# Spurpoint

Version 4.3

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# Table of Contents

# Introduction

In 2015, I was invited to provide communication support for the Teton Dam Marathon. Race officials were not certain what our complete role would be, but they knew there was spotty cell phone coverage in some areas of the course.
I organized a team of amateur radio operators to staff about eight of the 13 checkpoints along the course and established a control station at the finish line. The plan: When runners passed a checkpoint, radio operators would call the control station and report the bib numbers. The operators at the control station would keep track of those bibs. When race officials asked about lead or last runners, we could review our logs and report where and when the runners were last spotted.
Paper was messy. The writing was sloppy. It took too long to decipher which runners were where. Even before the end of the seven hour event, I knew there had to be a better way. And now there is!

Spurpoint is the product of many years and many iterations of software to track runners. You configure the event with courses (e.g. 5K, 25K, marathon, etc.) and a list of checkpoints. When communicators report bib numbers, they are recorded in the Sightings page. You can then view reports of the runners by checkpoint (which runners were last seen at what checkpoints) and by course (runners and checkpoints).

Spurpoint allows you to track your volunteers. Create assignments where volunteers will be stationed. These could be the same as the checkpoints, but they could also be rovers or control station assignments. You can log when volunteers check in to their assignment and when they check out. You'll know who is currently assigned and where. After the event you can generate reports of volunteer hours.

Spurpoint also tracks messages. In many of the events that I've supported, we relay information from the checkpoints to race officials. Maybe an aid station is out of cups or there is a runner that needs assistance. When those calls come to the control station, you can log them and track them to ensure they are addressed.

Recently, some local amateur radio operators began using the Automatic Packet Reporting System (APRS). It is similar to GPS, but it uses amateur radio frequencies for beaconing. They can use APRS like a texting system. They send an APRS "text" and the message is stored on an Internet server. Spurpoint can poll the servers for these messages and display them in a table. Users can then copy and paste messages into the Sightings screen or messages window. This is the only feature of Spurpoint that requires an Internet connection.

Although Spurpoint was written with long distance and wilderness trail events in mind, it would work just as well in road rallies or sailing events.

Spurpoint is not a timing program. Yes, there is a timestamp associated with the bib sightings, but it is not accurate down to the millisecond or even to the minute in most cases. I suppose, depending on the accuracy of your reports, you could use it that way, but that is not the purpose for which it was designed.  If you know it takes the average runner 15 minutes to run from checkpoint one to checkpoint two and bid number 234 was last spotted at checkpoint one 40 minutes ago, you'll be able to see that with Spurpoint. If you want to know the *exact* time bib 234 left checkpoint one, Spurpoint doesn't have that information. -- Maybe not at all if bib 234 was not reported by the volunteer, even though bib 234 was actually at checkpoint one. Spurpoint's reports are only as good as the information you record.

Spurpoint is evolving. This is by far the most advanced and feature-rich version I've developed. In the grand scheme of the universe, I have been involved with very few events. However, I am committed to making Spurpoint better. Your feedback and feature requests are always welcome.

[Return to top]

# Installation

One of the strengths of Spurpoint is that it does not need to be installed. You can run it from a USB thumb drive, if you want. Simply download the appropriate zip, dmg, or tar file, extract the files into a directory of your choice. Then launch the executable.

Spurpoint can be downloaded from https://rexburghams.org/spurpoint.html.

## Windows

Spurpoint for Windows has been tested on Windows 10 and Windows 11.

Hardware recommendations:
64 bit processor
2 GB of RAM
250 MB storage (minimum) (plus 100 MB per event)

Download the Windows version of Spurpoint
Create a folder such as c:\Spurpoint.
Copy the downloaded zip file to the new folder.
Extract the files into the current folder.

[***Future Feature***] A default database file (TDM2025.db) is included with the distribution. You are encouraged to open this file in Spurpoint for setup and configuration examples.

## Linux

Spurpoint has been tested on Ubuntu 24.04, Fedora Workstation 41, and Mint 22.1, but will likely run on most all distros.

Hardware recommendations:
64 bit processor
2 GB of RAM
250 MB storage (minimum) (plus 100 MB per event)

Download the tar file from https://spurpoint.rexburghams.org/
Extract the downloaded file into the directory of your choice.
> tar -xvf spurpoint_linux_4.3_tar.gz

Change “4.3” to the version number of the file you downloaded..

The folder should contain the spurpoint executable and the Spurpoint documentation files.

## Raspberry Pi

[***Future Feature***] Spurpoint has been tested on Raspbian [TODO version] on a Raspberry Pi 3B v1.2, but will likely run on most all RPi environments..

Hardware requirements:
64 bit processor
2 GB of RAM
250 MB storage (minimum) (plus 100 MB per event)

Download the tar file from https://spurpoint.rexburghams.org/
Extract the downloaded file into the directory of your choice.
> tar -xvf spurpoint_arm_4.3_tar.gz

Change “4.3” to the version number of the file you downloaded..

The folder should contain the spurpoint executable and the spurpoint.html file.

## Mac

[Not yet available for distribution.]

Spurpoint has been tested on [TODO] platforms.

Hardware requirements:
32 bit processor
1 GB of RAM
150 MB storage (minimum) (plus 100 MB per event)

Download the .DMG file from https://spurpoint.rexburghams.org/

[Return to top]

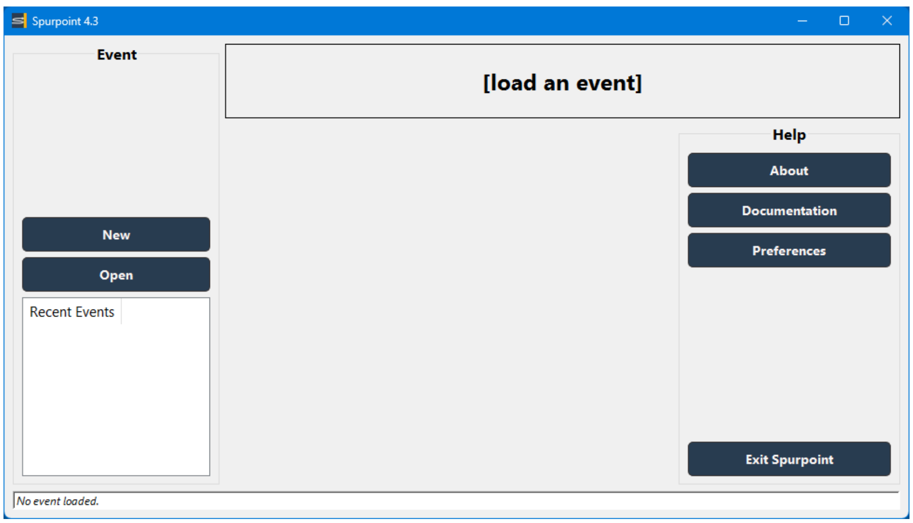
# Getting Started

By default, Spurpoint is a clean slate. There are no databases or preferences configured. The first thing you need to do is create a new event.

Launch Spurpoint by double-clicking the executable file or typing the name at the command line.

## Create an Event

To create a new event, click the New button on the main Spurpoint window.

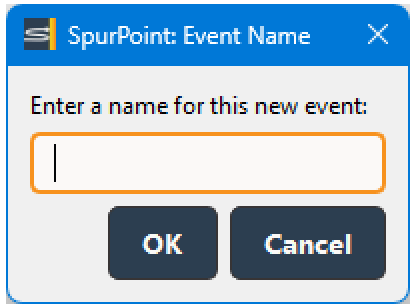



Specify a directory and a filename. This file will become the database which contains all the information about the event.

