The BEACON

WEST MOUNTAIN RADIO
Quarterly Newsletter

Quarter 4 - 2019

CQ SOTA ops …

Are you an *active* North American SOTA operator? Do you know someone who is? Could your expeditions benefit from on-the-go solar power?

West Mountain Radio is looking to sponsor a SOTA activation in 2020 and would supply an Epic PWRgate to our chosen operator! To apply for sponsorship consideration, please send a brief bio of yourself, why you wish to be considered and photos of recent activations.

Photos and Bios can be emailed to:

marketing@westmountainradio.com

or postmarked and mailed to

West Mountain Radio SOTA Search
1020 Spring City Dr
Waukesha WI 53186

Please Note:
The submission Deadline is February 29 of 2020. The winner will be chosen shortly thereafter. Must be located in the USA to be considered.

HOLIDAY REBATES

November 1st – December 31st, 2019
Use Code Holiday19

SHOP NOW!

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$10 OFF

RIGrunner 4005H | ISOpwr+ | PWRguard PLUS | RIGrunner 4005

$15 OFF

CBA IV | RIGrunner 4008 | PG40s | Epic | TARGETuner

$20 OFF

RIGblaster Advantage | RIGblaster Blue

$30 OFF

CLRdsp | CLRspkr

For a complete list of product rebates, visit the online link:

www.westmountainradio.com/holiday19

We recently had a customer who mentioned we might consider writing about Linux operating systems because "it is used more than you think". I have actually been promoting the use of Linux in a ham radio environment for more years than I care to remember, and certainly the number of users is growing all the time.

There are many good reasons to use a Linux operating system, and ham radio applications are well-supported by a variety of programs.

Long gone are the days when you had to be a computer whiz kid to get Linux onto your PC. Nowadays you can burn a USB flash drive with an image, boot to it and install Linux in a matter of minutes. You don't even have to install it, as some Linux distributions are happy to run from the flash drive directly.

This is a great way to take a Linux test drive or even take your operating system with you wherever you go.

You might also consider one of the small, inexpensive, single board computers which are available these days such as the Raspberry Pi. This is a complete PC with a Linux operating system on it and is perfectly suited for ham radio use.

Let's look at a few other benefits of using Linux vs Windows.
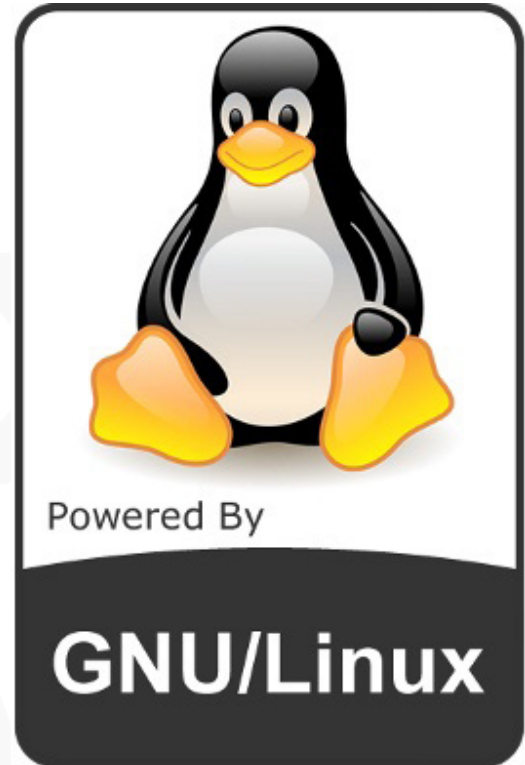
Linux is free, you don't need to pay anyone to install or use it. Linux is not some time-limited program with pop up adverts. It is a real, modern, operating system that is usually 100% compatible with your entire computer hardware.

Because it is not Windows or OS-X, it is in many ways more secure and less likely to be targeted by viruses or malware. It is generally much safer to browse the web or read emails on a Linux computer.

It is available in a number of different distributions (aka 'distro'). This might be difficult for long time Windows users to

think about but it basically boils down to choosing a particular distro (flavor) which suits you. If you don't like the look of one distribution, just try another!

