## CLUB COMMITTEE: 2008-2009

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## RUMINATIONS

I think that this may well be your last dose of "Ruminations" – I intend to ruminate, rather like a cow in a meadow, and as things have turned out, this will be my last chance to do so. Fact of the matter is that I have decided to "retire" from the MARC Committee, and this includes any involvement with HHN. Of all the tasks which I have undertaken for and on behalf of MARC, the one which has been my favourite and which has made the greatest demand on me from all aspects, has been my periods as editor and contributor to HHN.

So, as I said in the Club News Bulletin which I prepared and read last Sunday, the 21st June, the occasion was a sad one for me, as it represented my swan song, in that I had decided not to offer myself for re-election at the AGM which will take place on Saturday 18th July. The time has come for me to acknowledge the inexorable passage of the years and my own non-immortality: the mortality of man is both joyous and tragic. This contribution of mine is my swan song for HHN.

I want to say two or three things. First, in spite of my not being a technical guy, yet I managed to master the Morse Code (eventually reaching 20 wpm for both sending and receiving) and also passed the exam. I mention this as a possible encouragement to other non – techs. Second, ham radio is a fabulous hobby – it covers a huge range of activity, and is growing steadily. Ham radio is also essentially a social hobby. I have made countless good friends over the years – and it can and does make a huge contribution to society – especially at times of emergency. In short, our hobby is both challenging and very good fun.

In the face of other technical developments and distractions ham radio is suffering from an apparent decline in the interest of people : nearly every club and society struggle to attract active support : meetings are poorly attended; volunteers for club action and activity are hard to come by – experimentation and construction of radio equipment are both at a premium. But notwithstanding these negative aspects, the call of this great hobby is still powerful – newcomers to the field include young persons and a wide range of ages and backgrounds.

To conclude: MARC is thankful and fortunate to have an above average number of keen members who are prepared to give generously of their time and energies. I am confident that HHN (as only one example) will be able to go forward into the future growing steadily in quality. My sincere thanks to those to whom I pass the baton: well done, and all the best to you all. Best 73: VIVA MARC! VIVA HAM RADIO! VIVA!! Robin, ZS5MRS

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## Diary of Events

| | |
|---|---|
| 27 June | Combined Swop Shop, HARC Club House, Girl Guides Hall, Lyntton Cres, Pinetown, 12h00 |
| 1 July | DARC Mid-Winter Sprint |
| 18 July | MARC AGM, 11h00 |
| 25 July | RSGB IOTA Contest |
| 26 July | RSGB IOTA Contest; Boland 40m sprint |
| 28 July | Digital Competition and Intechnet |
| 1 August | Stand at the Hobbies Fair at the Model Engineering Club |

## The M.A.R.C. Infrastructure

### Voice Repeaters (FM)

**VHF**

| | | | |
|---|---|---|---|
| Worlds View | 145.750 MHz (Tx) | 145.150 MHz (Rx) | Emcom SA256 25W |
| Windy Hill | 145.700 MHz (Tx) | 145.100 MHz (Rx) | Emcom SA256 25W |
| Estcourt | 145.675 MHz (Tx) | 145.075 MHz (Rx) | SCR200 15W |
| Greytown | 145.775 MHz (Tx) | 145.175 MHz (Rx) | Storno |
| Zwartberg | 145.725 MHz (Tx) | 145.125 MHz (Rx) | |
| Underberg | 145.7875MHz (Tx) | 145.1875MHz(Rx) | YaesuFTC1525a20W |

**UHF**

| | | | |
|---|---|---|---|
| Mt Gilboa | 439.225 MHz (Tx) | 431.625 MHz (Rx) | General Electric MII |

### Packet Digipeater

| | | |
|---|---|---|
| Mt Gilboa | 144.800 MHz (Tx & Rx) | Kantronics KPC3 + V9.10 |
| | | Alinco DJ -135 50W |
| | | Diamond X-200 Omni 6db |

The PBBS (mailbox) is on ZS0PMB-1. The digi is on ZS0PMB-2. The KA-node is on ZS0PMB-7. Use Winpack on 144.800MHz to connect to the PBBS and leave a message for someone. The packet digi also acts as the aprs digi (ZS0PMB) and will respond to WIDEn-n or TRACEn-n.