If you select a filename that already exists, the user will be prompted two different times asking if the file should be overwritten. Note that the process Spurpoint uses to overwrite files deletes the old file and then creates a new file with the same name. All of the data in the existing file will be lost. This process cannot be undone.

# Give the Event a Name

After the database is created, the user is prompted to specify a name for the event.



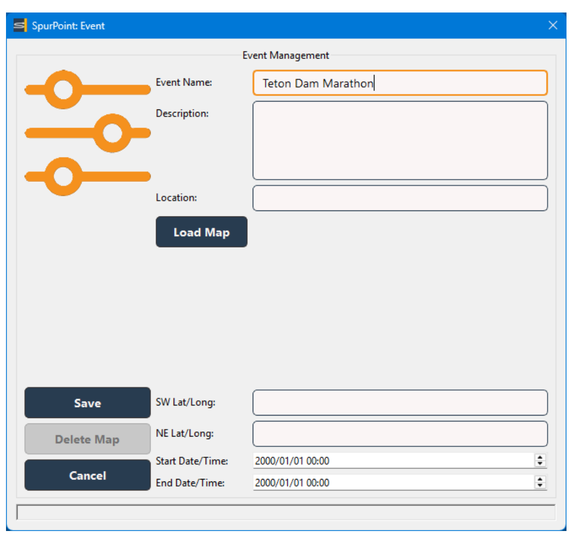

The name could be just about anything. I suggest making it descriptive -- brief, but not cryptic. Something like “Teton Dam Marathon 2025”  rather than “TDM25”; or “Spitfire Trail Challenge” rather than “stc”.

Enter the name and click OK. The name of your event should appear in the main window.

[Return to top]

# Event Details

You can specify additional details about your event by clicking on Manage in the Event column on the main screen. Only the Event Name is required.




Type a more detailed description of this event in the Description field.

Specify a Location for the event. This might be the city or county where the event is occurring. It might also just be a zip code.

If you desire to use the mapping features of Spurpoint, load an image file of your map by clicking on the Load Map button. Later, when you specify checkpoints and assignments, map markers can appear on this map image. For details and best practices regarding the use of maps, see Using Maps below.

If you have loaded a map image, you'll also need to specify the latitude and longitude of the northwest corner and southeast corner of the image.

Type the southwest latitude and longitude in the SW Lat/Long field. Decimal Degrees (DD) is the only supported format. Type the latitude and longitude separated by a comma. For example, “43.3235, -111.87673”. The more precise the coordinates, the more accurate Spurpoint will be.

Type the northeast latitude and longitude in the NE Lat/Long field. Again, use DD format separated by a comma.

If you do not know what the latitude and longitude is, you can imagine your map or image being overlaid by a x,y grid -- the x axis representing longitude values and the y axis representing latitude values. This turns your map coordinates into a relative system rather than an absolute system. Instead of using “absolute” GPS coordinates, you will enter values “relative” to the lower left (south-west) corner of the map.

If you are using relative positioning, enter “0,0” for the SW Lat/Long coordinates and “100,100” in the NE Lat/Long coordinates -- assuming your map is square. If your map is rectangle shape, maybe twice as wide as it is tall, then you could enter something like “100,200” for the NE Lat/Long coordinate.Then, later, when you're entering the coordinates of the checkpoints, you will need to also use relative coordinates

You may specify a start date and time for your event and an end date and time. The date and time must be in the format yyyy/mm/dd hh:mm. Use 24-hour military time. For example, 2025/04/12 06:00 for a start time of April 12, 2025, 6:00 am.

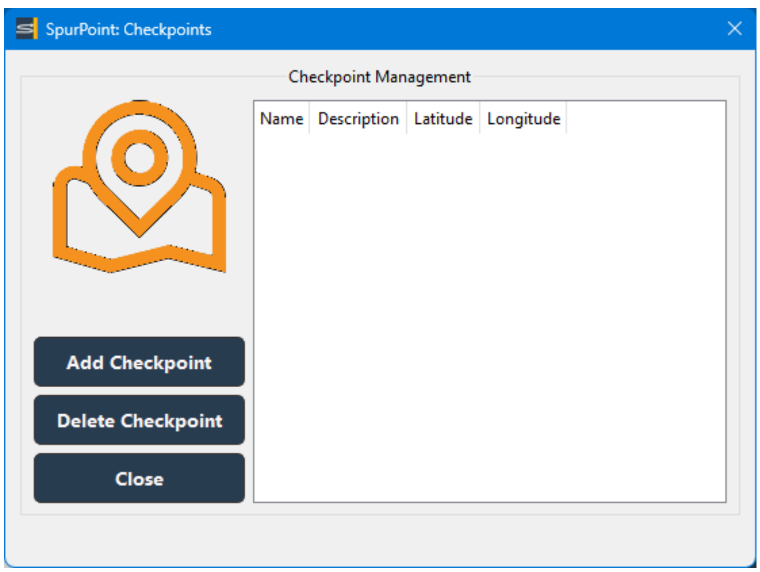
Click Save to record the details of your event.

# Setup the Checkpoints

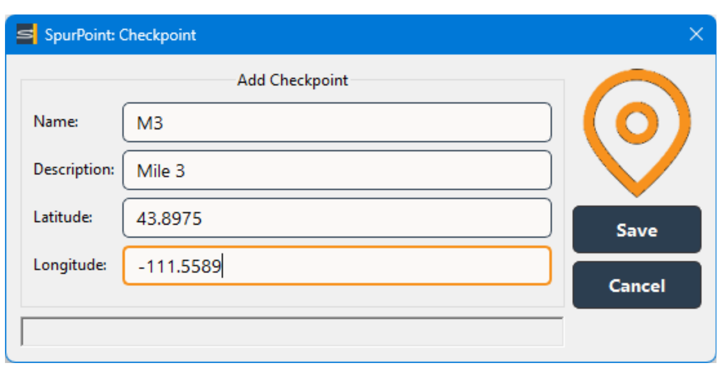
The next phase of the Spurpoint setup involves creating checkpoints and courses. I recommend creating the list of checkpoints first. Then, when you create the courses, you can specify the checkpoints associated with each course.

Checkpoints are generally key locations along a course where volunteers or equipment or facilities are located. When you record sightings, you'll associate these sightings with a checkpoint. Anywhere you have a volunteer stationed to report the passing of a runner would be considered a checkpoint.
There can be as many or as few checkpoints on your course as you wish or need, but there must be at least one checkpoint in order to use the Sighting feature. This could simply be the Finish line.

To create or edit checkpoints, click the Checkpoints button on the main Spurpoint screen. The Checkpoint Management window will appear.




To add a checkpoint, click Add Checkpoint.



