

Never a Better Time to be a  
Ham

KernelCon  
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# Introduction

If you have questions/comments please feel free to ask them anytime. You don't have to hold them until the end of the talk.

If there are other resources similar to these that you think might be useful to people please let the group know.

I've been a ham for over 20 years and am still learning :-)

Hopefully this will be an interactive and productive session.

Slides will be at <https://grothe.us>

# Ham Survey

## Quick Survey:

- How many of you have your Amateur Radio License?
  - Technician
  - General
  - Amateur Extra
- How many of you think you need Morse Code to be a Ham?
- How many of you think you'll be Hams by next year?

# Overview of Talk

- Never a Better Time to be a Ham
- The six excuses
- Test Notes (Technician/General/Amateur Extra)
- Linux and Amateur Radio
- Open Source and Amateur Radio
- Five Cool Things
- Sites/Resources to hit

# Never a Better Time to be a Ham

- When before now was the Best time for Amateur Radio
  - Open to discussion - but a popular consensus is after the Korean War
  - Why?
    - Availability of surplus military radio equipment (tubes)
    - Large population of former military re-entering civilian life
    - Many Amateur Radio clubs formed (1945, and 1950s)

# Never a Better Time to be a Ham

- Why NOW is the best time to be a ham
  - Radios are better and cheaper than they have ever been
  - You can study for exams by
    - Books
    - Videos (youtube)
    - in-person or online classes
    - applications for phones and tablets
  - Testing has never been easier
    - Online/In-person
    - Online tests every 15 minutes

# Quick Note

The Technician Amateur Radio Question Pool will be updated July 1st, 2026. General July 1st, 2027, Extra July 1st, 2028. 83 days away as of today.

The new question pool has been released and will include some topics such as

- Digital Radio - talk about DMR
- Winlink - sending email over radio. Good for emergencies
- New licensing procedures - receiving licenses etc.

If you're going to be taking your test after July 1st, recommend an updated guide

# The 6 Excuses

## The 6 Most Common Excuses for not becoming a Ham

1. Can't find a good Study Guide
2. Can't find practice exam
3. Can't find a place to take an exam
4. Can't find a good radio
5. Can't afford it
6. Don't know where to start

# Can't find a Good Study Guide

## Four types of Study Guides

Books - especially free books

Youtube Channel training

Classes In-person and Online

Apps for your phone & tablet

Keep in mind the Question pool for all of the Amateur Radio exams are publicly available.

# Can't find a Good Study Guide - Books

A Great Resource - KB6NU's study guides

KB6NU - has a good set of study guides.

The Technician class is available for free in .pdf for download. His guides are available in electronic format for \$9.95 and in paperback for \$20.00.

He hasn't updated his Technician class to the new pool yet, but he will be soon.

# Can't find a Good Study Guide - Books

Another Great Resource - Hambook.org

[Hambook.org](http://Hambook.org) has study guides for the current Technician class and a draft for the revised question pool available. Has QR codes linking to Hamstudy directly as well.

They are free to read online, or about \$10.00 for the digital and \$20.00 for paper copies

[Hambook.org](http://Hambook.org) also has a draft for the General class and are working on the Extra as well.

# Can't find a Good Study Guide - Videos

Another Great Resource - Ham Radio Crash Course

Series of 12 Videos that cover about everything you need to know to pass the current exam

11 are content. 12 is info about sitting for the exam. Recommend the 12th one even if you don't use the study materials.

There will be a new series for the new Technician class later this year.

Lot of other good free content on Youtube as well. Udemy has several courses available as well

# Can't find a Good Study Guide - Classes

Find a local user group - <https://www.arrl.org/clubs>

Most user groups offer training/testing sessions. Sometimes they charge a fee which may include a study guide, or be free. Great resources

Find an online training class - There are quite a few

- Ham Radio Prep - <https://www.hamradioprep.com>
- Ham Radio School - <https://www.hamradioschool.com/>
- Some clubs do online training as well

# Can't find a Good Study Guide - Apps

There are a bunch of training apps available as well for Android and iOS

## Tips

- Look for free demos
- Try several of them
- Some are basic questions pools, others have additional notes

# Can't find a Practice Exam

Lot of options here as well

Will mention just a couple of guides

[HamStudy.org](https://www.hamstudy.org) - <https://www.hamstudy.org> - great resource. Sign up for a free account. Easily take practice exams

[HamExam.org](https://www.hamexam.org) - <https://www.hamexam.org> - has flash cards, practice, exams, question pool access, pointer to resources