### APRS

The national APRS frequency is 144.800 MHz (Tx & Rx). The I-Gate is at ZR5S (Polly Shortts). Fixed stations should beacon at approximately 30min intervals with a path of WIDE5-5. Mobile stations should beacon at approximately 1min intervals with a path of WIDE5-5.

### ECHO-LINK "voip"

Our node number is 244279 Call Sign ZS5PMB. This Echo-link facility is available on the Midlands linked Repeater network.

### E-QSO "voip"

We are in the " 101ENGLISH" virtual room, on the "repeater.dns2go.com" server. This is linked to RF at Polly Shortts on 433.400 MHz simplex.

### BEACONS

| | | |
|---|---|---|
| Hilton | 50.321 MHz (Tx) | ZS5SIX FSK |

### WEB SITE

| | |
|---|---|
| MARC'S very own website | www.marc.org.za |
| SARL's website | www.sarl.org.za |

## Regular Events

**The KwaZulu Natal Net:**
Starts at 06h00 on 7.055 MHz. in winter and 3.650Mhz in summer and continues until 07h40. Colin ZS5CF hosts the net from 06h00 & Gary Potgieter (ZS5NK)-takes over later on.

**MARC Sunday Morning Net**:
Times: 07h45. Club bulletin is presented at 08h00 and the national bulletin at 08h30.

| Frequencies: | | |
|---|---|---|
| | HF: | 3.620MHz |
| | VHF: | 145.750, 145.675, 145.775MHz |
| | UHF: | 439.225MHz |

**Hamnet Bulletins:** Sundays at 07h00 on 145.625MHz
Wednesdays at 19h30 on 145.625MHz

# Editor's Waffle

Another month has gone by. We are heading towards our Annual General Meeting and in preparing this newsletter I had time to reflect on all that has been achieved during this past year. Much has gone on, often unbeknown to members, behind the scenes. Yet much still needs attention in the time to come.

We have been blessed by a fantastic inheritance from the club's "forefathers" who toiled and sweated all those years ago to provide this club with a great infrastructure. Unfortunately in the past few years maintenance of this has been neglected. During the past months the committee has begun rectifying said neglect, starting with getting the old repeaters back to good working order.

Where to start? With a lot of work and donated equipment, the Gilboa repeater site was secured by Shaun, ZR5S. Many trips to-and-from the site ensured that the repeater was installed, in its own aluminium cabinet, donated by Bob, ZS5CU and an antenna base donated by Bert, ZS5MQ. This repeater has proven to be invaluable as it links up the other repeaters using UHF as well as being an APRS repeater. Maintenance included replacing the Diamond X700 antenna which had been on loan from Shaun. During the storms experienced last year, this antenna had been blown over and it took a work party and a day's outing to replace the long antenna with a shorter one. Also added were steel guides which we trust will survive any veld fires.

Then there was the work done on the Greytown repeater. This was repaired, and installed, prior to the Mighty Men Conference this year. As the old slim jims were no longer serviceable, new antennae were bought and installed. Unfortunately the repeater developed a fault shortly after this work was done and Shaun uplifted it and sent it to Craig, ZS5CID, for repairing. At this time special DTMF boards were installed enabling us to switch this repeater on-and-off remotely. Shaun recently reinstalled this repeater and it is working extremely well. Linked to Gilboa with uhf link it has an incredible range, covering parts of the N3 in the Mooi River area, Pietermaritzburg and further out and also reaching some parts of the N2 along the KZN north coast.

The Estcourt repeater did not escape attention. It was taken down for repairs, again to be effected by Craig! These are now complete and we are hoping to install this repeater in Hilton in the week following our June meeting, together with new antennae. This repeater too will be linked to our network and give coverage towards the north and northwest of Pietermaritzburg.