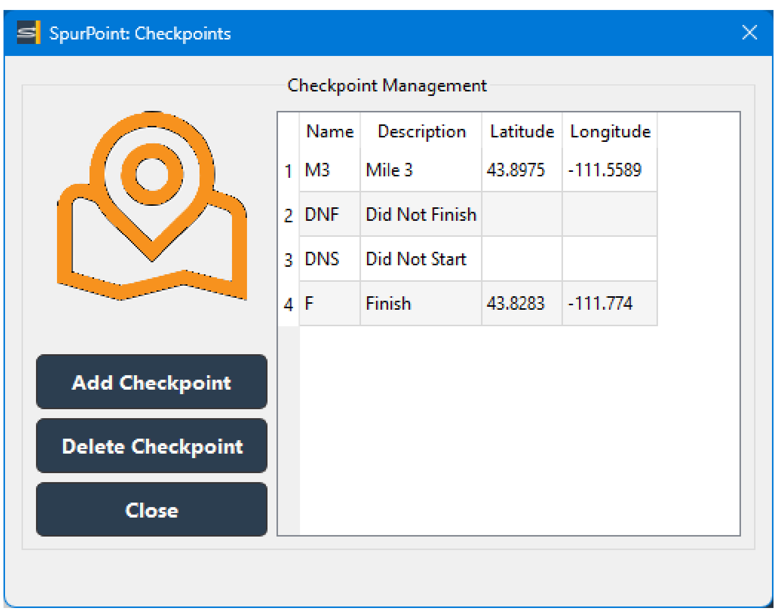
Enter a name for the checkpoint. This name should be descriptive, but very succinct. Operators will need to type this name on the sightings window. If you have a checkpoint at mile 3, you could name this checkpoint “M3” and enter “Mile 3” in the description. The finish line might be named “F” with “Finish Line” in the description.

If you are using the mapping features of Spurpoint and absolute positioning, enter the Latitude and Longitude of the checkpoint in the appropriate fields. These values should be in Decimal Degree format (e.g. 47.34 or -111.83). The more precision you use in the values will impact the accuracy of the map marker placement. If you entered relative coordinates on the Event Management window, then enter the relative positions in the latitude and longitude fields.

To delete a checkpoint, select the row and click Delete Checkpoint. A dialog box will open asking you to confirm the action. Click Yes to delete the checkpoint; No to cancel the operation. ***Note: Delete operations cannot be undone. If you delete a checkpoint, you will have to reenter the information to recover it.***

Most events also have participants that have registered but do not show up to the race. I create a checkpoint named DNS which stands for Did Not Start. After the race begins, I’ll confer with the race officials to determine which participants did not start the race and record them as such in the Sightings screen.

I also create a checkpoint named DNF which stands for Did Not Finish. I’ll use this checkpoint to record participants that began the race, but dropped out before finishing.



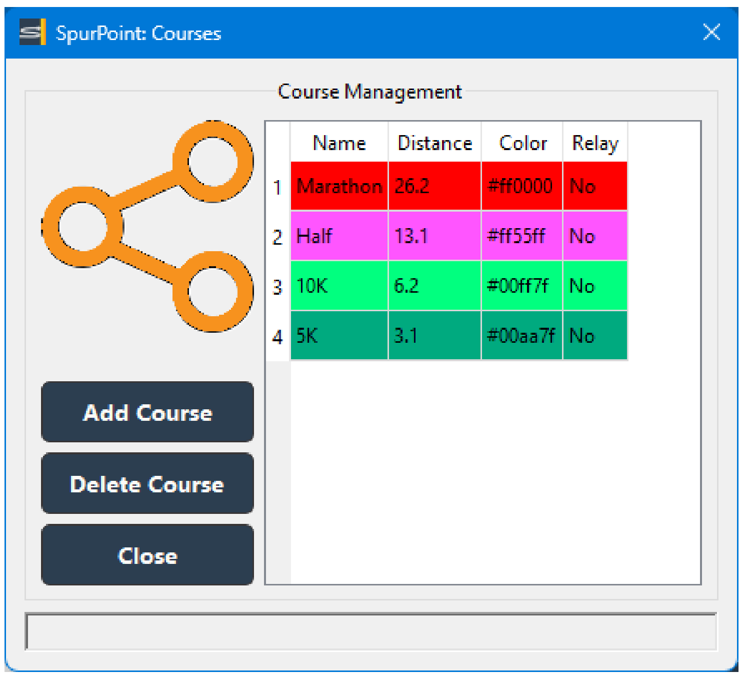

See Sightings below for more details of how to use these special checkpoints.

[Return to top]

## Setup Race Courses

Many races have multiple courses. For example, the annual Teton Dam Marathon in Rexburg, Idaho, hosts a marathon, half-marathon, 10K and a 5K as part of the same event. Several of the courses share checkpoints.

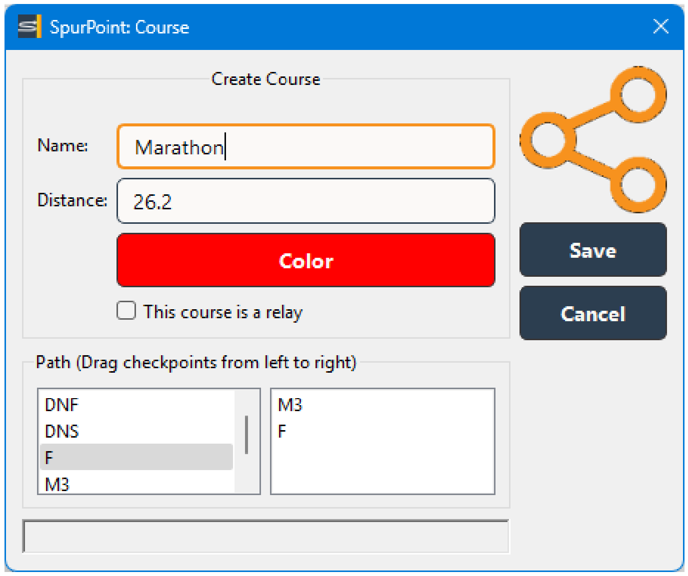
Spurpoint allows you to color-code the courses so you can readily distinguish which course a participant is assigned to. For example, a volunteer might see bib numbers 18 and 103. Bib 18 is a marathon runner and bib 103 is a half-marathon runner. When you view the log table, bib 18 and bib 103 rows will have different colors helping you to distinguish the course they are associated with.




You are not required to use courses. However, if your event has multiple courses running simultaneously, it may be beneficial to define them.

To manage the courses in your event, including adding or deleting a course, click on the Courses button on the main Spurpoint screen.

To create a course, click the Add Course button.




Specify the name of this course in the Name field. Each course is required to have a name.

Specify the distance. I generally make this in miles, but you can type whatever numerical value you want in this field. Do not specify the units. For example, if this course were for a marathon, I would type “26.2” in this field…not “26.2 miles”. Spurpoint does not track units (e.g. miles or kilometers) in any way.

Clicking the Color button opens a standard color picker dialog box. Select the color you desire to assign to this course. If you prefer to operate in dark mode, select a darker color so white text can be seen. If you normally operate in light mode, select a lighter color so black text can be seen.  After selecting a color, click OK. Once selected, the button background should assume the color assigned to this course.

If this course is a relay -- meaning a team of participants run different legs of the course, then check the “This course is a relay” checkbox. When a runner assigned to this course is sighted at a checkpoint, Spurpoint will record the team name (rather than the runner’s name) in the log. This allows you to track a team rather than seeing random bib numbers show up at checkpoints.

For example, imagine bibs 10, 11, and 12 are on a relay team named “Wild Cats”. Bib 10 is sighted at checkpoint A. The team name “Wild Cats” and the runners bib (10) are recorded in the log. Then bib 11 begins running for the team and is sighted at checkpoint B. The log then records “Wild Cats” and bib 11. Because the team name is there, you know that bib 11 did not just show up in the middle of the race. Likewise, you know that bib 10 did not disappear suddenly.