# Can't find a Practice Exam

If you want to be totally offline. Hamexam is available for Linux, Mac OS X, and runs under Windows Subsystem for Linux

Also a lot of free/cheap programs for Mobile phones

# Can't find a Place to Take an Exam

Three basic Places to check

Your local User Group - many user groups offer exams periodically

ARRL - pointer to in-person exams

<https://www.arrl.org/find-an-amateur-radio-license-exam-session>

ARRL - pointer to online exams

<https://www.arrl.org/online-exam-session>

# Can't find a Place to Take an Exam

Ham Study - pointer to their exam search engine

<https://hamstudy.org/sessions>

Is a good search engine for exams as well.

Keep in mind some of the online exams are available every 15 minutes online.

# Can't Find a Radio

There are a lot of good cheap radios available nowadays

Baofeng UV-5Rs are a cheap 5/8w radio - available for \$30+  
Quansheng UV-K5 are inexpensive as well - available for \$30+

These radios are powerful enough to talk to a local repeater

Alternative firmwares are available for the the Quansheng and some models of the Baofengs. These add a lot of potential new features to the radios.

A lot of clubs have loaner radios, to try out.

# Can't Afford It.

How much does it cost to become a Ham?

FCC License Fee - \$35 / good for 10 years

Exam Fee - \$15 / some online groups waive this

First radio - \$35 - \$50

So for about \$100 minimum you can get your technician class license and start being a Ham

# Don't know where to Start

My suggestion is find your nearest club and go to a meeting

<https://www.arrl.org/clubs>

You can be a ham without interacting with your local user group, but it really does help

# Testing Notes

Quick notes on the test

The Technician Question Pool is 411 questions

A real test consists of 35 Questions

You need to get 74% or 26 out of 35 to pass

General is 454 questions

Size and passing scores are the same as Technican

Extra is 622 question

Size is 50 questions, and passing 74% or 37 correct

# Linux and Amateur Radio

There are several Linux distributions that have a lot of Amateur Radio Software

Debian - has a pure blend for Amateur Radio - this includes a lot of packages (hamexam, antenna calculators, CHIRP programming tool for amateur radios, antenna design and many more tools

Ubuntu has a group with similar packages to Debian

Fedora - has a SIG group and a lot of software packaged for Fedora.

Contain a lot of the same packages - good way to add to your distribution

# Linux and Amateur Radio (cont'd)

There are several custom Linux Distributions for Amateur Radio

AndyOS - was a custom Linux distribution. Is now a script that installs all of its packages on top of a Debian-based system. Installing everything takes several days

DragonOS - A customized Linux distribution based on Lubuntu. Designed to make it as easy as possible to do Software Defined Radio

Recommend firing up a virtual machine and giving these a spin to see which one you like best

# Open Source and Amateur Radio

There are alternative firmwares available for radios

OpenRTX - Alternative firmware for quite a few radios

OpenGD77 - Alternative firmware for radios with GD77 chipset

Alternative firmwares open up many new capabilities

New modes, enhanced programmability, customization and you can also play snake on some of them

Some of the firmwares are open source, some aren't.

# Five Cool Things

- Get an SDR receiver for less than \$40.00
- LoRa - Long Range Radio (MeshCore and MeshTastic)
- 44Net - get an ipv4 address before they run out
- Github Awesome Guides Amateur Radio
- Hackaday website

# Get an SDR receiver for less than \$40.00

You can buy an RTL-SDR for about \$40.00

This opens up the whole world of receiving and capturing big chunks of the radio band via Software Defined Radio

OpenWebRX - is very cool with it

# LoRa - Long Range radio

LoRa is a store and forward technology using cheap radios to create a mesh network

It is new and it is exciting. You can do this without an amateur radio license but you have lower power limits on the system.

Very cool system being built out

Dataslayer on youtube has a lot of good information about this

<https://www.youtube.com/@DataSlayerMedia>

<https://www.womamesh.net>

# 44Net - get an ipv4 address

44net allows you to get a global public ip address with your amateur radio license

There is a whole community based around experimentation with this.

<https://connect.44net.cloud/>

# Awesome Guides Amateur Radio

Quick Search on google for "github awesome amateur radio"

Returns several very interesting sites

<https://www.google.com/search?q=github+amateur+radio+awesome>

You can do this for about any topic and get some great results back. E.g. docker or kubernetes.

# Awesome Guides Amateur Radio

Couple of interesting sites

firmware etc.