Bring on the Windy Hill 700 repeater. We envisage retrieving this from the test site shortly. This site had been secured and its feasibility and potential tested with the repeater from Hilton. This site, too, has proven invaluable, especially for HamNet events along the N3 and the Duzi/Umgeni rivers. HamNet plans to install its own repeater here in due course. We are planning to repair the 700 repeater and also install DTMF switching facilities. Once completed, this repeater is destined for Estcourt for linking with the rest of the network. By the way, one faulty antenna will also be replaced and has already been purchased.

Recently the 750 repeater at World's View suffered a setback. The power supply ceased to work, probably from an electricity spike. Shaun investigated and took a quick decision to uplift the repeater to determine any damage suffered. When this is inspected we will also upgrade it with DTMF boards for remote control of this repeater site. We are currently waiting for a lift to Craig's "hospital" in Underberg.

News just in is that the 145.675MHz repeater was installed yesterday. Please give it a try. It is linked to the rest of the network. More of this in the next edition.

What is truly gratifying is that once the 750 and 700 repeaters are again fully functional we will probably have one of the best radio coverages in this country especially if you include the APRS coverage. We also need to bear in mind the work done by Phillip and Craig in Underberg. Their repeaters have needed constant repairs which they have diligently effected. Phillip and Craig want to move the Zwartberg repeater further south towards the Kokstad area. These repeaters are linked and they envisage linking them to the rest of our repeater network.

Not to be outdone, HARC has installed their 600 repeater at Alverstone, for now the transmit side with uhf link. It is a split site repeater with the receive section still needing to be installed. This repeater is already connected to our network.

APRS coverage has also been improved. Shaun had some of his equipment installed on the south coast and also in Harrismith. Coverage of APRS now extends from the south coast to Durban and beyond, to Pietermaritzburg and on to Harrismith, Warden and Villiers from where the Gauteng Digipeaters pick them up, as well as covering large areas in the Midlands.

We acknowledge with thanks Shaun's input of time, travel and work. He has been incredibly active, has secured the power at our Groenekloof repeater site, has organised to have this site cleaned and cleared and that also for the World's View site. Thank you Shaun.

As you can see a great deal of work has been done, and much has been achieved mainly at personal cost of the various parties involved. Having made such inroads into the much needed work of repairing and upgrading all aspects of our infrastructure, I trust and hope the new committee will ensure that this continues in the new financial year.

That being said, at our last committee meeting we churned through quite a few items, two of which I would still like to mention now. Firstly, our finances. We have become more and more aware that our club subscriptions have not been increased in accordance with inflation. Our membership has steadily declined as silent keys have outnumbered new members for many years. As a result income generated by rental agreements from our repeater sites has had to be used to finance club running fees with hardly anything being left over for maintenance of our assets.

To illustrate this point: it is costing us R108-00 to print and post the HHN to one member over the period of one year. Employing one labourer for one day to clear one repeater site costs us R80-00. Subscriptions for the past financial year were R90-00 for members in Pietermaritzburg, and R60-00 for country members, living further than 20km from the central Pietermaritzburg Post Office. 40% of our members are country members!

Other clubs are in the same position and have had to take drastic measures to survive. For instance, HARC has increased membership fees to R240-00 per annum with an additional R75-00 should you require the newsletter printed and posted to you. It is unfortunate, but unavoidable that we will be increasing membership fees to R190-00 per member. For those who do not require the printed copy of HHN, a discount of R50-00 will be allowed, bringing the fees to R140-00 for the year. We are fortunate indeed that, by virtue of our repeater rental agreements we are able to offer such low subs for the forthcoming financial year. Under the current arrangement a husband and wife team pay R110-00 and both have voting rights. If both are licenced and want to be a full member they would have to pay 2 x R190-00 = R380-00. However the committee feels that they could share a HHN so the fee has been reduced to R300-00, and they will still be entitled to a discount of R50-00 for the emailed HHN. As a price comparison I was shocked to learn that a normal local monthly magazine costs R25-00 per issue and the daily newspaper nearly R5-00!

