First® RISE™ powered by Star Wars: Force for Change

2019-2020 First® Tech Challenge

Scorekeeper Manual
Sponsor Thank You

Thank you to our generous sponsors for your continued support of the FIRST® Tech Challenge!
Volunteer Thank You

Thank you for taking the time to volunteer for a FIRST® Tech Challenge event. FIRST® and FIRST® Tech Challenge rely heavily on volunteers to ensure events run smoothly and are a fun experience for teams and their families, which could not happen without people like you. With over 5,500 teams competing yearly, your dedication and commitment are essential to the success of each event and the FIRST Tech Challenge program. Thank you for your time and effort in supporting the mission of FIRST!

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1. Introduction

1.1. What is FIRST® Tech Challenge?
FIRST® Tech Challenge is a student-centered program that focuses on giving students a unique and stimulating experience. Each year, teams engage in a new game where they design, build, test, and program autonomous and driver operated robots that must perform a series of tasks. To learn more about FIRST® Tech Challenge and other FIRST® Programs, visit www.firstinspires.org.

2. Gracious Professionalism®

FIRST® uses this term to describe our programs’ intent.

Gracious Professionalism® is a way of doing things that encourages high-quality work, emphasizes the value of others, and respects individuals and the community.

Watch Dr. Woodie Flowers explain Gracious Professionalism in this short video.

Learn more about the roles of volunteers on our Volunteer Resources page, “Volunteer Role Description”.

3. FIRST Volunteer Rights and Responsibilities

NOTICE OF NON-DISCRIMINATION
For Inspiration and Recognition of Science and Technology (FIRST®) does not discriminate based on race, color, national origin, sex, disability, age, status as a veteran who served in the military, religion, gender, gender identity, or gender expression in its programs and activities.

Keep updated at: http://www.firstinspires.org/about/legal-notices

4. Job Description

- Physical/Technical Requirements:
  - Technical – High
  - Physical – Low
  - Administrative – High
  - Communication – High
- Time commitment:
  - The Scorekeeper should expect to arrive early at the event to help set up the scoring software and displays.
  - The Scorekeeper should expect to be at the event for the entire duration, approximately 8 hours for a full-day event. League Meet events are typically shorter.
- Proper Dress:
  - The Scorekeeper generally sits at the scoring system. Comfortable shoes and attire are encouraged.
  - ANSI Z87.1 certified safety glasses are required in the competition area.
4.1. Volunteer Training and Certification
Volunteers must apply to their role using the Volunteer Registration System. After the volunteer has applied to their role, FIRST Tech Challenge will send an email to the volunteer with access instructions to training and certifications (if applicable). Emails with access to the training and certifications will be sent within one business day from applying to the role. If you have applied for a role but have not received access to the training, please email FTCTrainingSupport@firstinspires.org.

The Scorekeeper should read this manual before the event. She/he should speak to the Tournament Director or Affiliate Partner to check for additional requirements, such as meetings before the event or run-throughs of the queuing path before the event.

The Scorekeeper is required to pass the certification test prior to the event. The estimated training time is one hour.

The Scorekeeper should familiarize him or herself with the FIRST Tech Challenge Scoring Software prior to the event.

4.2. Volunteer Minimum Age Requirement
FIRST requires that FIRST Event volunteers be at least 13 years old, however, the Regional Planning Committee can increase the age requirement as needed. Adult volunteers cannot have children with them while volunteering nor be responsible for supervising children at the event. Children under the minimum age are welcome at FIRST Competitions with suitable supervision by someone other than a volunteer.

4.3. Key Volunteer Role Minimum Age Requirement
Volunteers MUST be at least 21 years old before they can serve in a Key Volunteer Role for the FIRST Tech Challenge. Key Volunteer positions include: Volunteer Coordinator, Head Referee, Judge Advisor, Field Manager, Field Technical Advisor, Lead Robot Inspector, Lead Field Inspector, and Lead Scorekeeper. Local Affiliate Partners can make case by case exceptions to these guidelines by contacting FIRST for approval.

4.4. Bring a Friend!
Volunteers are a huge part of the FIRST Tech Challenge Program and continuing to inspire students to seek out careers in science, technology, engineering, and math (STEM). FIRST Tech Challenge needs your help in recruiting new volunteers to keep our programs thriving for future generations! If you have a friend or co-worker you think would be interested in volunteering at an event, there are just a few easy steps to help get them involved!

1. Check out our full list of volunteer opportunities online!
2. Have them apply for the event in the Volunteer Registration System. Volunteers must be screened before volunteering.
3. Have them contact Firsttechchallenge@firstinspires.org with any questions they may have.

If they are concerned about jumping in head first, no worries! Job shadowing at a FIRST Tech Challenge event is a great way to get a taste of what a full day’s worth of competition looks like. New volunteers can discover ways they can fit their personal skills into a volunteer position!
5. Overview of Responsibilities

The FIRST Tech Challenge lead Scorekeeper (referred to in this manual as “the Scorekeeper”) is the person responsible for making sure that the scoring software is setup correctly for use at the event. The Scorekeeper helps the flow of the event and provides information to the teams and to the audience. Being prepared before and diligent during the event will help to provide a positive experience for all participants. The responsibilities of a Scorekeeper include:

- Participation in training prior to the event.
- Accurately entering match scores into the scoring system.
- Entering team and sponsor information into the scoring software.
- Generating matches for the event.
- Setting up displays for audience to view scores.
- Communicating match schedules to key volunteers such as Referees, Judges, Tournament Directors, etc.

Make sure to speak with the Affiliate Partner or Tournament Director prior to the event to determine if there are additional responsibilities and time commitments to set up the Scoring computers and displays. At some events, the Scorekeeper may be responsible for setting up the computers, displays, etc. There are many components that are required to be set up to run the scoring system and displays correctly.

A Scorekeeper must be confident and comfortable with the system to be able to reliably record results during the hectic pace of an FIRST Tech Challenge event. Learning the role and equipment ahead of time will go a long way towards keeping the event running smoothly and on time.

6. Pre-Event Day Responsibilities

Outlined below are responsibilities Scorekeepers have before event day. Make sure to check with the tournament director to see if they need help setting up before the event, and when you should be there to set up the scoring equipment. Many events set up the fields and A/V equipment the night before, which may also include loading the scoring system onto the scoring computer and setup of the display screen. Be sure to check with the tournament director or Affiliate Partner to understand what is being prepared ahead of time, and what needs to be done on the morning of the event.

- Watch the pre-recorded Scorekeeper training videos. This will help familiarize with the system and how it operates.
- Pass the Scorekeeper certification test
- Familiarize yourself with the scoring software
- (Optional) Attend a Monthly Key Role Discussion Q&A call. This will provide the opportunity to ask questions, or provide feedback to other Scorekeepers.