If you’ve been following along, you have already created checkpoints for your event. The list of checkpoints will appear in the left hand pane under Path. Use the right hand pane to define the path runners will take for this course. For example, a 5K course might leave the start line and pass checkpoint A, then checkpoint B, then back to checkpoint A and then the finish line, checkpoint F. If you have defined checkpoints A, B, and F, you could drag them from the left hand pane to the right hand pane. Alternatively, double-clicking on the checkpoint on the left, adds it to the path on the right. To remove a checkpoint from the path on the right, double click the checkpoint.

After the details of your course have been defined, click Save.

If you'd like to edit a course that you have already created, double click on the row in the table of courses. Clicking Cancel on the Create Course or Edit Course dialog will cancel any changes you've made to the course details.

If you need to delete a course from the table, click once on the course and then click the Delete Course button. You'll be prompted to confirm. **There is no undo. If you click Yes, the course will be deleted from the database and cannot be recovered.**

Click Close to close the Course Management window when you are finished adding or modifying courses.

[Return to top]

# Create Participants

With checkpoints and courses defined, you are prepared to add participants to the event.

Click the Manage button in the Runners column on the main Spurpoint window.

On the Runner Management window, you can add or edit individual runners, import a batch of runners, or delete existing runners from the database.

## Adding Runners One by one

You can add runners one at a time by clicking the Add Runner button. The only field that is required is the Bib. Enter any other known information as you wish. You can always return to this screen to add more information or change what you've entered.

Click Save to commit the information to the database.

## Importing a Batch of Runners

You may also import runners from a comma-separated value (CSV) file. Many timing companies or registration systems can provide you a list of participants in the form of a spreadsheet or CSV file.
IN order to utilize the provided file, it needs to be in a CSV or TXT format. Excel spreadsheets (.XLSX) are not CSV files. If you have a .XLSX file, open it in Excel or Google Sheets and save it as a CSV.

The CSV file must contain the following columns:

- RACE_NAME
- BIB
- FIRST_NAME
- LAST_NAME
- GENDER
- RACE_AGE
- EMAIL
- PHONE
- TEAM_NAME

The file may contain other columns, but it MUST have these nine. The names must also match exactly, including case. They do not have to be in the above order.

RACE_NAME is the name of the course. (eg. 5K, 10K, Marathon). The values in this field must match a course name that you created

BIB is the bib number of the participant. It does not need to be a number. Any alpha-numeric value will work -- whatever is used by your event.

FIRST_NAME, LAST_NAME are the first and last names of the participant.

GENDER can be any value. Keeping the values consistent is helpful for searching and reporting purposes. For example, use M or Male or MALE or MAN, but it is not recommended that you use a mixture of these variations. Pick one style and stick with it.

RACE_AGE is the age of the participant at the time of the race.

EMAIL is an email address of the participant.

PHONE is the phone number of the participant.

TEAM_NAME is the name of the relay team. This cell may be blank if the participant is not part of a relay team.

Spurpoint really only uses the BIB and RACE_NAME. The other information is for your benefit. If a runner is expected at a checkpoint, but is long overdue, knowing that you are looking for a

80 year female is different than searching the course for a 12 year old male. At my events we frequently have family members come to us and ask, “Do you know where my daughter is? Where was the last place she was seen on the course?” Having access to more information is better. “Sure. What is your daughter’s bib number?” “Uh, I don’t know.” Having a name in the database facilitates situations like this.

To open a CSV file, click Select CSV File and choose the CSV that is ready as described above. The file will be read and will populate the table with the required information.

Click the Validate Data button. Spurpoint will scan the table to make sure the required columns exist. It will ensure all of the RACE_NAME values match Courses you’ve created in Spurpoint. It will also ensure that each row contains a bib number. Rows with invalid data will be highlighted.

A future version of Spurpoint will allow you to manipulate the data in the table. For now, any manipulations must occur outside of Spurpoint. If you notice a change to the data that needs to be made, close the import window, make the changes in your spreadsheet program of choice (eg. Excel, Google Sheets, etc.). Then come back to the Import Runners window again.

When you are satisfied that the data is correct, click Import. Spurpoint will create records in the database for each runner in your CSV file.

Click Close when the import is complete.

## Other Runner Management Features

To edit an existing runner, double-click on the row in the table.

To delete a runner from the database, click once on the row and then click Delete Runner. **Note: this operation cannot be undone. If you delete a runner, it also deletes any of their progress (sightings) that you’ve recorded.** Even if you manually recreate or import the runner again, you cannot recover the sightings.

When you are done managing runners, click Close to return to the main window.

[Return to top]

# Volunteers

The volunteer features of Spurpoint allow you to track your volunteers -- when they arrive at their assignment and when they leave, and communication between them.

## Adding and Deleting

To manage your volunteers, click the Manage button in the Volunteer column of the main Spurpoint screen.

To add a volunteer, click the Add Volunteer button. You must enter either a first name or a last name. All of the other information is optional. The more information you have, the more readily available the contact information. When you have entered the desired information about the new runner, click the Save button.

To delete a volunteer, click once on the row you want to delete and then click Delete Volunteer. A confirmation box will appear asking you if you are sure. Deleting a volunteer cannot be undone. If you click Yes, the volunteer will be permanently removed from the database. Click Yes or No to confirm your intentions.

You may delete multiple volunteers at once by multi-selecting the rows. Click on the a row to delete. You can then hold the control key while clicking additional rows. You may also hold the shift key to select all of the rows between the first click and the last.

[Return to top]

## Importing

Some events have a large number of volunteers. You may import volunteers from a comma-separated value (CSV) file.
Your import file needs to be in a CSV or TXT format. Excel spreadsheets (.XLSX) are not CSV files. If you have a .XLSX file, open it in Excel or Google Sheets and save it as a CSV.

The CSV file must contain the following columns:

- FIRST_NAME
- LAST_NAME
- CALLSIGN
- EMAIL
- PHONE

- NOTES

The file may contain other columns, but it MUST have these six. The column names must also match exactly, including case. They do not have to be in the above order.

FIRST_NAME, LAST_NAME are the first and last names of the volunteer.

CALLSIGN is the amateur radio call sign of the volunteer. If the volunteer does not have a call sign, just leave this cell blank

EMAIL is an email address of the volunteer.

PHONE is the phone number of the volunteer.

NOTES is a free-form text field. You can put any information about the volunteer that you deem relevant to the event. “Jerry needs to be excused at 1:00 pm.” or “Betty does not have a driver’s license.” If the note contains a comma, it needs to be enclosed in quotation marks.

Only the FIRST_NAME field is required. The others may be blank.

To open a CSV file, click Select CSV File and choose the CSV that is ready as described above. The file will be read and will populate the table with the required information.

The Validate Data button does nothing at this time.

A future version of Spurpoint will allow you to manipulate the data in the table. For now, any manipulations must occur outside of Spurpoint. If you notice a change to the data that needs to be made, close the import window, make the changes in your spreadsheet program of choice (eg. Excel, Google Sheets, etc.). Then come back to the Import Runners window again.

When you are satisfied that the data is correct, click Import. Spurpoint will create records in the database for each volunteer listed in your CSV file.

Click Close when the import is complete.

[Return to top]

# Assignments

Assignments are a role or responsibility given to a volunteer during the event. Assignments may include checkpoint monitoring, participant tracking, radio communications, or other operational duties to ensure smooth event execution.