The second point I wish to raise and which will need to be addressed by the incoming committee is our constitution. I recently went through it for advice and found it to be sadly lacking, containing vague descriptions and glaring omissions. However well meant when put together, and revised in 2004, it is totally inadequate.

A point in turn: it does not cover, or allow for, honorary memberships. This implies that all such memberships issued to date are technically null and void. Covered by the Constitution are long service members only, who will receive a certificate, once elected. It is for this reason that the confusion, and delay, of recent "expectations" has arisen. Clearly this will have to be addressed and included.

Another glaring omission is that our Constitution does not make provision for proxy voting. It is mentioned that proxy forms should be posted prior to an AGM however no provision is made for the regulation of proxy voting. This then permits this practise to remain open to interpretation and possible abuse.

The points mentioned above are just two of many. Should you not have a copy of our Constitution you can download it from our website.

Talking of the website, this is another area of input from the current committee that has shown to be positive and helpful. The website is privately sponsored and free full POP3 email addresses are available to all fully paid-up members. The committee does its best to keep the website up-to-date with information. Please let us know if there is anything of value you can contribute to have displayed here.

This has been an extremely long waffle on my part, but as I begin to close down I would like to submit a personal request. Kindly think carefully about your new committee, vote in progressive and pro-active members and let the momentum that has started continue to go from strength to strength in the year to come.

Robin, a very special thank you goes from us to you. I remember clearly the day we twisted your arm hard enough for you to accept the post of chairman, a position sadly vacated by Wessel's untimely death. He had started a magnificent job in leading this club forward in difficult times and I was proud to stand on his committee. Robin, I can sincerely say that you did not fail us. You did a sterling job! We cannot thank you enough and we hope that you will carry on doing our Sunday morning national bulletin for years to come.

A further, special thanks, needs go to Errol as well, who has indicated that he is not available for re-election. He was not enthusiastic in joining the committee. Errol, thank you for your positive contributions. You really helped to provide some stability with your insight, comments and kindness. Hopefully you will still be able to provide us with more of this in the future, even from the sidelines if you insist! To all other members of the committee, thank you for the roles and parts you played to make this past year so rewarding – and to all members, without you being there, we would not have a club to run, so thanks go to you too!

Having developed an urge to know more about electronics from an early age, I decided to do something about this desire. My first attempt was with an old valve Pilot receiver that did not work any more. Needless to say I blew the mains a good few times in trying to get it to work, before realizing that I needed some more practice and understanding, before I burnt the house down.

I kept all the parts and some years later I had another go at trying to get it to work, this time I nearly blew the thing out the window. That was it, my mother had had enough, and I was warned of it permanently. Uh, not quite.

I started reading about electronics and radios, books from the library were always in the house. Eventually I left school and got a job as an apprentice carpenter/ joiner. It was as far away from electronics as the moon from earth. Radios /electronics took a place on the back burner for a while, until I read an article about amateur radio and immediately filled out a form to get registered and start studying.

I had no sooner received the material to study when I was called up for military service. That was the end, so I thought. Once in the army and having been moved from one place to another, I heard radio operators were needed. Guess who was in front of the queue. Some twenty two years later, I left the army as a warrant officer (WO11). Having been seconded to the Commando's as a radio instructor, in charge of signals Group nine.

At this time a rather sad/nasty letter from the Ham group I had registered with caused me to give up on Ham radio. Maybe I had reached a point where I had had enough. This was all to change some years later thanks to the citizen band radio. Which had died off almost totally, I started to want more than just talking a lot of nonsense. By this time I was living in Richmond, and chatting to my wife she said I should try joining a ham club. I joined MARC to mainly occupy my spare time, as I was now on pension.

Here I met a number of new people who went out of there way to help me. A year after joining I wrote an exam which had the effect of making me a ham. (Albeit a junior version) Despite many set backs along the road I had arrived and can now proudly add zu5rob to my name, in ham circles.

