PINPOINT APRS SETUP on a stationary Windows 7 Computer with IC7100 Basestation

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This tutorial is about getting a digital base station set up as an RF Igate - that sounds technical but it just means that you will use your transceiver to listen for APRS transmissions and send them to the internet, an Igate is an "internet gateway" in APRS vernacular. If your computer is set up for digital communications with your radio than it can be used to transmit and receive APRS packets. Everything you hear and transmit will be stored and visible on the website at: <u>http://www.aprs.fi</u> which shows a map of your location and all APRS activity your area.

At a minimum you will need the following:

- A transceiver capable of 144.390 mhz tx/rx
- A soundcard or radio interface to the Transceiver
- The software based TNC or soundmodem by UZ7HO, this acts as a modem to translate the APRS packets which are transmitted in AX.25 coding
- APRS software, the one I am using is Pinpoint APRS and is free but appreciate Donations

Optional items:

• A USB GPS - not required for a stationary lgate system

To get started on APRS you want to be able to interact with the APRS network, in order to do so you need to request your APRS-IS passcode from APRS-IS, you can email them, instructions are here: http://aprsisce.wikidot.com/doc:passcode

Email address: aprsisce-owner@yahoogroups.com

A shortcut is to use one of these forms and get it using your callsign - make sure it's just your callsign like this "AG7GK" no "-1" etc.

Navigate to either of these links and enter your call sign. The online passcode generator will return your personal passcode. <u>https://apps.magicbug.co.uk/passcode/</u>

or http://n5dux.com/ham/aprs-passcode/

The APRS IS passcode is used if you want to interact on any device with their network including your phone, computer, etc.

You will also need to register at <u>http://www.aprs.fi</u> which is the de facto APRS activity site.

Before you start go into your FLDIGI software and make note of your soundcard settings under "Configure > Soundcard", make note of your "PortAudio" capture and playback values, they will be needed later in your setup.

Note -	mine	are:												
Fidig	i configu	ration											-0	-
Operator	UI Wat	terfal	Modems	Rig	Audio	ID	Misc	Web	Autos	tart	10	PSM		
Devices	Settings	Right	channel	Wav	Alerts									
	Closs	5								0	evice		¥	
	CiDer	thude		C	apture:	Micro	phone	1 (3- US	S8 Audio	o co	DEC)	2) •]
	Cra	(AUDO		Pla	yback:	Spea	kers (3- USB	Audio C	ODE	c)		\$]

On your computer you will be connecting to, download the following software:

SOUNDMODEM SETUP

Download from: <u>http://uz7.ho.ua/packetradio.htm</u> http://uz7.ho.ua/modem_beta/hs_soundmodem21.zip

Start up "soundmodem" and go into "Settings > Modem"

The settings below should be adequate for your configuration. Primarily we are setting that the modem is listening for 1200 baud ax.25 packets.

Modem filters	ch: A		Modern filters	ch: B	
BPF Width	1400	Show	BPF Width	1400	Show
TXBPF Width	1600	Show	TXBPF Width	1600	Show
LPF Width	650	Show	LPF Width	650	Show
BPF Taps	256		BPF Taps	256	_
LPF Taps	128		LPF Taps	128	_
🔽 Default se	ttings		🔽 Default se	ttings	
V KISS Optin	nization filter h.Δ		Modem tupe c	filter	
Mode AF	SK AX 25 12	00bd 👻	Mode AF	SK AX 2	51200bd 👻
TXDelay 900) ms	ec	TXDelay 15	0	msec
TXTail 150) ms	ec	TXTail 25		msec
A 11 mil 0	pai	rs	Add. RX 0		pairs
Add, HX 10	100 11		Add. RX shift	30	Hz
Add, RX 10 Add, RX shift	30 Hz				

Next go to "Settings > Devices"

From the FLDIGI soundcard info, select your output device (the "Playback" device in FLDIGI)

Select the "Input device" as the "Capture" device in FLDIGI)

If you have Hardware PTT than select that, otherwise if you are using a Signalink, your signalink will handle PTT to the radio.