To manage event assignments, click the Assignments button on the main Spurpoint screen.

## Adding and Deleting

To create an assignment, click Add Assignment. The Assignment (name) is required. The Description and Location are optional. I would recommend keeping the Assignment name succinct. Use the Description field to detail the responsibilities of the assignment. When you're satisfied with the assignment details, click Save.

To delete an assignment, click the select a row in the assignment table and click Delete Assignment. You will be prompted to confirm the deletion. Note, this operation cannot be undone. The assignment will be permanently deleted from the database.

## Check-In and Check-Out

With volunteers and assignments created, you can use the check-in and -out feature to track where volunteers are serving. Click on the Check In/Out button the main Spurpoint screen.

The Current Positions tree list the assignments with the volunteers currently assigned there listed under the assignment as leaves. It will also show the time the volunteer was checked-in to that assignment.

To check a volunteer into an assignment, select the volunteer's name in the volunteer list. Click the assignment he or she is checking to. Modify the time as needed. Then click the Check In button. The volunteer will appear in the Current Position tree under the assignment you just checked him into.

To check a volunteer out of an assignment, click the volunteer's name in the Current Position tree. The volunteer and the assignment will be selected in the Volunteers and Assignments lists. Modify the time as needed and click the Check Out button.

You can check-in multiple volunteers to one assignment. Multi-select the volunteers by control-clicking or shift-clicking on the volunteers. Select the assignment in the Assignments list. Modify the time, if needed, and click Check In. All of the selected volunteers will be assigned to the Assignment.

## Assignment Report

To display a report of the assignments and volunteers, click on the Assignment Report button on the main Spurpoint screen.

The assignment report shows a list of volunteers, any assignments they have been checked-in to and the time they served there.

The Assignment Time shows the amount of time in hours the volunteer served at that particular assignment. If the volunteer has not checked out of the assignment, the Assignment time is the difference between the time she checked in and the current system time. The Total Time is the total of ALL of the time that volunteer has served across all of the assignments.

For example, if Kevin served at assignment M1 for 1.5 hours and at M3 for 4 hours, the Total Time would show 5.5 hours on both rows.

Note that the total time across all volunteers and assignments is in the left margin: Total Volunteer Time:

## Messages

Communication is a critical component of every event. A checkpoint needs more water; a participant needs to be evacuated; a volunteer needs to be relieved before 3:15. The larger the event, the more communication there will be. Keeping track of all of the information can be overwhelming. Spurpoint provides a mechanism for tracking these messages.

To open the messages screen, click on the Messages button on the main Spurpoint screen.

When creating a message, only the Message field is required. The other fields are helpful for tracking the message -- from did the message come; who is the intended recipient (To); what time was the message received and whether there is a due time.

If you click in the Receive Time field, the current date and time will be entered automatically.

From and To are free-form text fields. These can be names, titles, radio call signs, checkpoint identifiers -- whatever makes the most sense for the message.

After entering the message information, click on the Post button. The message information will be listed in the table.

When the message has been addressed, you can click on the checkbox in the Complete column. The text of the message will be changed to ~~strikethrough~~ and moved below the other not-completed messages. If a message is mistakenly marked completed, you can check the box again.

You can change the sort order of the table by clicking on the column headers.

The Clear button on the form clears the fields on the form. Any information entered in those fields at the time will be lost. This does not clear any data or messages in the table.

# Automatic Position Reporting System

The Automatic Position Reporting System or APRS is an amateur radio system that utilizes a combination of GPS satellites, amateur radio frequencies and the Internet for tracking radio operators. This system requires APRS capable radios.

Amateur Radio operators can utilize APRS to send text-like messages. Spurpoint can retrieve those messages and utilize them as a secondary means of communication. Note: Use of the APRS feature in Spurpoint requires an Internet connection. The APRS button will not be visible if Spurpoint cannot sense a valid Internet connection when the application is launched.

In order to send APRS messages, the sender must be a licensed amateur radio operator. However, a license is not required to retrieve the messages from the Internet as Spurpoint does.

Two things are required to use the APRS messaging system in Spurpoint: an APRS API key and an Internet connection.

## APRS API Key

In order to acquire an APRS API key, open a browser and go to [https://aprs.fi](https://aprs.fi). Click on the Login link in the upper right corner of the screen. If you already have an aprs.fi account, login. If not, click the Sign up button and follow the directions for creating an account.

Once you are logged in to aprs.fi, from the main screen, click on My account in the right hand navigation bar under Other Views. Copy the API key.
Now launch Spurpoint and open your event. Click the Preferences button on the main Spurpoint screen. Paste the API key into the APRS API field and click Save.

### Using APRS Messaging

The APRS Messaging feature requires an active Internet connection. If you do not have an Internet connection when Spurpoint is launched, the APRS button will not be visible.

To open the APRS messaging system, click the APRS button on the main Spurpoint screen.

To retrieve messages, enter an amateur radio call sign and click Fetch Messages. For example, if you want to retrieve all of the messages sent to N7TMS, enter N7TMS in the Call Sign field and click Fetch Messages. APRS messages are serialized and Spurpoint keeps track of the message serial numbers so that duplicate messages are not recorded in the database.

In order to understand the power of APRS, consider the following scenario. In the middle of the Teton Dam Marathon event, there are a lot of runners on the course and there is a lot of radio traffic between the checkpoint volunteers and the net control station. Even with two radios running, some sightings go unreported. APRS gives the operators another avenue for reporting their sightings. They send an APRS message to a designated call sign (e.g. N7TMS). The message begins with their checkpoint name or assignment designation followed by the bib numbers they sighted. When the message is retrieved at net control, a Spurpoint operator can copy and paste the information from the message into the Sighting form.

After an APRS message has been handled, you can click on the checkbox in the ACKed column. (ACKed = Acknowledged).

[Return to top]

# Sightings

The heart of Spurpoint is in the Sightings feature. Here is where you record where volunteers have spotted runners. At the Teton Dam Marathon, we enlist the help of amateur radio operators to assist with communication at checkpoints along the course. When a participant runs by, the radio operator calls into a central station where Spurpoint is being run. The operator reports her checkpoint and the bib number of the runner she saw. The central station enters the checkpoint name and the bib number into the sightings form. When he presses enter, the checkpoint, bib and time are stored in the database.

Open the sightings form by clicking the Sightings button on the main Spurpoint window. The form consists of a dropdown box containing a list of checkpoints, a text field to enter bib numbers, and a table of all of the sightings thus far in the event.

When you receive a report, type or select the reporting checkpoint's name in the dropdown box. Press the Tab key to move to the Bibs field.

Type the bib or bibs reported at the checkpoint. The list of bibs may be separated by commas, periods, spaces, or plus-signs. The plus-sign and period make it convenient for entering bib numbers with the numeric keypad.

Then you can click Record Sighting or, while your cursor is still in the Bibs field, you may hit the Enter key and the bibs will be recorded in the sighting table.

The sighting table color codes the rows based on the course that each runner is assigned to.

By default the table is sorted by time in descending order -- with the most recent entry at the top. There is no search function here, but you can click on a column heading to sort the table by a different field. For example, click once on the Participant Name heading and the table will be sorted by the name of the participants, in ascending order, A to Z. If you click the Participant Name heading again, the table will reverse the order, now in descending order, Z to A.

When you record another sighting, the table is updated and the sort order is reset to descending order by sighting time.