Is this then the end? no I do not think so, as I have already started studying for the next exam ZS & Morse code, Hey its good. Thanks guys.

73 de rob
ZU5ROB

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**Membership Fee Summary for 2009/2010**

Full and Country Membership:   R190-00
Joint Membership:              R300-00
Student:                       R  95-00
All who opt to receive their HHN by email qualify for a discount of R50-00

The committee is also aware that some might not be in the position to pay these increases, and that they should be catered for. If you are in this position, or know of someone who would need assistance, please approach a committee member. Payment schedules will also be catered for. Please note that our financial year is from 1 July to 30 June in the following year, and that the new membership fees become due on 1 July.

*MARC's banking details are:*

| | | | |
|---|---|---|---|
| Account Name: | Midlands Amateur Radio Club | Account Number: | 62057756507 |
| Bank | First National Bank | Account Type: | Current Account |
| Branch: | Bank Street | | |
| Branch code: | 220825 | Use your Call Sign or Invoice Number as reference | |

# Ham Bulletin Readers

Robin and Errol thought they could resign just like that.... :-) We will finalise this list after the new committee is elected.

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## The MARC Vision   by  Shaun Rudling, ZR5S

Clubs and individuals need goals and visions to be progressive or else we stagnate. MARC has a dynamic vision and that is to stimulate "out of the box" thinking amongst its members and to be a benchmark for other clubs to follow.

Imagine this, communicating with each other with light frequencies. Why not? It gets done with optic fiber with glass as a medium. Lets try it with air as a medium. In fact, hams are doing it right now using a torch parabolic reflector to add some gain to the transmitted light and using a digital camera pick-up as a receiver. Imagine the scene at night with light communications between each other. Even better would to be using laser lights. Aligning your antennas would be a cinch.

Light is electromagnetic radiation just like the radio spectrum we use. Just a bit higher in frequency than what we are familiar with.

This also applies to microwave, Gamma, infra red and ultra-violet radiation. Your eyes are sensitive antenna's that receive a narrow bandwidth of this spectrum. We call it "visible light" Really, your eyes are  narrow-band, co-phased antenna's capable of receiving electromagnetic radiation. Do your eyes have a bad SWR? Spectacles can help you align your eyeball antennas. Pause here a bit and exercise your brain before you move on. Visualize what you have just read with your antennas. Your eyes are reading this text in an analogue format. Digitize and pulse this light and with a bit of practice your brain could receive and decode digital signals. We challenge you to challenge us on these ramblings. Your thoughts and ideas will be published in the next HHN.

What about upgrading our aging analogue vhf linked repeater network to a digital voice linked system. Icom have offered us a D-Star repeater that will seamlessly link repeaters to a network. Digital voice communications is how cell-phones work. We code your analogue voice into a digital format, then we modulate an analogue radio frequency with the digital data and it gets received by a repeater. The target destination receives and decodes the data and you hear a synthesized voice which should sound similar to the original source.

D-star makes repeater linking easy. It allows crystal clear audio without interference. It allows a easy way to link up with other D-star repeaters around the world. Only listen to voice traffic destined for you. Send Text msgs. Send data files. See what call-sign is calling you on the display. The flexibility of this system allows for new ideas to be implemented by flashing a new firmware.

Sounds expensive, doesn't it? With a bit of effort we could have our first D-star repeater installed and working within 2 years. It will be the first one in Africa.

Do not stagnate. Dream and visualize long enough and it will materialize. Amateur radio is not your granddaddy's hobby. It is a rapidly developing science and often leads ahead of the commercial sector. Let our youth see the new technology we embrace. Explain to them how we acknowledge our forefathers achievements of the past, but always look forward for new ideas to quench our thirst for invention.

# What is D-STAR   From Wikipedia, the free encyclopedia

D-STAR (Digital Smart Technologies for Amateur Radio) is a digital voice and data protocol specification developed as the result of research by the Japan Amateur Radio League to investigate digital technologies for amateur radio. While there are other digital on-air technologies being used by amateurs that have come from other services, D-Star is one of the first on-air standards to be widely deployed and sold by a major radio manufacturer that is designed specifically for amateur service use.