<https://github.com/DD5HT/awesome-hamradio>

manuals/information

<https://github.com/mcaserta/awesome-amateur-radio>

# Hackaday

Hackaday is a great website based around experimenting with technology

Recommend you hit the site <https://hackaday.com/>

Has topics such as "Amateur Radio", "Radio Hacks", and many others. Great site to do research and learn new things

# Summary

Amateur Radio is quite simply the best it has ever been

- Radios are better and cheaper than they have ever been
- ARDC has some cash from sales of part of the 44 ipv4 spectrum
- Guides/Learning tools have never been better
- Some radios are bluetooth and can be programmed via phone

# Summary

Still there are challenges

- ARRL and Amateur Radio groups have to fight for spectrum. There are companies that want parts of the Ham radio spectrum for commercial use
- The analog to digital transition is underway in the Amateur Radio space
- The age of the average person in the User groups continues to climb
- The M17 protocol brou ha ha
- Conflicting systems: Meshcore vs. Meshtastic

# One Last Item - AARC Meeting Friday

April 10 - This Friday @ 7:00pm Meeting

Ak-Sar-Ben - Amateur Radio Club

<https://www.aksarbenarc.org>

Location

American Red Cross

2912 S 80th Ave

Omaha, NE

This month's topic -Ham Radio Village bridges hacking with hams

Speaker: HamVillage.org

Thanks and 73 (best regards in Ham  
Radio)

Thanks for Listening

Any Questions?

# Links

KB6NU's home page

- <https://www.kb6nu.com/>

KB6NU - Link to Technican Study Guide

- <https://www.kb6nu.com/wp-content/uploads/2023/03/2022-no-nonsense-tech-study-guide-v2-20230204.pdf>

# Links

Hambook.org

- <https://www.hambook.org>

Current Technician Question Pool

- <https://hambook.org/tech2022/>

Draft New Technician Question Pool

- <https://hambook.org/tech2026/>

# Links

## Ham Radio Crash Course

- <https://www.youtube.com/@HamRadioCrashCourse>

## Ham Radio Crash Course - Sitting for your license

- [https://www.youtube.com/watch?v=3BpHdaM3ApA&list=PL1KAjn5rGhixvjb\\_jMzFWmbP97-t9Kyxk&index=13](https://www.youtube.com/watch?v=3BpHdaM3ApA&list=PL1KAjn5rGhixvjb_jMzFWmbP97-t9Kyxk&index=13)

# Links

## Club training

- <https://www.arrl.org/clubs>

## Online training

- Ham Radio Prep - <https://www.hamradioprep.com>
- Ham Radio School - <https://www.hamradioschool.com>

# Links

## Practice Exams

- HamStudy.org - <https://www.hamstudy.org>
- HamExam.org - <https://www.hamexam.org>

# Links

Where to take an exam

ARRL - Search Engine for in-person exams

<https://www.arrl.org/find-an-amateur-radio-license-exam-session>

# Links

Where to take an exam

ARRL - pointer to online exams

<https://www.arrl.org/online-exam-session>

Ham Study - pointer to their exam search engine

<https://hamstudy.org/sessions>

# Links

Linux and Amateur Radio

Debian Hamradio Pure Blend

- <https://www.debian.org/blends/hamradio/>

Fedora Special Interest Group (SIG)

- <https://fedoraproject.org/wiki/AmateurRadio>

# Links

Andy's Ham Radio Linux

- <https://sourceforge.net/projects/kb1oiq-andysham/>

DragonOS - SDR Linux distribution

- <https://cemaxecuter.com/>

# Links

Alternative firmware and Amateur Radio

OpenRTX project

- <https://openrtx.org/#/>

OpenGD77 firmware

- <https://www.opengd77.org/>

# Links

Get an SDR receiver for less than \$40.00

- <https://www.walmart.com/search?q=rtl-sdr>

44Net - get an ipv4 address before they run out

- <https://connect.44net.cloud/>

# Links

LoRa - Long Range Radio

- <https://www.youtube.com/@DataSlayerMedia>

OmaMesh

- <https://omamesh.net/>

# Links

## Awesome Guides Amateur Radio

- <https://www.google.com/search?q=github+amateur+radio+awesome>

## Firmware etc.

- <https://github.com/DD5HT/awesome-hamradio>

## Manuals/information

- <https://github.com/mcaserta/awesome-amateur-radio>

# Links

Hackaday

- <https://www.hackaday.com>