Settings	×
Sound Card	
Output device Speakers (3	USB Audio CODEC)
Input device Microphone	(3- USB Audio CODEC 🔹
Dual channel	TX SampleRate 11025
TX rotation	TX corr. PPM
I Single channel output	RX SampleRate 11025
Color waterfall	RX corr. PPM
Stop waterfall on minimize	e Priority Highest 🔹
Minimized window on sta	rtup
Server setup	
AGW/PE Server Port 8000	Enabled
KISS Server Port 8100	Frabled
PTT Port	
Select PTT port COM6	Dual PTT
	Swap COM pins for PTT
ок	Cancel

After you are set up -tune your radio to 144.390mhz which is the standard APRS frequency in all of North America (Canada, Mexico, the US and some of Central America)

You should hear some screeches and see text pop up in the soundmodem that looks like this when you hear and decode:



NOTE: when you minimize the SoundModem it goes into your systray as an Icon, it is still running, look for it by your clock like this:



VIRTUAL COM PORT (Required if using Rigcontrol - not required if you are using an external Soundcard interface with built in PTT like Signalink)

Download this virtual com port and point a new com port to your PTT port http://www.cantab.net/users/john.wiseman/Documents/CAT7200.html

This makes a new Port available to point to the "actual" PTT com port of my USB soundcard. In this case the PTT Port for the IC7100 is COM3 If you are using a signalink you should not need to use this



PINPOINTAPRS SETUP

Download and install:

http://www.pinpointaprs.com/

This software is the brains for your view into APRS on your computer. All of the above is just infrastructure. In Pinpoint APRS you will be able to see all of the weather stations in your area, hear and see mobile and stationary APRS stations, and send and receive messages to APRS users whether RF or Internet based.



Setup:

Go to "Tools > Options"

Change your Callsign and pick an SSID, here's a listing of SSID's and what they mean.

SSID Description

- -0 Your primary station usually fixed and message capable
- -1 Generic additional station, digi, mobile, wx, etc
- -2 Generic additional station, digi, mobile, wx, etc
- -3 Generic additional station, digi, mobile, wx, etc
- -4 Generic additional station, digi, mobile, wx, etc
- -5 Other networks (Dstar, Iphones, Androids, Blackberry's etc)
- -6 Special activity, Satellite ops, camping or 6 meters, etc
- -7 Walkie talkies, HT's or other human portable

- -8 Boats, sailboats, RV's or second main mobile
- -9 Primary Mobile (usually message capable)
- -10 Internet, Igates, echolink, winlink, AVRS, APRN, etc
- -11 Balloons, aircraft, spacecraft, etc
- -12 APRStt, DTMF, RFID, devices, one-way trackers*, etc
- -13 Weather stations
- -14 Truckers or generally full time drivers
- -15 Generic additional station, digi, mobile, wx, etc

From <<u>http://aprsisce.wikidot.com/doc:ssids</u>>

NOTE - you cannot use -0 in this software, I used -1 to indicate my home QTH

PRS	TNC GPS Ma	AP	RS-IS Misc		Donate
	My APRS Call sign +	SSID	AG7GK-1		
	APRS Path		WIDE1-1,WIDE2	1 🕶	
	Position comment		PinPoint v2		
	Station icon		< 俞 >]	
	Overlay (type table +	symbol d	irectly in box + Enter	key) 1	<u> </u>
_	APRS DigiPeater set	tings —			- A
	Enable APRS DigiPe	ater (Fill-in	Digi. For non-KISS	TNC's o	nly for the moment
	My DigiPeater alias		WIDE1-1,WIDE2		
	APRS Position Beac	oning set	lings		
V	Enable APRS beaco	ning			
	Beacon at least ever	у	30 minutes	0	seconds
	Beacon a minimum o	fevery		3	miles
	Beacon when heading	ng chang	es more than	35	degrees
	Beacon my altitu	de			
	Beacon my coun	se and sp	eed		
	Maximum speed repo	orted via r	adio	65	mph

Next Tab - TNC

Note the last field for "Port" should be equal to the "Kiss Server Port" from the soundmodem:

	KISS Server Port	8100		Enabled
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This means that Pinpoint APRS is simply getting the decoded packets that the soundmodem makes available over a simple locally based

webservice on your computer.