D-Star compatible radios are available on VHF and UHF and microwave amateur radio bands. In addition to the over-the-air protocol, D-Star also provides specifications for network connectivity, enabling D-Star radios to be connected to the Internet or other networks and provisions for routing data streams of voice or packet data via amateur radio callsigns.

The first manufacturer to offer D-Star compatible radios is Icom. As of December 30, 2008, no other amateur radio equipment manufacturer has chosen to include D-Star technology in their radios. Kenwood re-brands an Icom radio and distributes it in Japan only.

## History

ICOM ID-800H mobile D-STAR transceiver

1999 – Funded by the Japanese government and administrated by the JARL, investigation was put into finding a new way of bringing digital technology to amateur radio.

2001 – D-Star is published as the result of the research.

Unknown Date – Icom enters the construction of the new digital technology by offering the hardware necessary to create this technology.

Unknown Date – The conclusion of all this work is the digital technology for amateur radio called D-Star.[1]

February, 1 2008 - Icom announces the availability of Gateway 2.0 software.

April 23, 2008 - Icom and US trust server administration announce the shutdown of the Gateway 1.0 U.S. trust server will occur at 00:00 UTC on June 1, 2008, at which time all systems should have transitioned to Gateway 2.0 software and the new U.S. trust server.

## Technical details

D-STAR transfers both voice and data via digital encoding over the 2 m (VHF), 70 cm (UHF), and 23 cm (1.2 GHz) amateur radio bands. There is also an interlinking radio system for creating links between systems in a local area on 10 GHz.

Within the D-Star Digital Voice protocol standards (DV), voice audio is encoded as a 3600 bit/s data stream using proprietary AMBE encoding, with 1200 bit/s FEC, leaving 1200 bit/s for an additional data "path" between radios utilizing DV mode. On air bit rates for DV mode are 4800 bit/s over the 2 m, 70 cm and 23 cm bands.

In addition to DV mode, a high speed Digital Data (DD) mode can be sent at 128 kbit/s only on the 23 cm band. A higher-rate proprietary data protocol, currently believed to be much like ATM, is used in the 10 GHz "link" radios for site-to-site links.

Radios providing DV data service within the low-speed voice protocol variant typically use an RS-232 or USB connection for low speed data (1200 bit/s), while the Icom ID-1 23 cm band radio offers a standard Ethernet connection for high speed (128 kbit/s) connections, to allow easy interfacing with computer equipment.[2]

## Importance of Digital Technology and D-STAR

As long as the signal strength is above a minimum threshold, and no multi-path is occurring, the quality of the data received is better than an analog signal at the same strength.

The system today is capable of linking repeaters together locally and through the Internet utilizing callsigns for routing of traffic. Servers are linked via TCP/IP utilizing proprietary "gateway" software, available from Icom. This allows amateur radio operators to talk to any other amateurs participating in a particular gateway "trust" environment. The current master gateway in the United States is operated by the K5TIT group in Texas, who were the first to install a D-Star repeater system in the U.S.[3]

Another important aspect of D-STAR technology is its ability to send large quantities of data to emergency responders in the event of a disaster. Served agencies can instantly relate to sending "email" or a "word files" to someone. The data sent

can be high-volume, where traditional amateur radio "modes" are capable of getting a message through albeit slowly, D-STAR can place documents into the hands of those that need them most—fast image, text and document data exchanges.

**Criticism**

D-STAR has been criticized for its use of a patented, closed-source proprietary voice codec (AMBE). Hams do not have access to the detailed specification of this codec or the rights to implement it on their own without buying a licensed product. Hams have a long tradition of building, improving upon and experimenting with their own radio designs. The modern digital age equivalent of this would be designing and/or implementing codecs in software. Critics say the proprietary nature of AMBE and its availability only in hardware form (as ICs) discourages innovation. Even critics praise the openness of the rest of the D-STAR standard which can be implemented freely. An open-source replacement for the AMBE codec would resolve this issue.