Clicking the Clear button or hitting the Esc key will clear the Bib fields and place the focus back on the Checkpoint dropdown.

Clicking the Refresh button will update the sightings table. This might be helpful in a networked environment to update the local table with entries from other stations running Spurpoint against the same database.

If you have created DNS and/or DNF checkpoints, this is the place to use them. After a race has started, I'll get a list of participants from the race officials that have not checked in. Then I'll report them in the Sightings window.

Select DNS from the checkpoint dropdown. Then in the Bibs field, enter the list of bib numbers that did not start the race. Press Record Sightings to commit them to the databases.

As the race proceeds, there may be reports from checkpoints that a runner has dropped out or has been evacuated from the course for whatever reason -- perhaps from an injury or exhaustion -- and is not able to complete the course. In that case, Select DNF from the Checkpoint dropdown and enter the runner's bib number in the Bibs field. Press Record Sighting.

[Return to top]

# Reports

The reporting features of Spurpoint are very basic, but perhaps one of the most useful features of the application. Currently, you can view reports of all of the participants by course or by checkpoint.

## By Course

The By Course report creates a tab for each course (eg. 5K, 10K, etc.) and lists the last time and checkpoint each participant was sighted.

To open the report, click the “by Course” button on the main Spurpoint screen. Select the tab corresponding to the course you’d like to view. By default, the tables are sorted by checkpoint, but you can change the sort order by clicking on the heading of the table. Clicking on the heading will toggle between ascending and descending order.

If you want to know who the lead runner is or a particular course, click that course’s tab. Scroll through the table to the furthest checkpoint in the course. There may have been more than one runner reported at the checkpoint already. The one with the earliest time is your lead runner.

Similarly, if you want to find the last runner, scroll to the checkpoint closest to the beginning of the course. Find the runner with the most recent time.

If there are runners in the database that have not been assigned a course, a tab will be created (No Course Assigned) to list those participants.

Under the tab title, you will see a list of checkpoints that constitute the path for this course. As participants are sighted, an entry is made in the database corresponding to the checkpoint they were sighted at. A column in the table indicates the checkpoints at which they have been sighted.

For example, imagine the path for a course is A, G, H, F. A cell in the Path column shows “X _ X”. The “X” indicates the runner was sighted and the underscore “_” indicates the runner was not sighted. Thus, “X _ X” means the runner was sighted at A, was NOT sighted at G, but was sighted at H. The runner has not reached F yet.

## By Checkpoint

The By Checkpoint report creates a tab for each checkpoint (eg. M1, M8, DNS, etc.) and lists the last time a participant was sighted at that checkpoint.

The name of each tab also includes a count of how many runners were last seen at that checkpoint. For example, if the tab title might be “M3 (24)” which means this is checkpoint M3 and 24 runners were last seen at this checkpoint. This provides a quick way to determine how many runners are at each checkpoint with having to click on each tab and count.

You can use this report similar to the By Course report to find lead and last runners, but I find it most useful to determine when all of the runners have passed a particular checkpoint. For example, if there are runners at M3 and M6, but no runners at M1, then I can be relatively confident that all of the runners have passed M1 and none remain on the course between M1 and M3. Then I can make the decision to close that checkpoint and release the volunteers.

Near the end of the race, I use this report to determine how many runners are still on the course and where they are. If you have a big event like the Teton Dam Marathon that has nearly 1200 participants each year, it is handy to be able to look at tabs M24 and M25 and tell the race officials how many more runners are out there.

[Return to top]

# Searching

You can search for participants by clicking the Find button on the main Spurpoint screen.

The Search window allows you to search for a bib number, a name, a checkpoint or a time. Precede the search text with a character to indicate which you want to search.

| Pre-Character | Meaning |
|---|---|
| [none] | Search for a participant’s name |
| **#** | Search for a participant’s bib number |
| * | Search for a specific time |
| **@** | Search for a checkpoint |

## Name

To search for a runner’s name, just type the characters you want to search for. When you type a character, the table is automatically filtered on the letter. For example, if you type an “a”, every name that contains an “a” will be displayed. Allen, Allie, Austin, Eastmond, Bella, Nala, etc. Typing “al” will further limit the search to just names that contain an “a” followed by an “l” -- Allen, Allie, Nala.

You can search for names that begin with the search criteria by using a “>”. For example, by type “>al”, you will only see names like Allen and Allie, but not Nala, because Nala does not begin with “al”.

If you’d like to search for an exact name, you can precede the search text with a period. “.al” will only return “Al” if there is a runner named Al. It will not return Allen or Allie.

This is the primary method to answer the question, “Where is my daughter? I don’t know what her bib number is.”

Search text is not case-sensitive.

## Bibs

To search for a bib number, first type a “#” in the search bar, immediately followed by the number. Do not type a space after the “#”. For example, #1 will show all the bib numbers with a 1 in them -- 1, 10, 41, 3012, etc.

Like names, you can also precede the search criteria with a “>” or “.”. So “#>1” will return 1 and 10, but not 41 or 3012. “#.1” will return only 1, not 10 or any other bib.

This option is helpful for questions from race officials like, “Where was the last place we say bib 345?”

## Times

To search for a specific time, enter an asterisk “*” followed by a time. For example, if you want to know what reports came in at 11:03, enter “*11:03”. If you’re interested in seeing what reports came in during the 9 o’clock hour, you can enter “* 09:”.

That looks cryptic. The “*” tells Spurpoint you’re looking for a time. The space because there is a space immediately preceding the hour in the timestamp, and then the hour. The colon following the 9 is just for good measure.

You can also use the “>” and “.” with times, but their benefit is questionable. For example, in order to search for a specific time, you would have to type in the entire time, “*.2025-04-01 09:04:23”. It might be better to use the starts-with modifier “>”, “*>2025-04-01 09:” would return all of the entries that occurred in the 9:00 hour.

## Checkpoints

It may also be helpful to see what runners have been reported at a particular checkpoint. To filter the table by just a particular checkpoint, precede the search criterion with a “@”.

The search modifiers “>” and “.” also work with checkpoints.

For example, to display only the sightings at mile 3 -- assuming your checkpoint is named M3 -- type “@m3” in the search bar.

[Return to top]

# Using Maps

I have made every effort to design Spurpoint to *not* be dependent on the Internet. When you are in the middle of the Idaho wilderness with no Internet connection, Google Maps does not perform very well.

To compensate, you can upload a static image -- a screenshot of Google Maps or other mapping software…or any other image for that matter. You give Spurpoint some reference points and it can then extrapolate where markers should be placed.

Let's assume you are going to use a snapshot of a Google map. You'll need to do this prior to the event in a location where you have an Internet connection. (Or you can capture the image, save it to a USB thumb drive and copy it to your Spurpoint workstation.) Open Google maps in your favorite web browser and adjust the zoom level so you can see your entire course.

In the lower left corner of the map, this is a box called Layers. If you want to remove all of the street names and other markers, click the Layers box. Then click More. Click Satellite (at the bottom of the pop-up). Then uncheck the Labels checkbox. If you don't want the other labels on your map, your options for map types are extremely limited -- this is basically your only option. Click on the tiny "x" in the upper right corner of the pop-up window to close the Label window.

With the map positioned where you want it, hit the Window-Shift-S button simultaneously. This will put you in screen capture mode. Make sure the Rectangle Snip option is selected. Click on your map and drag your mouse so that your entire course is highlighted. When you release your mouse button, the highlighted area will be saved to the clipboard.