7. Event Day Responsibilities

7.1. Scoring System Setup

Setup of the Scoring System is usually completed the day before the event. The Affiliate Partner or tournament director will be able to guide you on what has been completed the day before. On the morning of the event, you will need to turn on the scoring computer and displays, and start the scoring system.
7.2. Pre-Match Responsibilities

- Work with Affiliate Partners or Tournament Director to establish when teams are declared “no show”
- Work with Affiliate Partners or Tournament Director to determine logistics of the event, such as number of matches to be played, or the time schedule for the matches.
- Ensure that all team and sponsor information has been entered correctly.
- When all teams have checked in, update team information as necessary and generate matches.
- Communicate match schedules to key volunteers.
- Generate the inspection schedule.
- Generate the judging schedule.

See Appendix B for the Event Checklist.

7.3. Game Play

The Scorekeeper and the Emcee/Game Announcer should agree on a “ready” signal to start the match timer clock prior to the start of the matches. The match timer clock shall begin after the Emcee/Game announcer has verified that both alliances and the Scorekeeper are ready, and a 3-2-1 countdown.

7.4. Generate Alliances

After all qualification matches have been played, the Scorekeeper will enter the formed alliances and generate matches for the elimination matches.

7.5. Awards

The Scorekeeper may be asked to enter the awards into the scoring system and print the awards ceremony script for the Emcee/Game Announcer.

Other event-day duties may be assigned, as needed.

8. Post-Event Responsibilities

For League Meet Events - the Scorekeeper must save and provide the results to the Tournament Director or Affiliate Partner. These results contain important team information that needs to be loaded into the Scoring System at the next League Meet or League Tournament.

Qualifying Tournaments, League Tournament, State/Region Championship Events – After all matches have been played and all scores have been recorded, the event score results must be submitted to FIRST. See the section Uploading Event Data to FIRST for more information.
9. Introduction to the Scoring System

What is the FIRST Tech Challenge Scoring System?
The FIRST Tech Challenge Scoring System (also known as FIRST Tech Challenge Live) is a software program that has multiple functions to allow you to input and track vital information at an event.

The system allows a Scorekeeper to generate and track the following:

- Team information,
- Sponsor information,
- Match schedules,
- Match results (including an option for real-time score tracking)
- Alliance selection for elimination and final matches.

This software will also allow you to display sponsor information and team match results to teams and spectators. This manual will go through step by step instructions on how to run the program correctly and efficiently.

10. System Hardware

10.1. System Requirements

The FIRST Tech Challenge Live software is available on the Windows and Mac platforms. It is a browser-based application, meaning that you interact with the system exclusively through a web browser. The system also supports real-time score tracking. Live score data can be entered into the system using a tablet.

10.1.1. Windows

- Windows 7 or 10
- Java 8 or higher (available from www.java.com, only needed for the laptop running system software)
- Google Chrome; Firefox is not supported.
- Support for Wi-Fi if connecting to a wireless network
- Ethernet adapter if connecting to a wired network

10.1.2. Mac

- macOS Sierra or greater
- Java 8 SDK or higher (available from www.java.com, only needed for the laptop running system software)
  - Note – Unlike the Windows environment, macOS requires the Java Development Kit (JDK) to run. Windows only requires the Java Runtime Environment (JRE) to run.
  - If you install the JDK software onto your Mac, you should not need to install the JRE software. The JRE should already be included as part of the JDK
  - The JDK software can be downloaded from the following Oracle web link:
Figure 1 - Accept the License Agreement, then select the Mac OS X x64 version to download.

- Google Chrome
- Support for Wi-Fi if connecting to a wireless network
- Ethernet adapter if connecting to a wired network

10.1.3. Android Tablet (for Real-time Score Tracking)
- Android Marshmallow (6.x) or greater
- Google Chrome
- Support for Wi-Fi

Note: Some event hosts prefer to use Amazon Kindle tablets for real-time score tracking. Kindle tablets can be configured to work well with the scoring system. Kindle tablets, however, do not typically have Google’s Chrome Browser installed. Additional steps are required to get the Chrome software running properly on a Kindle tablet. Details on installing Chrome on a Kindle tablet are beyond the scope of this documentation.

Also note: that some Kindle tablets have an operating system that is based on an older version of Android (Lollipop). These Kindle devices can still be used with the scoring system.

10.1.4. iOS Tablet (for Real-time Score Tracking)
- iOS 8 or greater
- Google Chrome
- Support for Wi-Fi
10.2. **System Layout**
The *FIRST Tech Challenge* software is flexible and can be used in a variety of configurations. This section provides an example of a basic configuration and an example of a more complex configuration.

10.2.1. **Basic Configuration with Paper Scoring**
The most basic configuration requires a single laptop that will serve as both the scorekeeper computer and as the field display computer. This configuration also includes an external monitor (to serve as a field side display), and a printer (to print match schedules and scoresheets).

![Figure 2 - A very basic layout with paper scoring.](image)

10.2.2. **Advanced Configuration with Real-Time Scoring**
The system also supports real-time score tracking using a pair of wireless tablets.

![Figure 3 – An advanced configuration with support for real-time tracking.](image)
This advanced configuration includes the following components:

- **Scorekeeper Laptop** – A laptop that has the FIRST Tech Challenge Live scorekeeping software installed. This laptop acts as a server for the whole system. It is also used for match control and scorekeeping (such as reviewing, editing, and committing scores).
- **Printer** – Used to print match schedules, reports, and other useful documents.
- **Network Router with Wi-Fi support** – Used to connect system components together.
- **Field Display Laptop** – A laptop that uses a web browser and a network connection (wired or wireless) to access the system server and display field-related information during an event. It is connected to a large screen monitor.
- **Audience Display Laptop** - A laptop that uses a web browser and a network connection (wired or wireless) to access the system server and display spectator-specific information during an event. It is connected to a large screen monitor.
- **Scoring Referee Tablets (x2)** – Referees use these tablets to track, in real time, the score during a match. After a match is complete, referees can review, edit, and submit their scores to the system. The tablets use a wireless connection and a web browser to access the system server.

**Important Tips:**

- You will need to know the IP address of your computer that is running the system software (i.e., the scorekeeper laptop in this example). When another device, such as a referee tablet or a display computer, wants to access the system, the user will have to provide the IP address of the scorekeeper laptop to the web browser in order to access the system functions. Consult with your IT administrator on what the IP address is for your server or refer to the section.
- Wireless activity for the scoring system should operate on a Wi-Fi channel that will not interfere with the control of the competition robots.
- Audio cues (such as the match start or match stop sound effects) for a public announcement (PA) system can be pulled from any of the Display computers. It is recommended that a single computer is used as the source of the PA audio (to avoid audio synchronization issues).

11. **Download and Installation**

11.1. **Important Tips for Running the System Software**

Here are some tips before you get started:

- Disable any firewall, or open appropriate ports, on the computer that will be running the server.
- Disable any ad blocking software on devices that will interface with the server. The ad blocking software occasionally misinterprets server resources as ads.
- Ensure that Google Chrome is installed and is the preferred browser.
- Important note: Firefox browser is not supported!
- If it has been more than a few days since the software was released and you have internet access, perform a data download before creating the event to ensure team info is up to date. "Event Admin" dropdown -> Manage Server -> Data Download.
11.2. **Minimum Hardware Configuration**
For most events, the hardware requirements to run the FTC Live scoring software are very modest.