Linux is a great choice for an old desktop or laptop PC that was left behind by Windows. You can find a distribution which will work on even ancient PC hardware! So go ahead and put that old machine back in use instead of consigning it to the landfill. You will find that other Linux users are often very helpful and it may be worth asking around your club members to see if someone will take you under their wing and help you get started.

There are literally hundreds of distributions to choose from but the main well known ones are probably the place to start. I personally use Debian, but Linux Mint, Ubuntu and Manjaro are all worthy contenders.

Page Hit Ranking		
Data span:		
Last 6 months ⌄		Go
Rank	Distribution	HPD*
1	MX Linux	4776▲
2	Manjaro	2715▼
3	Mint	2036▼
4	Debian	1445▲
5	Ubuntu	1417▼

A good place to start is https://distrowatch.com/ which details all of the major distributions. Their "page hit ranking" column on the right hand side is a good way to gauge the popularity of currently used distributions.

Anything in the top 5 is probably a safe bet.

Once you have selected the distribution you want to try, you should burn the downloaded image to a flash drive using a program such as UNetbootin (see https://unetbootin.github.io/) then restart your PC and change the boot up sequence to use the flash drive instead of the internal hard drive.

Booting from a flash drive is usually quite quick and most of the major distributions will start without issue and present you with a desktop in a matter of seconds.
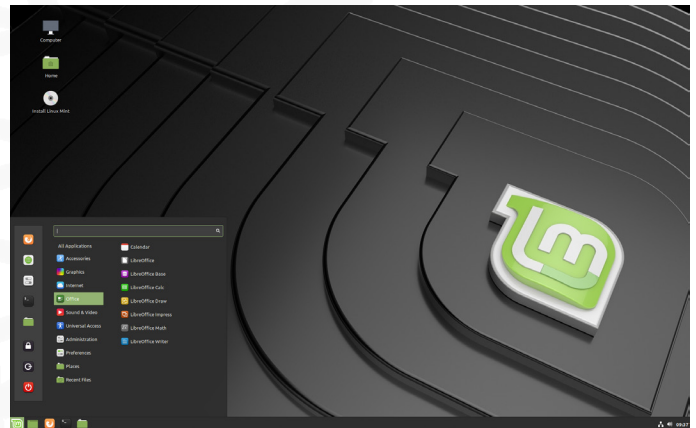
Linux Mint provides a modern, clean-looking desktop for everyday use. Mint is a good choice for someone transitioning from Windows to Linux as a lot has been done behind the scenes to make things "work out of the box".

Many of the well known major ham radio programs are written for Linux too. Software such as WSJT-X (JT and FT modes) and Fldigi (multimode and CW) are available. Other great programs to try are QSSTV (Analog & Digital SSTV), FreeDV (Digital HF voice), & Xastir for APRS use.

Linux in the Hamshack
by: Sholto Fisher K7TMG

There are even special distros available with ham radio software baked in. KB1OIQ has a nice Ubuntu based distribution with many of the programs you will likely use already installed.
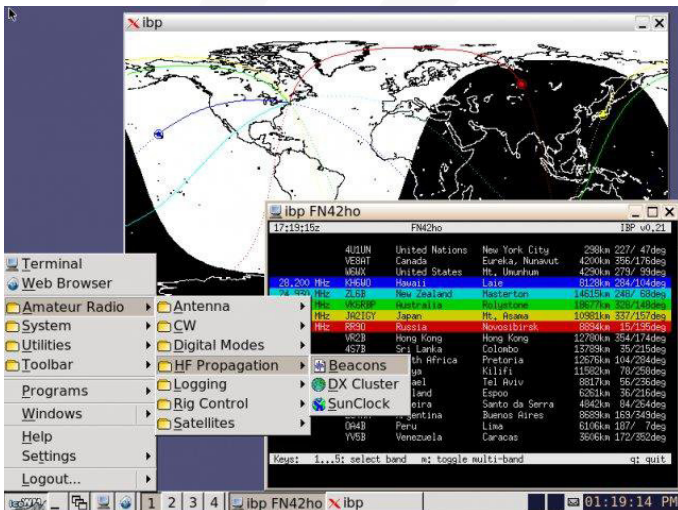
Check out Andy's Ham Radio Linux page located at https://sourceforge.net/projects/kb1oiq-andysham/ for details.

