party took place at the home of Tony and Anne near Storrington in September.

A contingent of close friends attended for a lunch buffet and drinks followed by a chat of reminiscences of radio. May we wish you well for another 50 years!

Copy deadline for November edition 20th October

For items sent by email please send to this address:

[harc.news@g4jhi.co.uk](mailto:harc.news@g4jhi.co.uk)

# Diary

Oct 1st, Club Night: Junk Sale

Oct 2nd-3rd, Lincoln Hamfest 10:00 - Newark and Nottingham Showground

[www.nationalhamfest.org.uk](http://www.nationalhamfest.org.uk)

Oct 8th, Committee Meeting - QTH of G3ZBU  
80m Club Sprint - CW 20:00-21:30 SN + Name

Oct 9th-11th, RSGB Convention - Wyboston Conference Centre  
09:00 (Sat/Sun)

[www.rsgb.org.uk/rsgbconvention](http://www.rsgb.org.uk/rsgbconvention)

Oct 13th-14th, EMCUK Exhibition - Newbury Racecourse

[www.emcuk.co.uk](http://www.emcuk.co.uk)

Oct 15th, Social Evening - The Dog and Bacon - Horsham

Oct 17th - 18th Scouts JOTA

Oct 21st, 80m Club Sprint - SSB 20:00-21:30 SN + Name

Nov 5th, Club Night: Electrical Oddities - John Narborough

Nov 12th, 80m Club Sprint - SSB

All above times are BST

Committee/Club Meetings and Socials start at 8pm