11.2.1. **Scoring Server Minimum Requirements (Windows/Mac/Linux)**
- Intel Core i5 Processor
- 4 GB of RAM
- 300 MB of available disk space
- CAT 5 Ethernet adapter (USB connected would be OK if built-in not available)
- 802.11 WiFi adapter

*Note:* If you are running a large event, such as a dual division event, a higher performing computer might be warranted.

11.2.2. **Network Requirements**
The selection and configuration of the network hardware can be more critical than the selection of the server hardware to the success of your live scoring event.

- Use a dedicated (i.e., not shared with other users or applications), local network to connect your scoring devices.
- To avoid latency issues, the scoring server should be local to your event (and not run through a remote Internet/Cloud connection).
- Scoring network should be on its own secure network (i.e., not open to the public). This should minimize the risk of malicious activity from occurring towards the scoring system.
- Use a wired connection whenever possible (with the exception of the real-time scoring referee tablets, which are typically wireless devices).
- If you need to use a wireless connection, work with your FTA and venue IT staff to make sure you select a wireless channel that does not interfere with the competition robots.
- Check with your venue’s IT staff to see if a WiFi Blocker is present. If one is present, you will not be able to use wireless scoretracking devices unless the staff disables this function.
- Use a modern (made within the past 3 years) switch/access point that is powerful enough to accommodate the number of devices needed at your event
  - FIRST has received credible reports of older, "underpowered" switch/access points being unable to support a large enough number of devices operating on the scoring system network.
  - Use an appropriately sized network device that will be able to accommodate all your scoring-related devices simultaneously.

11.3. **Downloading the Software Package**
The *FIRST Tech Challenge Live* software is available for download from the following link:

https://github.com/FIRST-Tech-Challenge/scorekeeper/releases

The software is stored as a compressed archive file and is available in .zip or .tar format.

*Also note:* that Windows and Mac users will most likely want to download the “.zip” version of the archived software.
Figure 4 - Releases begin with the phrase “FIRST-Tech-Challenge-Live”.

To use the software, unzip the downloaded file into the folder of your choice. FIRST suggests that users save the file on the computer’s desktop to easily access the program. The software will run from this directory.

To extract or unzip the file, right mouse click on the archive file and select the appropriate option to extract the compressed files to your computer.

11.4. Launching the FIRST Tech Challenge Live Server
Once you have successfully extracted the contents of the archive file, you will need to launch the system server. This server will run in a window on your computer. You will access this server through your Chrome web browser.

11.4.1. Launching the Server Using Windows
Use Windows Explorer to navigate to the main program directory. Find the Windows batch file called “FIRST-Tech-Challenge-Live-Windows.bat” and double click on it to launch the server.

Figure 5 - Double click on the FIRST-Tech-Challenge-Live-Windows.bat batch file to launch server.

It is safe to ignore the warning and click on “Run” to run the software.
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11.4.2. Launching the Server Using macOS

Using Finder, navigate to the main directory of the program folder and locate the script file named “FIRST-Tech-Challenge-Live-UNIX”. Double click on the file to run the script.

**Note:** macOS might warn you that the application was downloaded from the Internet. If you see this warning, click on the “Open” button to allow your computer to run this application.

![Figure 10](image1.png)

Figure 10 - If prompted, click on the “Open” button to allow your Mac to run the software.

For Mac computers, the user account that is running the scorekeeping software typically needs administrative access on the computer to run the software properly. When you launch the “FIRST-Tech-Challenge-Live-UNIX” script, the software will check to see if you are running the script with administrative access. If it does not think it has administrative access, the application will prompt you for your Mac’s password. A macOS terminal will appear and the system will prompt you to login using your user password. Type in the password and press return.

![Figure 11](image2.png)

Figure 11 - If prompted, type in your user password for your Mac account and press RETURN.

If successful, the terminal window will show that the scorekeeping server is running. Note that while you are using the software, you should keep the server running in the background on your Mac computer. You can minimize the terminal window, but do not close the window or the system will stop working. After the server is started, the batch file should also launch your default web browser and display the main system webpage (with a web address of “localhost”, see Figure 11).
**Note:** On some Macs, the system will launch the main page in a Safari browser, even though you might have Chrome set as your account’s default browser. If this happens, FIRST recommends closing the Safari window and open a Chrome window instead. Specify the address of “localhost” in the Chrome window to access the scorekeeping server.

![Terminal output](image)

**Figure 12 - If successful, the terminal will show that the server software is running.**

### 11.5. Using an Alternate HTTP Port (Advanced Topic)

By default, when you launch the server, the software tries to use the default HTTP port (port 80) when it launches the web server that is used by the scoring software. In some cases, the default port might not be available on the laptop that is running the system’s server.

Or, if a mac user does not have administrative privileges on the computer (which is needed to use the default port), then he or she can still run the software if they specify an alternate HTTP port for the scorekeeper server.

For these cases, it is possible to change the port by passing the new port value as a command line argument. Note that this is an advanced topic. Most scorekeepers will not need to know how to change the port.

#### 11.5.1. Using an Alternate HTTP Port on a Windows Computer

Open a Windows command line terminal ("cmd.exe") and navigate to the “bin” subdirectory of the scorekeeping software’s program folder. In the command window, type in the following command

```bash
FIRST-Tech-Challenge-Live.bat -p <port number>
```

Where `<port number>` is replaced by the value of the port number you’d like to use (“8080” for example). Press RETURN and the software should invoke the webserver and use the port specified in the command line.
When the install script launches your web browser it should include the port number (in this example, “:8080”) when opening the web page for the address “localhost”.

11.5.2. Using an Alternate HTTP Port on a Mac Computer

One advantage of using an alternate HTTP port number on a Mac is that it does not require administrative access to run the software. This is useful if your user account is restricted and does not have administrative privileges.

You will need to use a terminal window to launch the software using a different HTTP port. The terminal program is in the “Utilities” subfolder of the macOS “Applications” folder.
Launch the terminal app from the Utilities folder. You will need to type commands into the terminal window to navigate to the FIRST Tech Challenge Live directory and then to launch the server software. Note that macOS is a case sensitive operating system so if you copy the commands in the example below, make sure the capitalization is correct.

For example, assume that the software is in a folder on the Desktop of the current user and has the name “FIRST-Tech-Challenge-Live-0.4.0”. You will need to type in the following command at the terminal prompt to change to the “bin” subdirectory.

```
cd ~/Desktop/FIRST-Tech-Challenge-Live-0.4.0/bin/
```

If you successfully changed to this “bin” subdirectory, you can invoke the software using the following command (don’t forget the “./” before the name of the file):

```
./FIRST-Tech-Challenge-Live -p <port number>
```

Where `<port number>` is replaced by the desired port number value (for example, “8080”). The software should invoke the system server and use the port specified in the command line. When the install script launches your web browser it should include the port number (in this example, “:8080”) when opening the web page for the address “localhost” (see Figure 16).

**11.5.3. Navigating to the Server Using an Alternate Port**

If you launched the server with an alternate HTTP port, then when you want to connect to the scoring system server, you must specify the port number as part of the server address. For example, if the system is listening on port 8080, then you must append a “:8080” to your web address when navigating to the server. If you do not specify the port at the end of the address, the web browser might fail to connect to the scorekeeping server.