Bruce Perens, K6BP, amateur radio and open source advocate, has announced that he will investigate the development of an alternative codec.

**Gateway server**

The current gateway control software rs-rp2c version 2.0, more commonly called "Gateway 2.0", runs on virtually any Linux, but the Icom-supported and -recommended configuration is CentOS 5.1 on a Pentium IV 2.4 GHz or faster machine.

The recommended configuration uses Linux CentOS 5.1 with the latest updates, typically running kernel 2.4.20. glibc 2.3.2 and BIND 9.2.1. The CPU should be 2.4 GHz or faster and the memory should at least be 512 MB or greater. There should be two network interface cards and at least 10 GB free of hard drive space which includes the OS install. Finally for middleware, Apache 2.0.59, Tomcat 5.5.20, mod_jk2 2.0.4, OpenSSL 0.9.8d, J2SE 5.0 and postgreSQL 8.2.3 are utilized, but these can be different as updates occur.

Along with the open-source tools, the Icom proprietary dsipsvd or "D-Star IP Service Daemon" and a variety of crontab entries utilize a mixture of the local PostgreSQL and BIND servers to look up callsigns and "pcname" fields (stored in BIND) which are mapped to individual 10.x.x.x internal-only addresses for routing of both voice and data traffic between participating gateways.

During installation, the Gateway 2.0 software installation script builds most of the Web-based open-source tools from source for standardization purposes, while utilizing some of the packages of the host Linux OS, thus making CentOS 5.1 the common way to deploy a system, to keep incompatibilities from occurring in both package versions and configuration.

Additionally, gateways operating on the U.S. trust server are asked during initial setup to install DStarMonitor which is an add-on tool that allows the overall system administrators to see the status of each Gateway's local clock and other processes and PIDs needed for normal system operation, and also sends traffic and other data to servers operated under the domain name of "dstarusers.org". Installation of this software also includes JavaAPRSd, a Java-based APRS interface which is utilized on Gateway 2.0 systems to interface between the Icom/D-Star GPS tracking system called DPRS to the more widely known and utilized amateur radio APRS system.

**How Gateway 2.0 works**

Each participating amateur station wanting to use repeaters/gateways attached to a particular trust server domain must "register" with a gateway as their "home" system, which also populates their information into the trust server a specialized central gateway system—which allows for lookups across a particular trust server domain. Only one "registration" per trust domain is required. Each amateur is set aside eight 10.x.x.x internal IP addresses for use with their callsign or radios, and various naming conventions are available to utilize these addresses if needed for specialized callsign routing. Most amateurs will need only a handful of these "registered" IP addresses, because the system maps these to callsigns, and the callsign can be entered into multiple radios.

The gateway machine controls two NICs, the "external" one being on a real 10.x.x.x network behind a router. A router that can NAT a single public IP address (can be static or dynamic in Gateway 2.0 systems) to a full 10.x.x.x/24 subnet mask is required. From there, the Gateway has another NIC connected directly to the D-Star repeater controller via 10BaseT and the typical configuration is a 172.16.x.x pair of addresses between the gateway and the controller.

**Differences between Gateway 2.0 and Gateway 1.0**

The main differences between Gateway 1.0 and 2.0 are the addition of a relational database (PostgreSQL) for more flexibility and control of updates, versus the previous use of only BIND for "database" activities, the addition of both an administrative and end-user Web interface for registration which was previously handled via command-line commands by the Gateway 1.0 system administrators, dropping the requirement for static public IP addresses for gateways, and the ability of the software to use a DNS FQDN to find and communicate with the trust server, allowing for redundancy/failover options

for the trust server administrators. Finally, a feature called "multicast" has been added for administrators to be able to provide users with a special "name" they can route calls to which will send their transmissions to up to ten other D-Star repeaters at the same time. With cooperation between administrators a "multicast group" can be created for multiple repeater networks or other events.