	GPS Map	APR	S-IS Misc		D	onati
TNC	type net	work KIS	Smode	•		
	Connect TNC a	utomatic	ally when PinPo	int starts		
Serial T	NC Settings					
COM port	COM6	•	Serial Speed	115200	•	
Data bits	8	•	Parity	None	•	
Stop bits	1	•	Flow control	Hardware		٠
RF Speed	1200	•	EOL Char	CR	•	
	Send startup sc	ript wher	n connecting to	TNC		
V 5	Send shutdown	script w	hen disconnecti	ng TNC		
	rk KISS TNC S	iettings				_
Netwo				_		
Netwo	Paddmen or II	DI 12	7001			
Netwo	P address or U	IRL 12	7.0.0.1			
Netwo	P address or U Po	IRL 12 rt 81	7.0.0.1			
Netwo	P address or U Po	IRL 12 nt 81	7.0.0.1			
Netwo	P address or U Po	IRL 12 rt 81	7.0.0.1			
Netwo	P address or U Po	IRL 12 rt 81	7.0.0.1			

Optional GPS settings: If you have a USB GPS receiver connected on your computer use these settings, otherwise set your Initial position manually from your known lat/Lon and altitude.

	мар	APR3-15	MISC		-	
Use GPS (data coming f	rom TNC (P	assthrough mo	de)		
COM port	COM7	•				
Speed	4800	•				
V Connect G	PS automatic	ally when P	InPoint starts			
Process all	GPS NMEA	sentences				
Process or	ne type of GP	S NMEA se	ntence			
Sentence	SGPRMC					
Interval	3 -	seconds				
Display format	Degrees M	In day Cas	and - (n n 77)	00: 32	01" W)	
	2020001	inutes, sec	onds (e.g. 77	00 32		•
Initial positi	on	inutes, Sec	onas (e.g. //	00 32		•
Initial positi	on	179890	A	titude	6425	ħ
Initial positi Lattude	on	179890 156048	A	titude	6425	ŧ.

Map settings - change as you see fit

- -	TNC	GPS	Мар	APRS-IS	Misc		Donat
Call	sign tool	tip / Sta	tion disp	ay mode			
0	Only sho	w call si	gn tooltig	ps on mouse	over		
	Show all	call sign	n tooltips	all the time			
0	Show ca	ll sign to	oltips in	space separ	ated list below, res	t on mou	se over
0	Only sho	w statio	ns in spa	ace separate	d list below, ignore	all other	5
V	Show my	position	n on the	map			
	Center th	ne map o	on receiv	red APRS po	sition reports		
1	Center th	e map o	on my po	noition			
4	Double o	liching (toome in			
	proverse a	acturing o	on map a	200113 111			
	Show cri	osshairs	at map	center			
	Show on Require	osshairs SHIFT k	at map (at when	center n clicking on	map to place way	points / c	hange positi
Mag	Show on Require	sshairs SHIFT k	at map of at map of cey when gleMap	center n clicking on	map to place way	points / c	hange positi
Map Sym	Show cri Require o provide	sshairs SHIFT k r Goog 24	at map of cey when gleMap Pixel	center n clicking on	map to place way	points / c	hange positi
Map Sym	Show cri Require p provide nbol size GPX im	r Goog 24 port sett	at map of eey when gleMap Pixel	center n clicking on	map to place way	roints / c	hange positi
Map Sym	Show on Require p provide mbal size GPX im ck Color	r Goog 24 port sett	at map of cey when gle Map Pixel tings	center n clicking on Is	map to place way — Station trackir Track Color	opoints / c	s
Map Sym Trac	Show cri Require p provide nbol size GPX im ck Color ck Opact	r Goog 24 port sett	at map at	center n clicking on ls ange	map to place way Station trackir Track Color Track Opacity	opoints / c	s Change
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Map Sym Trac Trac Way	Show on Require p provide abol size GPX im ok Color ok Opact ok Width ypoint Te	r Goog 24 port sett ty 5! 2 set Aj	at map of the set of t	center n clicking on ls ange k bixels	map to place way Station trackir Track Color Track Opacity Track Width Track Depth	repoints / c	s Change % pixels v points