![Figure 15- The terminal application is in the “Utilities” subfolder of the “Applications” folder.](image1.png)

**Figure 15- The terminal application is in the “Utilities” subfolder of the “Applications” folder.**

![Figure 16 – Specify the port number in the address if your scorekeeping server is using an alternate port number.](image2.png)

**Figure 16 – Specify the port number in the address if your scorekeeping server is using an alternate port number.**
12. Setting Up an Event

12.1. Getting Version Number and IP Address
Due to software updates, it is useful to know the version number of the FIRST Tech Challenge Live software that you are currently running. It is also helpful to know the IP address of the scorekeeping server. This information can be obtained from the top of the browser screen when viewing the FIRST Tech Challenge Live pages (software version 0.4.3 and higher).

![Figure 17 - The software version number and the system IP address](image)

12.2. Logging in to the System
- Click on “Login” at the top right corner of the screen.
- You can log in with the username “local” and leave the password field blank.

![Figure 18 - Log in to the “local” account to gain access to the system.](image)

Important Note: the “local” user account is the primary administrative account for the system. It is only available locally on the computer that is running the server application. Users should take care to secure this computer to make sure an unauthorized user will not access the “local” account.

12.3. Navigating the System’s Home Screen
Once you have logged in to the system, the home screen should look like the following image:
Note: If you do not have any events defined for your system, these lists will be empty.

In the upper right-hand corner of the screen you will find:

- **Resources**: Opens a directory of scorekeeper related documents, including printable scoresheets.
- **Feedback**: Submit your concerns to the FIRST Tech Challenge Live software developers.
- **Login**: User account information, you can also click on the “Hello, local” link to get information about your current user account.

There are options available in the “Event Admin” menu:

- **Setup Event**: This will allow you to create a single event and prompt you to enter an authentication key.
- **Create User**: This gives you the option to create individual user accounts for users that may only require access to a subset of the software features.
- **Manage Users**: When you have a list of users for the events, this section will allow you to manage the users and their system access.
- **Manage Server**: This allows you to manage the server for an event.

### 12.4. Set Up an Event

1. Once you’ve logged in, the "Event Admin" dropdown appears. Select "Setup Event":

![Figure 22 - Select "Setup Event" option to create a new event.](image)

2. Opens the Setup Event page with a prompt to input the Region Key. Regions will be sent a Region Key, which your Affiliate Partner will distribute to event scorekeepers. This key will be required to upload event data - which every official event needs to do (even league meets!).

![Figure 23 Prompts to enter a key](image)

**Important Note**: The key will be validated upon connection to FIRST's servers. If a region does not appear, the key is not recognized. We strongly recommend using a copy/paste operation to enter the key.

**Note**: If you do not have a key at the moment, or are running a non-official/test event, you can skip the entry. It will allow you to enter the key later for upload.
After you submit the key, it takes you to the Create Event page. If a key was entered on the Setup page, it will auto-fill the Region field. If you skipped that step, you will need to enter it yourself.
When you want to create a new event, you are required to fill in the following fields:

- **Event Code**: The event code must be *unique, all lowercase, and must not contain spaces or special characters*. For example, an event code can be “leaguemeet01” or “nhqualifer1”. Important note for League organizers: the event codes for league meets should be unique within a league.
- **Event Name**: The event name is used for the scoring software and will appear on displays.
- **Event Type**: It is important to select the correct event type. *League meets must select the “League Meet” event type* for the rankings and score rollover to work correctly.
- **Event Start Date**: Select the start date of the event from the calendar.
- **Event End Date**: Select the end date from the calendar.
- **Number of Fields**: League Meets will be pre-populated with 1 field. Other event types will allow you to enter the number of competition fields at the event. Most events have 1 or 2 competition events.

Once you have entered in valid values for these fields, press the “Create Event” button to create the event.

![](image)

*Figure 26 - Specify the event information then press “Create Event” to create a new event.*

### 12.5. **The Event Dashboard**

Once you have created a new event, the system should display an *Event Dashboard*, which lists the typical steps a user will follow to run a *FIRST* Tech Challenge event. You can also jump to the Event Dashboard for the currently selected event by selecting the event’s “Dashboard” option from the “Event Admin” drop down menu.
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Also, in the upper left-hand corner there is a “Back to Event Home” link. Clicking on this link will take you to the home page for the currently selected event.

### 12.6. Creating Default User Accounts

You will need to create a set of user accounts that your volunteers can use during the event. Click on the “Create Default Accounts” button on the Event Dashboard to display the Default Accounts screen.

**Figure 29** – Press the “Generate New Random Accounts” to create a set of accounts for the currently selected event.

Press the “Generate New Random Accounts” to generate a set of user accounts that can be used to provide limited access to the system for the selected event.

Press the printer icon in the upper right-hand portion of the screen if you want to print a hard copy of the list.
The password and access permissions for a user account can be changed by an event administrator by clicking on the “Manage Users” item from the “Event Admin” menu and then using the resulting screen to review and modify information for the selected account.

New users can be added by an event administrator by selecting the “Create User” item from “Event Admin” menu.

When they are logged into the system, an individual user can also change his/her account password by clicking on the “Hello” link in the upper right-hand corner.

An event administrator can reset the accounts back to their originally assigned passwords by clicking on the “Reset Accounts” button.

An event administrator can generate new random passwords for all the default accounts by pressing the “Generate New Random Accounts” button.

### 12.7. Adding/Editing Teams for an Event

Click on the “Add/Edit Teams” button on the Event Dashboard to add or edit teams for the selected event. **Note:** The system comes with a pre-populated list of FIRST Tech Challenge teams that you can search from.

#### 12.7.1. Adding a Team Individually

You can add a team individually from the “Add Individually” tab:

- In the “Team Number to Add” field, type in the number of the team you would like to add.
- Press the word “Add” to the right of the Team Number to add the team to the event.

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Figure 31 - Enter Team Number and hit "Add" to add a team.

- If the system already has the team’s data prepopulated, the newly added team number will appear along with its team information. If the system does not have any data for the team, the remaining columns for the newly added team will be blank.
- Edit the empty field, then press Save. You can remove a team by pushing the delete button towards the right side of a team listing.
- You can switch to “Find by State/Province” mode by clicking on the “Find by State/Province” tab.
- If you are done adding and editing teams, press the “Done” button.

Figure 32 - Use the Edit or Delete buttons to modify or remove a team.

12.7.2. Adding Teams by State or Province

Another option is to select “Find by State/Province” tab to add teams:

- The system should display a list of available pre-populated teams by selected region.
- Use the Country and State/Province controls to select the country and state/province to display.

Figure 33 - Use the Country and State/Province controls to select your country and state/province.

- “Add?” column check boxes to add teams to the event.
- Select single teams with the “Add Individually” tab.
- If you are done adding and editing teams, press the “Done” button.
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12.7.4. Editing Existing Teams
Select the “Add/Edit Team” button on the Event Dashboard, and then use the “Add Individually” tab to edit the team. When you are finished editing teams, press the “Done” button to leave the Add/Edit Team screen.