At West Mountain Radio, we have worked hard to ensure that all of our RIGblaster interfaces are supported in all operating systems. Drivers for our interfaces are in the Linux kernel which makes them truly plug and play.

73,

Sholto, K7TMG

The 7th edition of 2019 IEEE Radio and Antenna Days of the Indian Ocean (IEEE RADIO 2019), the international conference was held in Reunion Island (France) from Monday 23rd to Thursday 26th September 2019. I had a tutorial on amateur radio communications there, and this time I wanted to include even more practical demo and display than before. In that direction, I obtained a temporary French license for transmitting amateur radio signals and two special call-signs: TO0MPB and TO019IEEE. (TO0MPB was chosen to have a similar suffix as my original call-sign YT7MPB so to allow easier communication, while TO019IEEE was chosen to celebrate that IEEE event in 2019.)

Fig. 1 & 2 – Conference registration desk

As usual, I wanted to announce my presence by using local APRS (Automatic Packet/Position Reporting System) networks. For that purpose, my equipment included RIGblaster Plug & Play. The initial setup included some HF equipment, kindly provided by local radio amateurs at Reunion Island. I intended to use it for BPSK31 mode, with RIGblaster Advantage.

Having in mind geographical configuration of surrounding terrain as well as the distance to the other islands in the area, it was not expected that APRS communication would reach many recipients, if any.
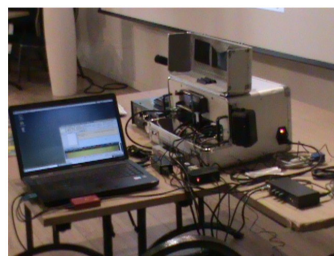

Fig. 3 & 4 – RIGblaster Plug & Play (left) and RIGblaster Advantage (right); The conference room
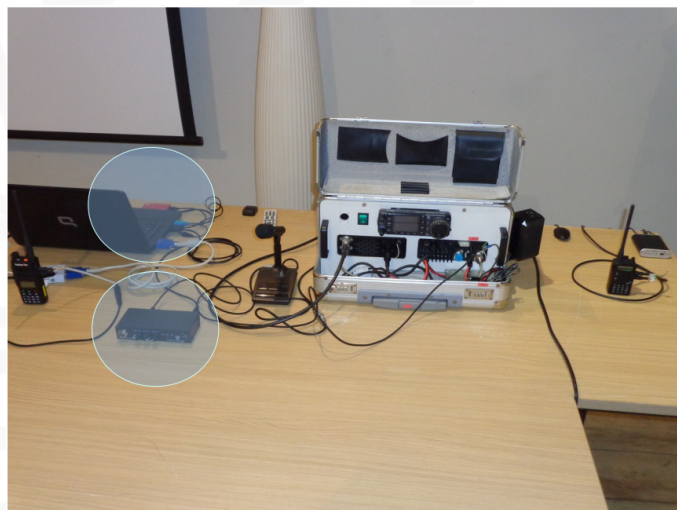

Fig. 4 – RIGblaster Plug & Play (top) and RIGblaster Advantage (bottom)

Fig. 5 & 6 – The equipment table in the conference room; Participants

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Fig. 7 & 8 – Mounting HF 'Inverted-V' wire antenna; Opening ceremony

Fig. 9 & 10 – Invited speeches (followed by my tutorial session & demo)