APRS-IS settings: Enter your APRS-IS passcode you got over email if you want to post reports you hear from other stations. This is "good practice" and helps strengthen the information for all users as you fill in gaps in RF signals.

Option	15							
APRS	TNC	GPS	Мар	A	PRS-IS	Misc	1	Donate
1	Enable	RF to IS	iGate v	vhen	connect	ted to AF	PRS-IS	
AP	RS-IS P	asscode	201	94		(Req'd f	or TX on APR	S-IS)
Pa	cket de-	duping	30		Seco	onds		
3	Only iG	ate pack	ets hea	rd din	ectly			
AP	RS-IS S	erver	noa	m.api	s2.net			•
Ser	rver UDF	P Port	145	80]			
	Receive	e Range	Filter	75		mile radi	us from my pos	stion
0	Custom	Filter	(7)	1			1000	
Rest	at							Count

Misc: Change as you see fit. You might want to keep reports for more than 60 minutes, experiment with it.

PHS	TNC	GPS	Мар	APRS-IS	Misc		Donate
-	Misc. a	applicatio	n setting	6			
P	Auto An	iswer AP	RS Mess	ages	Always	•	
	AL	to Answ	er Messa	ge	AG7GK HO	ME STATIO	N AUTO RE
12	Keep La	ast Heard	and Cor	nm Monitor	windows on	top of others	
J	Automat	tically rem	nove repo	orts older that	an 60	minutes	
1	Expand	call sign	in Lasthe	ard window	when click	ing on station	on map
	– Мар с	ache info					
File	- Map c	ache info	o	aron Jones	WSJTX\Ap	pData\Local	GMap.NET\
File	– Map c e Locatio	ache info	Users\A Da	aron Jones tabase(s) [WSJTX\Ap 32.15625	pData\Local MB	\GMap.NET\
File	– Map c e Locatio	ache info	VUsers\A	aron Jones tabase(s) [W5JTX\Ap 32.15625	pData\Local MB	\GMap.NET\
File	– Map c e Locatio	ache info) \Users\A Da	aron Jones tabase(s) [WSJTX\Ap 32.15625	pData\Local MB	\GMap.NET\

Start up Everything:

Start up your APRS-IS Connection and your TNC connection (GPS if you have one connected) Go to "Tools > Connect TNC" and "Tools > Connect APRS-IS" to get things moving



Give it some time and you'll see all the stations you hear pop up on your map view.

Something to try:

Send a message to someone on the APRS network.

Find a friend that you see live on the network, like AG7GK-1 which will be running 24x7 for the next week or two. Go to "Messages" and right click the "Inbox" and click "New message"



Enter the SSID (Callsign + "hyphen" + "suffix") of the station you want to send a message to. IN this case I will be sending to my mobile rig from my base station: AG7GK-9

rom	AG7GK-1	Characters remaining 6
Го	AG7GK-9	Message number 1
send vi		9783-13

Then click "Send"

If you are going to send the message over the internet, than pick "APRS-IS"

Try sending an SMS message from your station to your phone by entering it like this:

To: SMSGTE

In the message body type your cellphone after an @ symbol and a short message like this:

Send	Reply	Forward	Delete
From	AG7GK-1	Characters remaining	21
To	SMSGTE	Message number	1
Send via	🔿 RF 💿 A	PRS-IS	
@602	8192378 Te	ext message to my p	phone

You can now text your base station back and forth from your phone.

Good luck with your experimentation in this excellent systems.

https://www.nowsms.com/doc/submitting-sms-messages/send-sms-from-a-command-line-interface