12.8. Adding/Editing Sponsors for an Event
The software comes populated with the following sponsors:

- FIRST Tech Challenge Presenting Sponsor: Qualcomm
- FIRST Tech Challenge Official Program Sponsor: Rockwell Collins
- FIRST Tech Challenge Official 3D Augmented Reality/Virtual Reality Sponsor: PTC

These sponsors cannot be modified and need to be displayed at every event. In addition to the above sponsors, you may add regional or event sponsors.

Click on the Add/Edit Sponsors to create or edit a sponsor list for your event.

![Figure 36 - You can add/edit sponsors for an event.]

- Press the “Add” button to add a new sponsor for an event.

![Figure 37 - When you add/edit a sponsor, you should specify the sponsor’s name and level of support.]

- Enter the name of the sponsor.
- Select the type of sponsor (Global, Regional, or Event).
- Click on the “Create Sponsor” button to create the new sponsor.
- From the main Add/Edit Sponsors screen, you can also use the “Choose File” and “Import Sponsor Data” buttons to import a sponsor data file.

Sponsor information can be displayed on Audience Displays by using the “Video Switch” tab of the Match Control Page (for details, see the section “How to Display Sponsor Information”).

12.9. Creating the Match Schedule
If you have a list of at least four teams for your event, you can generate the match schedule. On the Event Dashboard, select the Create Match Schedule.

![Figure 38 - Create Match Schedule main screen.](image)

- You can edit the “Matches per Team” field (within the limitations set by the system) to adjust how many matches per team will be scheduled.
- You can edit the “Cycle Time” field to adjust the desired target cycle time for a match.
- You can press the “Default” button to use the default parameters to generate a simple match list (no match blocks or breaks included).
- You also have the option to create a more complex match schedule, with blocks of matches and breaks inserted in between.
  - Press the “Add Match Block” button to add a block of matches to the schedule.
  - Press the “Add Break” button to add a break in between matches to the schedule.
  - Adjust the start and end times for the blocks and breaks and provide labels (such as “lunch”, “morning”) for the breaks.
Once you configured your match blocks and breaks, you can push the “Run Matchmaker” button to run Idle Loop’s Matchmaker software. A progress bar should appear with an estimate on how much time to generate the schedule.

Once the match list has been generated, it will appear towards the bottom of the screen. There is an option to display or hide the suggested match times for the schedule. By default, the match times are hidden.

After you have reviewed the match schedule, you can use the “< Back to Dashboard” link to return to the Event Dashboard.
### NH State Championship Schedule

<table>
<thead>
<tr>
<th>Match</th>
<th>Field</th>
<th>Red 1</th>
<th>Red 2</th>
<th>Blue 1</th>
<th>Blue 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualification 1</td>
<td>1</td>
<td>10939</td>
<td>4130</td>
<td>10941</td>
<td>10940</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qualification 2</td>
<td>2</td>
<td>10938</td>
<td>10937</td>
<td>8888</td>
<td>10939</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qualification 3</td>
<td>1</td>
<td>4130</td>
<td>10941</td>
<td>10938</td>
<td>8888</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qualification 4</td>
<td>2</td>
<td>10938</td>
<td>10940</td>
<td>10937</td>
<td>4130</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qualification 5</td>
<td>1</td>
<td>10937*</td>
<td>8888</td>
<td>10941</td>
<td>10939</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qualification 6</td>
<td>2</td>
<td>10940</td>
<td>4130</td>
<td>10937</td>
<td>10941</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qualification 7</td>
<td>1</td>
<td>10940</td>
<td>8888</td>
<td>10939</td>
<td>10938</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qualification 8</td>
<td>2</td>
<td>10937</td>
<td>10939</td>
<td>4130</td>
<td>10938</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5 minute break for consecutive match per T14.

**Figure 41 - The generated match schedule will appear towards the bottom of the screen.**
12.10. **Uploading Event Data to FIRST**

On the Event Dashboard, select the Send Results to *FIRST* button:

![nh1 Dashboard](image)

*Figure 42 - Dashboard with Send Results button.*
Opens the Send Results to FIRST page, select Submit Results.

![Send Results to FIRST](image)

*Figure 43 - Press the Submit Results button.*

Successful submit will give a Submission ID. If you need to report any issues or bugs to Github, please include this number.

**Note:** Once you submit, an event cannot be resubmitted. So make sure the event is complete and all data is saved and correct.

![Successful submission will give a Submission ID](image)

*Figure 44 - Successful submission will give a Submission ID*

If you skipped the Setup Event step, it will prompt you for a key now. It is required for this step.

![Copy/Paste the region key.](image)

*Figure 45 - Copy/Paste the region key.*

If the key is invalid, it will alert you and you will need to re-enter the key to make sure it is correct.

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13. Match Control and Scoring

If you successfully created a match schedule for your event, then you are ready to begin controlling (initializing, running, and scoring) the matches.

13.1. Example Scoring Workflows

Before examining the details of the Match Control features that are available with the system, it is helpful to look at the workflow for scoring an event.

13.1.1. Scoring Using Paper Scoresheets

The system can be used with paper scoresheets to control and score an event. For this scenario, the typical workflow is:

- Load Match
- Show Match Preview
- Randomize Field
- Run Match
- Manually Enter Scores (using a “Forced Edit” of the results)
- Commit Results
- Display Results

13.1.2. Scoring Using Wireless Tablets

Wireless tablets can be used for real-time score tracking:

- Load Match
- Show Match Preview
- Referees Submit Pre-Match Info
- Randomize Field
- Run Match
  - Referees track then submit Autonomous
  - Referees track then submit Driver-Controlled
  - Referees review then finalize their scores
- Commit Results
13.2. **Event Home Page**

You can navigate to the Event Home Page from the Event Dashboard by clicking on the "<< Back to Event Home" link that is in the upper left-hand corner of the screen. Depending on your user account permissions, the home page will display categorized lists of features that are available from the server:

- **Event Info** – These links display important event-related information. A scorekeeper can review and print out information such as the match schedule, team rankings, and match results using these links. Also, a pit display can be launched from a link in this category.
- **Score Tracking** – A referee would use these links to score for the red or blue alliance.
- **Event Administration** – These links take the user to the Event Dashboard, the Match Control page, and to the various public display screens.

---

**nhchampionship2019: NH State Championship**

**Event Info**
- Judging & Inspection Schedule
- Judging & Inspection Status
- Match Schedule
- Rankings
- Match Results
- Pit Display
- Event Reports

**Inspection**
- Robot Inspection
- Field Inspection

**Score Tracking**
- Red Alliance Score Tracking
- Blue Alliance Score Tracking

**Displays**
- Scoring/Timing Displays

**Event Administration**
- Event Dashboard
- Match Control Page

---

**Figure 47 - Event Home page.**
13.3. **Match Control Page**

Click on the “Match Control Page” link to display the Match Control Page.