Fig. 11 & 12 – The auditorium; The amateur radio session

Fig. 13 & 14 – RIGblaster Plug & Play and the APRS map were displayed all 4 conference days!
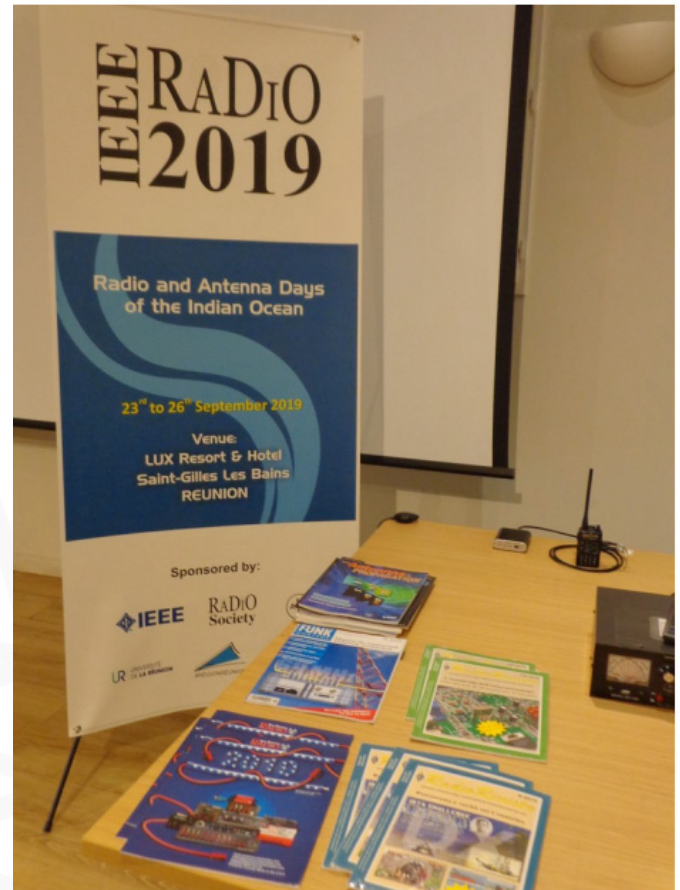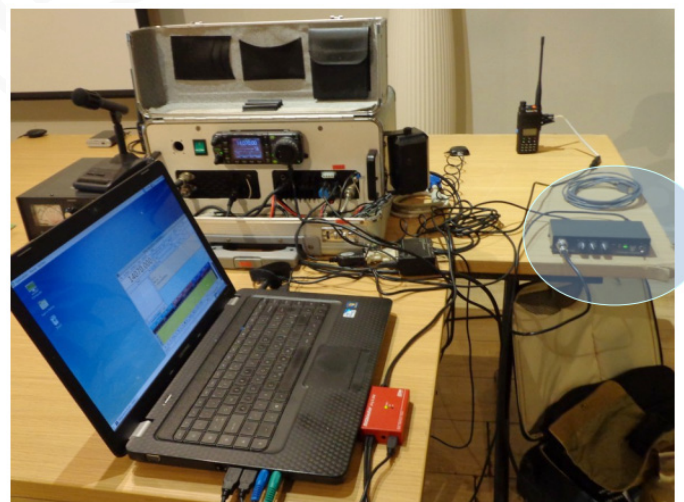

Fig. 15 & 16 – West Mountain Radio production (above) and RIGblaster Advantage (below) were promoted all 4 conference days!

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Fig. 17 & 18 – Participants showed interest in technical equipment

The West Mountain Radio RIGblaster Plug & Play performed very well and after more than 3 years of use now, it is still reliable. The RIGblaster Advantage was also excellent. Both interfaces were connected to the same laptop computer, so the operations could be done in parallel, simultaneously. Although local conditions (lack of developed APRS radio network on the island; absence of BPSK31 operators in that part of world) did not yield some spectacular results in radio contacts, the 4-day event gave a plenty of opportunities for spreading awareness on amateur radio among the academic & research audience, and to bring attention to the modern electronics designs for digital 'data' modes, including sound-card ones.

My next conference travel shall happen in December 2019 for a large engineering event in Goa, India, and for visiting universities and amateur radio groups in that country. West Mountain Radio products will also be proudly displayed there!

73,

Miroslav "Misko" Skoric
YT7MPB

Special Event Station WW0WWV : September 27 to October 2, 2019

Every so often, you experience one of those big "life changing moments". Maybe it was graduating from school, meeting your significant other, or getting a new job. Or just maybe, it was that moment you decided to become a ham! Many reading this article may not remember exactly when the amateur radio bug bit them – but I do – because I am still a pretty new ham. In fact, two short years ago the ham radio hobby was not even on my radar screen.

All that changed in October 2017. My wife and I had just arrived in Colorado to visit our kids. Sunday afternoon, driving down from an enjoyable family day in the mountains, my phone rang. It was old college buddy Bob Schmid, WA9FBO. We became friends many years ago in engineering school. Bob has lived most of his adult life in Colorado and runs S-COM, LLC. If you've ever talked on a 2 meter repeater, there is a pretty good chance one of his controllers handled your traffic. I assumed he was calling to set up lunch.