Another additional feature of Gateway 2.0 is the ability to use callsign "suffixes" appended to the user's callsign in a similar fashion to the repeaters and gateways in the original system, which allow for direct routing to a particular user's radio or between two user radios with the same base callsign, by utilizing the 8th most significant field of the callsign and adding a letter to that location, both in the gateway registration process on the Web interface, and in the radios themselves.

### Gateway 1.0 control software

The Gateway 1.0 software was similar to Gateway 2.0, and utilized Fedora Core 2+ or Red Hat Linux 9+ OS on a Pentium-grade 2.4 GHz or faster machine and Icom has announced a shut-down date for the U.S. Gateway 1.0 Trust Server, see "History" section.

### Add-on software

Various projects exist for gateway administrators to add "add-on" software to their gateways, including the most popular package called "dplus" created by Robin Cutshaw AA4RC. A large number of Gateway 2.0 systems are offering services added by this software package to their end-users, and users are getting used to having these features.[1] Features include the ability to link systems directly, "voice mail" (a single inbox today), ability to play/record audio to and from the repeaters connected to the Gateway and the most important, the ability for DV-Dongle [2] users to communicate from the Internet to the radio users on the repeaters.

There is often a misconception by users and system administrators alike that the Gateway 2.0 systems have these add-on features from dplus by default, a testament to the popularity of this add-on software. Software development on dplus is very active right now, and features such as multiple repeater/system connections similar to the type of linking done by other popular repeater-linking systems (IRLP and EchoLink) are being worked on.

### D-STAR Reference and Operating Guide

Many interested amateur radio operators have found it difficult to obtain information that clearly describes the various D-STAR operating modes and how to program their radios to make use of these modes of operation. A new book by Nifty Ham Accessories, the "Nifty E-Z Guide to D-STAR Operation" [3] describes the many D-STAR Gateway 2.0 and Dplus operating modes, and popular Internet resources that are core to D-STAR communications.

After describing how D-STAR repeater systems are configured and inter-communicate via the Internet, the nut-and-bolts of how to program D-STAR transceivers is covered in detail. The book provides instructions for programming radios to take advantage of call routing and linking within the local repeater system and through Internet gateways to anywhere in the world.

Additional chapters are devoted to DV Short Messaging, and the d*Chat and D-RATS programs used for DV Mode slow-speed data communications. Finally a chapter is devoted to installing, configuring and using the popular DV-Dongle which uses a PC to access the Internet for D-STAR communications without a radio or local D-STAR repeater.

### Manufacturers of D-STAR equipment

| Manufacturer | Radio(s) | Repeater(s) | More Information |
| --- | --- | --- | --- |
| Icom | Yes | Yes | |
| Kenwood | Yes | Yes | (Kenwood "re-badges" an Icom radio in Japan which is not for sale outside Japan.) |
| Moetronix | DV Dongle | No | (Available through multiple amateur radio dealers.) |

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Two Irishmen were standing at the base of a flagpole, looking up.
A blonde walks by and asked them what they were doing.

Paddy replied, 'We're supposed to be finding the bloody height of this flagpole, but we don't have a bloody ladder.'
The blonde took out an adjustable spanner from her bag, loosened a few bolts and laid the flagpole down.

She got a tape measure out of her pocket, took a few measurements, and announced that it was 18 feet 6 inches.
Then, she walked off.

Mick said to Paddy, 'Isn't that just like a blonde!  We need the bloody height and she gives us the bloody length.'

**MARC members : Sorted by Surname**      (June 2009)

| Call sign | Name | Surname | Address1 | Address 2 | City | Code | Phone | Cell | Email |
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| ZS5NZ | Milne | Buchan | P O Box 100634 | Scottsville | Pietermaritzburg | 3209 | | | |
| ZR5HRC | Harry | Chalmers | 8 Lymbrook Rd | Scottsville | Pietermaritzburg | 3201 | O33 386 4857 | | |
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