![Match Control Page](image)

**Figure 48 - Match Control Page**

The Match Control Page is where the scorekeeper will spend most of their time. It is where the match timer is controlled, as well as, where scores are edited. It is recommended that the Match Control Page be used in full screen mode, and that the user not navigate away from the Match Control Page’s browser tab. If the user would like to have two or more active browser screens on their laptop (for example, if the user wanted to display the match control page and the field display page), it is recommended that user have two separate browser windows (and not two browser tabs within the same window) launched on their computer.

**Important Note:** Only one Match Control Page should be open per scoring server per event. More than one Match Control Page can result in confusion and inaccurate and unpredictable match results.

![Loaded Match and Active Match information](image)

**Figure 49 - Loaded Match and Active Match information.**

At the very top of the Match Control Page, lists information about the current “Loaded Match” and the current “Active Match”.

- **Loaded Match** is the next match to be played. The alliance lists turn green once the referee has submitted initialization data for that alliance. When both are green, the match start button turns green to allow for match start.

- **Active Match** shows the match currently in progress and the time left. The buttons progress through the match flow, generally from left to right. Green buttons indicate the next steps, yellow buttons indicate repeated actions (that are allowed), and red buttons indicate non-standard match flow operations, but are still allowed. Grey buttons cannot be used at the time.

**13.3.1. Match Control Buttons**

The buttons on the Match Control Page below Loaded and Active Match, allow for the control of the match flow.
Figure 50 - Buttons allow for control of the match flow.

- Load Next Match - This button will load the next match in the schedule for play, allowing referees to input initialization data and allowing randomization of the field. To load a different match, use the Play / Replay button on the schedule tab. If no matches exist, button does nothing.
- Show Preview - Audience Displays will show the list of teams competing in the next match, and their current rank.
- Randomize Field - This will generate a random number to use to configure the field before the match. If external randomization is enabled in settings, a tooltip will appear below the button to allow selection of a value. Clicking again will prompt for confirmation, but will allow re-randomization.
- Show Randomization - This will show the randomization value and corresponding field state on Audience Displays.
- Show Match - This prepares the displays for match start by showing the screen used during a match.
- Start Match - Starts the match. This button is not available until after the field has been randomized. It is red until both referees have submitted initialization, but can still be clicked when red. After match start, it turns into an “Abort Match” button, which is used to reset the match timer. After an abort, the match returns to the waiting for init stage, and referees must refresh their pages and re-submit initialization before the start button turns green again.
- Commit & Post Last Match- This is a convenient button that is available once the previous match’s scores have been submitted by referees, and the next match has not yet started. It will both save the results of the previous match, and show them on screen. This button should only be used after confirmation signal from the head referee that all data as entered by the referees is correct and no cards need to be given. Otherwise, matches can be edited, committed, and posted from the schedule tab /edit scores tab.

13.3.2. Match Control Tabs
The Match Control Page has several tabs that can be used to switch the information displayed on the screen:

Figure 51 - Each tab changes the information displayed on the screen.

- Schedule - Shows list of matches, their status, teams, and scores. From this tab, which match to play can be selected, and matches can be selected to edit or show results.
- Incomplete Matches - Shows the matches that have been started but not completed (committed to the database).
- Score Edit - Used to edit scores or enter CARDs. Click Edit on a match in the schedule tab to load this tab.
• Active Match - Shows the live scoring state of the match currently being played, or the last one played. Looks like score edit tab but cannot be edited. After a match is complete, it provides a button to edit scores.
• Settings - Allows for configuration and loading of test matches.
• Video Switch - Used to show sponsors, bracket, audience key, wifi reminder, ranks, and blank screen.

13.3.3. How to Display Sponsor Information
You can display the list of sponsors on an Audience Display using the tabs that are available on the Match Control screen.

1. Select the Video Switch tab, then the “Show Sponsors” button.

![Match Control](image)

Figure 52 - Click on the "Show Sponsors" button to display the sponsor information on Audience Displays.

2. Select “Show Sponsors” button to display the sponsor information on the Audience Displays at your event.
3. The Audience Displays should automatically begin displaying the sponsors for your event.

![Sponsors on Audience Display](image)

Figure 53 - The Audience Displays with sponsor information.

13.4. Scoring/Timing Displays
A laptop or computer that is connected to the same network as the system server can be used to display scoring and timing information:

• Field Display – The Field Display provides basic match and timing information for the teams and volunteers on an active competition field. If live scoring is enable, it also provides live score information.
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• Audience Display – The Audience Display provides match and timing information, formatted for spectators. If live scoring is enabled, it also provides score information including a graphical representation of the state of the field during a match. When the results of a match have been committed and posted, the results information should display on the audience displays.

• Overlay Display – The Overlay Display mode is similar to the Audience Display but has a season specific screen. The blank portion of the screen is where a video feed (typically live camera footage of the match) can be overlaid onto the screen using chroma key technology.
You can have multiple devices acting as Field or Audience Displays on your network. It is strongly recommended that these devices are connected to the server through a wired (Ethernet) network to avoid interfering with the wireless control systems of the robots. Or, if a wired connection is not convenient, a wireless connection can be used, but it should be configured so that it operates on a Wi-Fi channel that will not conflict with the wireless control systems of the robots.

### 13.4.1. Setting up a Display

By default, the Scoring/Timing Displays are private and not accessible without an authorized user account. Currently a user account requires Event Admin privilege to be able to display the Scoring/Timing information.

Before you can set up a Field or Audience Display, you will need:

- Verify that you have the IP address of the system server.
- Verify that you have a valid user id and password that can access the Scoring/Timing feature.
- Launch the Google Chrome browser on your display computer.
- Typing in the IP address to navigate to the system server.

- “Login” link in the upper right-hand corner.
- A listing of available events. Click on the event that you want to track in the Field or Audience Display.
- In the Event Home page for your selected event, click on the “Scoring/Timing Displays” link (currently located under the “Event Administration” category).

![Figure 58 - Scoring/Timing Display in Event Admin.](image)

- On first load, the Display Page will appear with a settings dialog open. The settings dialog allows you to choose a display type (Audience, Field, Overlay), as well as binding the display to a field. Note that after you close the settings dialog, can re-open it by clicking anywhere on the page while holding down the CTRL key.
• The “Audio Testing” buttons at the top can be used to play the game audio cues to test the PA system.
• Select the Display Mode for the computer you are configuring.
• If you bind the display to a field, then it will only show events for the specified field.
• If you are not using real-time score tracking, disable the “Show Live Scores” option.
• Displays must be shown in full screen. After changing to full screen, refresh the page to ensure it is properly displayed.
• Google Chrome is recommended. Firefox is NOT supported and will not work with the display screens.

Test that Scoring/Timing Displays update automatically as the scorekeeper changes the state of the active event.

13.5. Scoring Using Paper Scoresheets
The system supports scorekeeping using paper scoresheets and a very basic system configuration (see Figure 3 on page 13). This configuration has a single laptop that functions as the scoring system server, the Match Control laptop, and as the Audience Display. Referees use paper sheets to score the matches. After a match is complete, the scorekeeper manually enters the values through the Match Control page.