But instead Bob said, "If you can be in Ft. Collins tomorrow at 10:00 AM, you can have the one remaining open spot on a very special technical tour of Radio Station WWV that is scheduled with our local amateur radio club!" He explained the station is not open to the general public, and such events were quite rare. Although I was not a ham at the time, Bob remembered my interest in radio, and knew I regularly attended local swapfests, looking for that next great electronic gem. Of course, I jumped at the chance .... and my life changed.

Arriving in Ft. Collins that fateful Monday morning, the group was greeted by massive towers, huge transmitters, antenna tuners befitting an epic science fiction movie, all patiently explained by an extremely knowledgeable staff that had been doing "big radio" their entire lives. Departing several hours later – little did I know I'd been bitten by a crazy radio bug!

One of WWV's Single Band, Half-Wave, Vertically Polarized, Center Fed Dipoles
(aka: modified sleeve antenna).

Several months later and now severely infected with "radio" – I had passed all three amateur license exams, made countless trips to our HRO Milwaukee store drooling over equipment, and finally managed to convince a few backyard trees that antenna wires were not their enemy. It took a while, but eventually I was on HF and talking to the world. What a great hobby!

In March 2019, when the Northern Colorado Amateur Radio Club (NCARC) issued a general "Call for Operators" to work a Special Event Station commemorating the 100th Anniversary of radio station

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WWV, friend Bill Schnell, AC9JV and I quickly submitted our applications. Still pretty new to the hobby, I was not sure I would be accepted, and was thrilled when confirmation arrived. Now we just had to wait six long months for the celebration to begin. During the wait, I honed my operating skills working local special event stations for Field Day and the International Lighthouse weekend.

Summer finally passed, and on September 27, 2019 after an intense year of planning - the incredible NCARC technical team, with help from other Colorado area ham radio clubs and several major equipment vendors went "On the Air" with Special Event Station WW0WWV. Over the next five days, they were heard around the world and worked by thousands of hams eager to log that unique station.

WW0WWV Special Event Station (looking north), with WWV in the background. Four transmitters covering 160–10 meters (all modes), three additional specialty stations, and more than a dozen antennas!

It was not without its challenges, though – both technical and bureaucratic. WWV is part of the National Institute of Standards & Technology (NIST) - an arm of the Department of Commerce – which, of course, is part of the US government. They

don't let just anybody set up a radio station outside their perimeter fence. And even if they did, there is a pretty good chance much of that new station's equipment would severely object to operating in the impressive 120,000 watt near field radiation from WWV (time signals) and WWVB (which sets your "atomic clocks").

Capturing the Exact Time of our visit - one of WWV's redundant Time Code Generators.

So, after a lot of bureaucratic wrangling, with able assistance from WWV's Engineer-In-Charge Matt Deutch, N0RGT and his ham-populated staff; the paperwork gods smiled down - and the stations went up.

And what an event it was! Four primary, frequency agile, all mode stations covering 160 to 10 meters on CW, SSB Phone, and Digital FT-8. Three more specialty stations for Satellite, 6M meteor scatter, and Case Western University's propagation study. Transceivers from Elecraft (K3S) & Flex (6600M), Elecraft KPA500 watt amplifiers for all stations (except 30 meters), two SteppIR beams, a large assortment of verticals, dipoles, and yagi's covering

all bands. At least a dozen, maybe as many as fifteen antennas. And tying it all together were networked computers running N1MM Logging Software and WSJT-X. Think of it as a Field Day site on steroids – with all equipment somehow operating harmoniously inside the previously mentioned 120,000 watt near-field radiation from WWV & WWVB. A remarkable accomplishment and testimony to the care, technical skill, and extraordinary planning of WW0WWV's capable staff.

W9KEY and AC9JV – Relaxed and Working the Pile-Up at Special Event Station WW0WWV. Thanks to everyone who "called" that day – It was a blast!