Now you also need to record the latitude and longitude of both the upper left (northwest) corner and the lower right (southeast) corner of the selection. If you click on the map, a marker will be placed there and a pop-up will appear at the bottom of the screen. At the bottom of that pop-up is the latitude and longitude of that point. Save these numbers for both corners of your selection.

Open your favorite drawing or photo editing program and paste the image into the editor. Then Save it as an image file … with a .png or .jpg extension … in your Spurpoint directory.

To upload an image into Spurpoint, click on the Manage button in the Event column of the main Spurpoint screen. Click the Load Map button and select the image you just saved and click Open. The image should appear in the box next to the Load Map button.

Now click in the NW Lat/Long field and enter the coordinates for the upper left corner of your map. Then enter the lower right coordinates in the SE Lat/Long field. These should be entered in Decimal Degree format with the latitude and longitude separated by a comma (e.g. "43.5932, -111.3829"). Click Save.

With this image loaded with the proper coordinates, checkpoints, assignments, and some reports will utilize the image to give you a visual of where resources are located.

[Return to top]

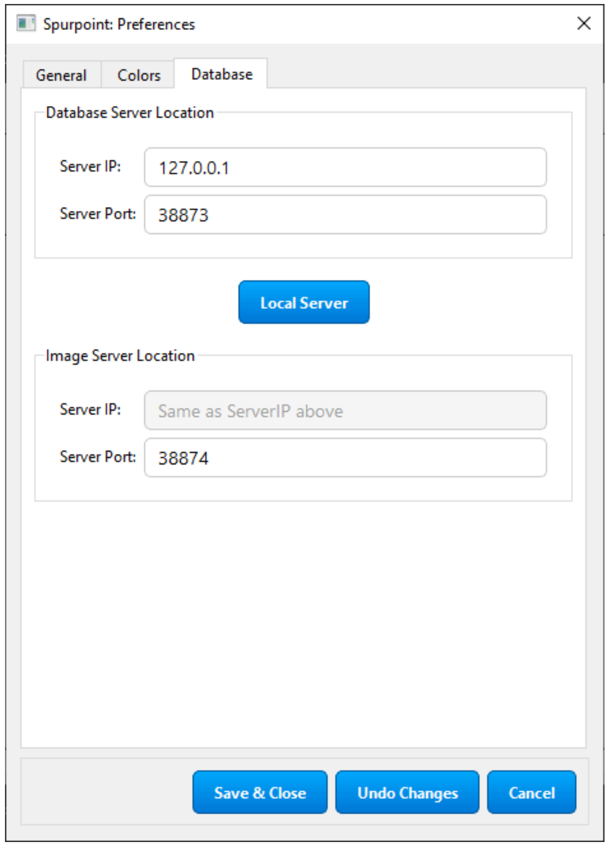
# Client/Server Operations

Spurpoint is capable of operating in a client - server mode. This means you can configure Spurpoint to run on one workstation (server) and another instance of Spurpoint running on another workstation (client) that accesses the same database as the server. In this configuration, you can have multiple stations receiving and recording sightings.
At the Teton Dam Marathon, we utilize two radio frequencies. We have two radios each with their own instance of Spurpoint running -- but one is configured as a server and the other is a client. We often have additional workstations that we can use for looking up information. If a race official comes over and wants to know where the lead runner is, we don't want to disrupt what is happening at the radio workstations. Having a third Spurpoint instance running allows us to use it as a reporting station.

The Spurpoint server runs a TCP socket server and a web server. The socket server is used by the server and the clients to access the database. The web server is used to transfer images and documents to the clients. For example, when a client station opens the By Checkpoint report, the map is transferred from the server. When a client opens the documentation, the pdf file is transferred from the server.

**[Future Feature]** The web server will also be used to host read-only reports accessible from tablets or mobile devices.

When you launch Spurpoint, it defaults in server mode. To change to client mode and point a workstation at an already-running server, launch Spurpoint. Click on the Preferences button. Select the Database tab.




There are two sections on this tab: The database server location and the image server location. These will both be running on the server. So only the Server IP can be modified.

The Server IP is the IP address of the server. If “this” workstation is the server, then it should be 127.0.0.1.

To find the IP address of your server, go to the server workstation and open a command prompt or a terminal window.

In a Windows command prompt, type “ipconfig”.
In a Linux, Max, or Raspberry Pi terminal, type “ip a”.

```
D:\>ipconfig

Windows IP Configuration


Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . : ci.rexburg.id.us
   Link-local IPv6 Address . . . . . : fe80::b67:f3c3:c205:99e3%12
   IPv4 Address. . . . . . . . . . . : 10.10.1.172
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 10.10.1.1
```

You're looking for the IPv4 Address. In this case, 10.10.1.172.

Back on the client, enter the IPv4 address of your server in the Server IP line.

The default port for the database server is 38873 and for the image server 38874. These numbers must match the Preferences on the server. You can change these numbers, but it is not recommended, unless you NEED to.

Clicking the Local Server button will reset the Server IP and Server Port fields back to their defaults: 127.0.0.1, 38873, and 38874.

After setting the Server IP, click Save & Close and then Exit Spurpoint. You must restart Spurpoint in order for the changes to take effect.

When Spurpoint launches in client mode, the Event pane will not be available on the main Spurpoint window. Changes to the Event details, Checkpoints and Courses must be made on the server.

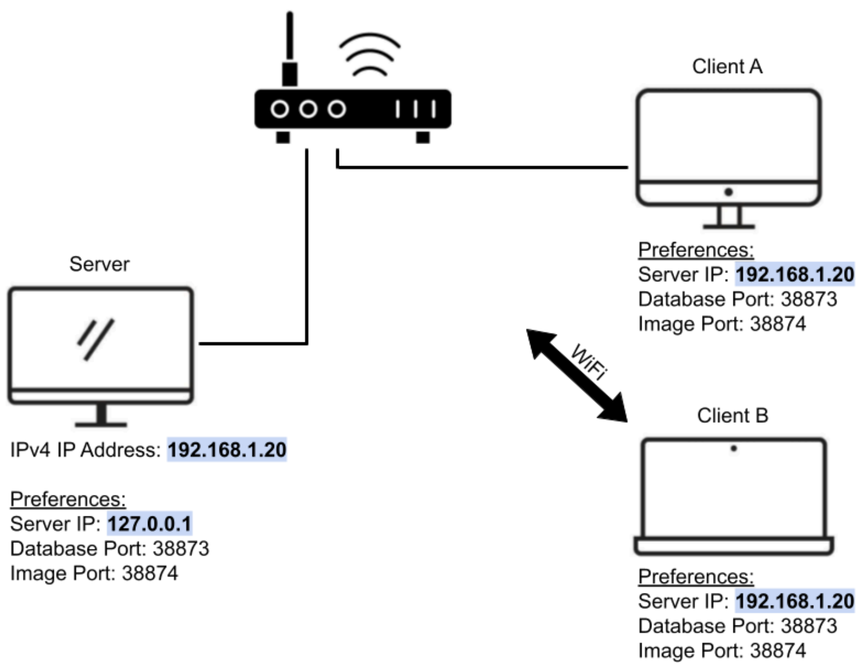
Also, the server must be running and an event loaded, before starting the client workstations.