13.5.1. Configuring the Audience Display
On the laptop, the scorekeeper should have two browser windows opened. One window should display the Match Control screen. The other window should be configured as an Audience Display with the “Show Live Scores” option disabled (see image below). Both browser windows should be logged in as the “local” user.
If the “Show Live Scores” option is disabled, then the Audience Display will only display match and timing information. No real-time scores will be displayed.

**Note:** The Audience Display browser window should be maximized in the externally connected HDMI monitor so that the teams and audience can see the timing and match information clearly.

### 13.5.2. Step-by-Step Example: Scoring with Paper sheets

1. Scorekeeper selects the match that he/she wants to score and pushes the “Play” button that appears next to its listing on the Match Control Page (or the Scorekeeper pushes “Load Next Match” if the next match in the schedule is to be played). The match should be listed as the “Loaded Match” near the top of the Match Control screen.

2. The scorekeeper presses the “Show Preview” button on the Match Control Page. This should force the Audience Displays to display information about the upcoming match.
**Note:** On the Match Control Page the “Show Preview” button should change from green to yellow after the button has been pressed.

![Match Control Page](image)

**Figure 62 - The Audience Display should display match info after the “Show Preview” button has been pressed.**

3. Select the Randomize Field button on the Match Control page or the referees can roll a physical die and use the result to determine how to place the game elements for the autonomous phase.

![Randomization](image)

**Figure 63 – After the “Show Random” button has been pressed, the Audience Display will show randomization info.**

4. The scorekeeper can push the “Show Match” button to show the match information, which for this scenario will include the alliance team numbers and the match clock.
5. The scorekeeper pushes the “Start Match” to run the match.

Note: The “Start Match” button might be colored red. This is because it is “waiting” for pre-match information from a score tracking tablet. Since this scenario does not involve live score tracking, you can disregard the color of the button.

6. After the match begins, the Audience Display should play the audio cue indicating that the match has begun and the countdown timer on the display should be active.

Note: that the scorekeeper has the option to abort the match by pushing the “Abort Match” button while the match is active.
7. After the match is complete, the scorekeeper collects the paper scoresheets from the referees and then pushes the “Active Match” tab on the Match Control screen. This will bring up the electronic version of the scoresheets on the Match Control screen.

8. Under the “Active Match” tab, the scorekeeper should push the green button with the label “here” to edit the scoresheets manually.
9. When prompted, click on the “Force Edit” to force the edit to occur.

Figure 69 - Click "Force Edit" button to force an edit of the scores.

10. If prompted, click “Yes” to override the referees. It is OK to click “Yes” since real-time scores were not tracked for this match.

Figure 70 - Hit "Yes" to override the referees and enter the scores manually.

11. The scorekeeper should manually enter in the score values through the Match Control page. The scorekeeper should then press “Save Edits” and then “Commit” (or just “Commit”) and the scores will be committed to the system.

Figure 71 - The scorekeeper should edit the scores, then push the "Commit" button to commit them to the system.

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12. The scorekeeper should then press the “Schedule” tab to return to the match schedule, and then press the “Post” button next to the match to display the match results on the audience display.

![Figure 72 - Press the "Post" button next to the match to display the Match results to the Audience Display.](image)

13. The scorekeeper can repeat the process for subsequent matches.

### 13.6. Live Score Tracking Using a Tablet

#### 13.6.1. Connecting a Tablet to the Server

A tablet running Google Chrome can be used to manually track scores during a match. Before you can begin live score tracking, you will need to know the IP address of the computer that is running the system server. You also will need a user id and password that has referee (i.e., score tracking) permission for the event.

Also note that if you implement live score tracking using a pair of wireless tablets, make sure the operating Wi-Fi channel for the score tracking tablets will not conflict with the wireless control system of the robots.

To connect to the server, use the following steps:

- Verify that the tablet is connected to the same network as the scoring system server.
- Launch the Google Chrome browser on the tablet and type in the IP address into the Chrome address/navigation bar to navigate to the scoring system server.
Figure 74 - Type in the IP address (which you can get from your IT admin) of the server in the browser's address bar.

- If you successfully connect to the scoresystemserver, you will see the system home page. Click on the upper righthand menu icon to display the menu options for the home page. The “Feedback” and “Login” links should appear towards the top of the screen.

Figure 75 - Click on upper right hand menu icon to display the "Feedback" and "Login" menu options.

- Click on the “Login” link and follow the onscreen instructions to login to the appropriate user account.
- If you have successfully logged in, you should see the Home page with a listing of all the active events in the system. Click on the event that you want to score.

Figure 76 - Find your event on the system home page and select it.
• On the Event Home page, click on the appropriate Score Tracking link (Red Alliance or Blue Alliance).

Figure 77 - Red or Blue Alliance link.

• If prompted, select a field if you want to bind the tablet to a specific field or select “All Matches” if you would like to use this tablet to score all matches for this event.

Figure 78 - Select a field if you want to bind tablet to a specific field, or select "All Matches" to score all matches with this tablet.

• If there are no active matches yet, the tablet will display the following message. You will have to wait for the scorekeeper to prepare a match to play before the screen will change.
13.6.2. Step-by-Step Example: Scoring an Event with Wireless Tablets

In this section, we will go step-by-step through the process of scoring an event using wireless tablets for real-time score tracking. Scorekeeper is logged into the system with Event Admin privileges and has a browser window displaying the Match Control page for the selected event. The referees who are score tracking for the event have connected their respective tablets to the server and are logged in with score tracking access. We also assume that there is a Field Display computer and an Audience Display computer and these devices are properly configured and connected to the server.

1. Scorekeeper selects the match that he/she wants to score and pushes the “Play” button that appears next to its listing on the Match Control Page (or the Scorekeeper pushes “Load Next Match” if the next match in the schedule is to be played). The match should be listed as the “Loaded Match” near the top of the Match Control screen.

2. The scorekeeper tablets should display the match (or matches) that are available for scoring. Both referees (Red Alliance and Blue Alliance score referees) should click on match that they will be scoring.
3. The scorekeeper presses the “Show Preview” button on the Match Control Page. This should force the Audience Displays to display information about the upcoming match.

**Note:** On the Match Control Page the “Show Preview” button should change from green to yellow after the button has been pressed.

4. The score tracking referees should see a screen that displays the Pre-Match Setup state for their alliance. Each referee (red and blue) should use their tablet to update the Pre-Match Setup state to match the state on the field.
   a. The system needs to know if each team is present.
   b. The referees should press the respective “Alliance Ready” buttons at the bottom of their screen after they have entered in the current state of their Pre-Match field.
   c. In Figure 81 (see below) team 11103 is present. Team 8089 is present.
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5. Once the Pre-Match information has been entered, the referee tablets will display a message that indicates that the system is waiting for the match to start.

6. The scorekeeper should press the “Randomize Field” button to “roll” the virtual die to determine how to configure the minerals for the Autonomous portion of the match.
   a. After the field has been randomized, the score tracking tablets will display the randomization results.
   b. The Audience Display, however will not show the randomization results yet. Instead, the Match Preview information should still be visible.
7. The scorekeeper should press the “Show Random” button to display the randomized information on the Audience Displays.