So what was it like to operate a highly desirable Special Event Station from 5000 feet above sea level, running state of the art transceivers, 500 watt amplifiers and beam antennas? One word - "Intense"!! Both Bill, AC9JV and I were "pretty busy", being fortunate to have generally good band conditions on 40 & 20 meters for much of our operating shifts. Yes, there were lulls, but nothing like those experienced by the "night shift" crews.

Over the 5 day period, WW0WWV logged over 10,600 contacts. I am confident that decent nighttime band conditions during a better part of the solar cycle would have easily doubled, if not tripled that number. Bill and I had an absolute blast with impressive pile-ups during much of our on-air time. In an extraordinary coincidence, Bill, Amanda (from Ham Nation), and I all exactly tied for the 18th spot on the QSO list, putting us in the top 20% of the Operators. An acceptable result considering we each only worked a single 2 hour shift and shared the hot seats with some very capable operators from across the country - who often battled challenging band conditions.

WWBV has three Continental Electronics 50 kW transmitters, two active and one standby.

Although we made the long trek from Wisconsin to Colorado specifically to operate WW0WWV, we also managed to secure a coveted ticket (only 100 issued) to attend the 100 year anniversary party on the exact date WWV turned 100 years old – October 1, 2019. The lucky ticket holders, including scientists from NIST's Boulder, CO facility, as well as government

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officials and visiting hams were treated to three excellent presentations by NIST Director and Undersecretary of Commerce, Dr. Walter Copan, followed by Dr. P. J. Erickson W1PJE, Assistant Director of MIT's Haystack Observatory, and finally WWV Staff member Glenn Nelson, who presented a fascinating look back over WWV's 100 year history.
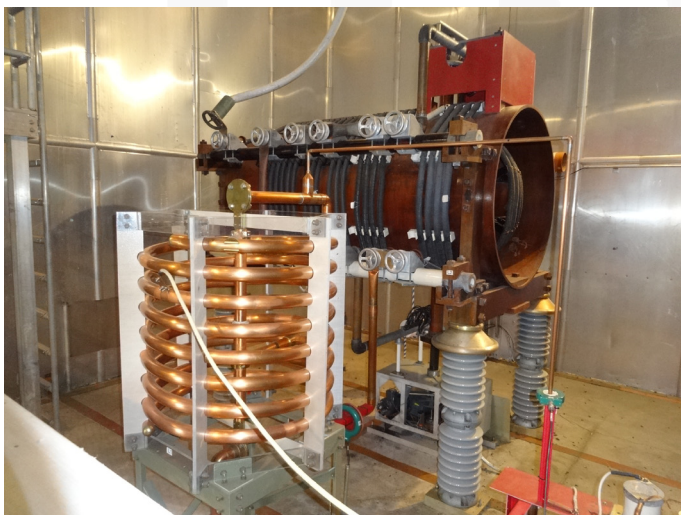
Massive WWVB Helix House Automatic Antenna Tuning Components, including Variometer.

WWV's powerful signals continue to be an important tool in the ongoing study of atmospheric science and radio propagation. Hams can learn more about current activities and directly participating in a massive propagation data collection project slated to coincide with the next total solar eclipse in 2024. See the Ham Radio Science Citizen Investigation website at www.HamSCI.org for more details.

And finally, my personal thanks to WWV's Bill Yates, KE0UZT for his comprehensive WWV facility tours that were specially provided to the almost 100 ham radio operators from around the USA that arrived to work WW0WWV's Special Event Station.

It was a real treat to see such incredibly powerful transmitters and massive antenna arrays "up close".

And for me – this return to WWV two years after my first visit was a true "pilgrimage back to Mecca", from a ham radio perspective. Because without that fateful encounter with the NCARC group and their special 2017 technical visit to WWV, I would not be a ham today. I only wish it would have happened 10 or 20 years earlier. One thing I have already learned about amateur radio – there's an awful lot to learn. I should have started sooner!!

73,

Fred, W9KEY

If you want to learn more about WWV / WWVB's fascinating history or impressive technical details, check out these two papers written by Glenn Nelson, AE0GF:

1) WWV 100 Year History Paper (2019):
https://www.nist.gov/publications/century-wwv-100th-anniversary-commemoration

2) NIST WWV / WWVB / WWVH Technical Paper (2005):
https://tf.nist.gov/general/pdf/1969.pdf

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