After setting a workstation up for client mode, it will always startup in client mode. To change a client workstation back to a server or stand-alone mode, launch the Spurpoint client, click Preferences and then select the Database tab. Click the Local Server button; click Save & Close and then Exit Spurpoint. When you launch Spurpoint again, it will open in server mode.

Note: Two server workstations can use the same database file (by connecting via a shared network drive), but this type of configuration is not recommended. The database architecture is not designed for this type of operation and the potential for database corruption is high.

The number of clients you can have running and pointing at a single server has not been determined. Theoretically, you will be limited by the amount of resources (processor and memory) on the server workstation. In a test environment I have had five clients hitting the server hard and fast with hundreds of sightings and noticed no degradation in performance.

# Example Configuration




The server and clients need not be on the same local network. It is possible for the systems to communicate over the Internet, but explaining such a configuration is beyond the scope of this document. You can use commands such as ping to determine if clients can communicate with the server.
On a client workstation, open a command-line or terminal window. Type ping followed by the IPv4 IP Address of the server. In the example above, the command would be

```
>ping 192.168.1.20
```

If you get a positive response such as

```
Reply from 192.168.1.20: bytes 32 time<1ms TTL=128
```

then the systems are communicating successfully. On the other hand, if you see a response like

```
Request timed out.
```

then there is a problem with the network connectivity, cabling, router configuration or something else.

[Return to top]

# Backup and Restore

Spurpoint offers the ability to backup and restore individual tables in the database. Although this can be a valuable tool for data recovery, the primary purpose is to transfer information from one database to another.

For example, imagine that you support several events in your area. You typically utilize the same volunteers across all of the events. You can populate the volunteer information for your April event. Then, in order to prepare for the June event, you can export the volunteer list from April into the June database, thus avoiding the hassle of recreating the roster.

As another example, you have everything configured just right for a July 2025 event. In July 2026, the next year, you can just export the relevant information so you do not have to completely recreate the event.

Spurpoint backup saves the data in a comma-separated value (CSV) file. The file is not secure or encrypted in any way. It should be noted that the Spurpoint backup and restore procedures are rudimentary at best. There are limitations and consequences for importing data into tables with existing data.

For the best backup, copy the .db file for your event to another location, such as a USB thumb drive or Google drive or even just a different hard disk on your computer.

## Backup

To backup Spurpoint data, launch Spurpoint and open the event. Click Backup & Restore at the bottom of the Event group.

Click the Backup tab at the top of the Backup & Restore window.

Click the Backup File button and specify a filename and location for the backup.

Click on the checkboxes corresponding to the information (database tables) you want to backup.

Click Backup.

The selected information will be written to the selected CSV file. Click Close to exit the window.

Here are a few recommendations:

- If you are going to backup Sighting information, be sure to include Runners, Courses, and Checkpoints, too. The Sighting information will be almost useless without the additional tables.
- If you backup the Check Ins/Outs, be sure to include the Volunteers table.
- If you have specified Paths for your courses, be sure to include the Checkpoints table when backing up Courses.
- If you backup the Runners, be sure to include the Courses table.

## Restore

A few words of caution:

- Restoring data deletes all existing data in the target table.
- Restoring Sighting information without Runners, Checkpoints, and Courses will result in data corruption.
- Restoring Check Ins/Outs without Volunteers will result in data corruption.
- Restoring Courses without Checkpoint information may result in data corruption.

To restore Spurpoint information, launch Spurpoint and open the event. It is highly recommended that you only restore data into a new event. *Restoring data into an existing event is risky.* Click Backup & Restore at the bottom of the Event group.

Click the Restore tab at the top of the Backup & Restore window.

Click File to Restore and select the CSV file containing the table data you wish to restore. Spurpoint will scan the file and highlight the checkboxes corresponding to table data found in the file. A preview of the data will appear in the Preview table at the bottom of the window. As you check and uncheck checkboxes, the Preview table will be updated. The data remaining in the Preview window is the data that will be restored.

You cannot modify the data in the Preview table. Nor should you. Modifying the data outside of Spurpoint may result in data corruption.

After selecting the desired tables to restore, click Restore. Warning: Restoring data deletes all of the data in the existing tables before the data is read from the file. For example, if you want to restore Volunteer information, when you click Restore, all Volunteer data in the event is deleted and then the data from the CSV file is imported into the database. Restoring only a few records or merging data is not possible with backup and restore. If you want to just add records to existing data, then use the Volunteer Import feature.

You'll receive a confirmation message that the tables were restored. Click Ok and then Close to complete the restoration process.

[Return to top]

# Documentation

[Documentation about the documentation will be written at a near future date.]

[Return to top]

# Glossary of terms

**APRS (Automatic Packet Reporting System)** – A digital communication protocol used by amateur radio operators to transmit real-time data, such as participant locations, weather conditions, and status reports. In an event setting, APRS can be used for live tracking and coordination.

**Assignment** – A designated role or responsibility given to a volunteer or staff member during an event. Assignments may include checkpoint monitoring, participant tracking, radio communications, or other operational duties to ensure smooth event execution.

**Bib** – A unique identifier assigned to each participant, typically printed on a race bib worn during the event. This number is used for tracking and reporting purposes.

**Checkpoint** – A designated location along a course where participants are recorded as they pass. Checkpoints are used to track progress and provide real-time updates on a participant's last known position.

**Course** – A predefined route within an event that participants follow from start to finish. Courses may vary in distance and difficulty, such as Marathon, 10K, or 5K.

**Event** – A structured race or competition that consists of one or more courses. An event includes organizational details such as the date, location, and participant registration.

**Last Seen Location** – The most recent checkpoint where a participant was sighted, used to track progress and determine their position on the course.

**Message** – A specific piece of communication or transmitted information. In an event setting, messages typically involve participant sightings, checkpoint status updates, or other operational instructions.

**Net Control** – The central communication hub responsible for coordinating event operations, relaying checkpoint updates, and managing volunteer reports. Net Control ensures efficient information flow between checkpoints, race headquarters, and event staff to facilitate real-time participant tracking.

**Participant** – An individual registered in an event who competes in one of the available courses. Participants are identified by unique bib numbers.

**Race Headquarters** – The central location where event organizers monitor participant progress, manage data from checkpoints, and generate reports.

**Radio Operator** – A trained individual who uses amateur (ham) or other radio communication systems to support event operations. Radio operators facilitate reliable communication between checkpoints, Net Control, and race headquarters, especially in areas with limited cellular coverage.

**Relay** – A race format in which a team of runners or participants takes turns completing different segments (legs) of a course.

**Report** – A dynamically generated summary of participant data, typically organized by course, to provide event staff with real-time tracking information.

**Sighting** – The recorded observation of a participant at a checkpoint. A sighting includes the participant's bib number, the checkpoint location, and the timestamp when they passed, providing real-time tracking data for event organizers.

**Spurpoint** – The runner tracking application designed to log participant sightings at checkpoints and provide event organizers with real-time updates and reports.

**Timing System** – A separate system from Spurpoint that records official race times. Spurpoint focuses on participant tracking rather than race timing.

**Tracking** – The process of recording participant progress along a course using checkpoint sightings to determine their last known location.

**Traffic** – A term used in radio communication to refer to the transmission of messages or data. It can include routine updates, requests for information, or emergency communications. In the context of an event, traffic refers to the flow of information between checkpoints, Net Control, and other event participants.

**Volunteer** – A person assisting with event operations, including checkpoint management, participant tracking, and administrative support.

[Return to top]