8. The scorekeeper should press the “Show Match” button to show the match information on the Audience Displays and the Field Displays.
9. When everyone is ready to begin, the scorekeeper pushes the “Start Match” button to start the match.

10. During the Autonomous phase, the referees should enter the score tracking data using their respective tablets.
   a. While the scores are being entered, the score values on the Audience and Field displays should be updated with the current score tracking values.
   b. The scorekeeper can press the “Active Match” tab on the Match Control Page to monitor the score tracking data.
   c. The match information (including the time remaining on the countdown timer and the state of the match) are listed for the “Active Match” at the top of the Match Control Page.
11. Once the Autonomous phase is complete, the referees should verify their autonomous scores and push the “Submit Autonomous” button to submit the autonomous scores to the system.

12. During the Driver-Controlled period, referees should enter the scoring data using their tablets.
13. Once the Driver-Controlled period is complete, referees should verify their scoring data and then push the “Submit Driver-Controlled” button to submit the scoring data.
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Figure 93 - Scorekeeper can press the "Commit" button to commit the finalized scores.

16. Once the scores have been committed, the Scorekeeper can push the "Post" button to post the results to the Audience Displays.
   a. The scorekeeper also has the option to Replay the match if the referees determine that a replay is warranted.
   b. The scorekeeper also has the option to Edit the scores for the match.

Figure 94 - Once the scores have been committed, the scorekeeper can post the results.
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f. The system will prompt the scorekeeper to verify that he/she really wants to abort the match.
g. If a match is aborted, referees will need to manually refresh their tablet browsers to display the current state information for the match.
h. After a match has been aborted, it can be replayed. Note the field might need to be re-randomized before replaying a match.

17. Once this process has been completed, the scorekeeper can press the “Load Next Match” button to start the process again for the next match in the schedule.

14. Managing Elimination Matches

1. Once the qualifying matches have been completed and committed, the scorekeeper can press the “Alliance Selection” tab on the Match Control Page to begin the Alliance Selection process.

![Figure 97 - Press the Alliance Selection tab to begin the selection process.](image)

2. Press the “Start Alliance Selection” button will display a ranked list of teams on the Match Control screen.

![Figure 98 – Pressing the Start Alliance Selection button will display a ranked list of teams.](image)

3. The scorekeeper should push the “Set Audience Display” to toggle the Audience Displays to Alliance Selection mode.
4. Press the “Captain” button next to a team to designate the team as an Alliance captain. If an eligible team is unable to be an alliance captain (for example, if the team must leave the event early) press the “Remove” button in their listing to remove them from the selection process. Once an alliance Captain is selected, their team number should appear as the Alliance Captain, and the list of available teams will be updated.

5. As the Captain makes his/her Alliance’s first invitation, the scorekeeper can press the “Accept” or “Decline” button for the invited team to indicate whether the team accepted or declined the Captain’s invitation. The Alliance Selection Displays should update automatically as the button is pressed.
6. Once the first alliance captain has made their initial selection, the process begins again for the team that is eligible to captain the second alliance.

Note: that the software will adhere to the Alliance Selection rules that are prescribed in the official Game Manual when determining and displaying selection eligibility for the remaining teams.

The selection process is repeated until all alliances are finalized. If the scorekeeper needs to undo the most recent alliance selection, then he/she can push the “Undo” button on the Match Control screen.
Figure 103 - Once the alliances are established, push the “Generate Matches” button to generate the elimination match schedule.

7. When the alliances are finalized, the scorekeeper should press the “Generate Matches” button to generate the elimination match list. Once the elimination matches have been generated, the scorekeeper can click on the “Schedule” tab to view the elimination schedule.

Figure 104 - Press the “Schedule” tab after the matches have been generated to view the elimination schedule.

8. Once the elimination schedule is available, the scorekeeper and referees can run the matches in a manner similar to how the qualification matches are run. However, if there are more than 20 teams participating at your event, the elimination matches will list three teams per alliance. For an event with 3 teams per alliance, during the Pre-Match Setup of an Elimination match, the referees will need to designate which two of the teams are competing in each match.
9. In figure above the referee has indicated that Teams 11780 and 8089 will be playing in the match while team 13507 is sitting out the match for the Red Alliance.

After the first elimination match of a semifinal round has been played, when the referees view the Pre-Match Setup screen for the next match in that semifinal round, a message should appear at the top of the screen indicating which of the three teams did not play in the previous match. This warning appears so that the referee can verify that all three teams for each alliance participated in the elimination matches per the official Game Manual, part 1 (if an alliance has three teams, then “the team that sits out the first match must play in the second match, with no exceptions”).

The system lets the scorekeeper run the matches until each semifinal round has a winning alliance. The scorekeeper can edit, commit, and then post the results for each elimination match. If the alliances in a semifinal round are tied, the system will generate an additional tie breaker match and automatically add it to the elimination schedule.

When the semifinal matches are complete, the system will automatically generate final elimination matches for the two winning alliances. The final elimination matches are scored in a manner similar to the semifinal
matches. The scorekeeper can edit, commit and post each final-round match. If the alliances tie, the system will automatically add a new match to the schedule.

![Table showing schedule and incomplete matches](image)

*Figure 107 - The system will automatically generate the final matches after the semifinal matches are complete.*

Once the final matches are complete, the scorekeeper can post the final match results to the Audience Displays and display the winning alliance.

![Final match score board](image)

*Figure 108 - Once final matches are complete, the scorekeeper can post the final match results and display the winning alliance.*

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15. Managing League Events

A League Meet is a one-field competition that uses the same field and game elements as other FIRST Tech Challenge tournaments. However, for a League Meet, the event is abbreviated, and only includes Qualification Matches (but no judging sessions or elimination matches). Teams that are part of a league can compete in as few or as many League Meets as they choose. A team’s league ranking is calculated using data from prior league meets. At the end of the season, a league will have a League Championship, which will include judging and elimination matches.

The scorekeeping system supports league play throughout a season.

15.1. Creating Leagues for Your Region

Currently, the scorekeeper software requires that you define and manage your leagues as part of an event. If you want to create and manage leagues in advance of any scheduled league meet, you can create a dummy event at the beginning of the season and define your leagues from within the dummy event.

**Note:** that you can also define the leagues from an actual scheduled League meet if you prefer (instead of using a dummy event). This section, however, uses a “dummy” event to create the leagues.

1. Log in to the scoring software as the Local admin user.
2. Enter the region key or Skip this step.
3. Use the "Create Event" menu item to create a dummy event.

   a. Specify a unique Event Code for your League Meet (all lowercase, no spaces).
      i. The event code that you specify for this “dummy” event will appear in the exported data file.
      ii. A good example might be the region name, such as “granite”.
   b. Make sure that “League Meet” is selected as the Event Type for the dummy event.
   c. Specify an Event Name (such as "Granite State Dummy Event")
   d. Specify a date (you can use the current day).
   e. Click "Create Event" to create your “dummy” event.

   ![Create Event](image)

   **Figure 109 - Create a Dummy event to create your leagues.**

4. On the Event Dashboard for your newly created dummy event, select step 3 “Manage Leagues”.
5. Use the “Add” button on the right side of the Manage Leagues Page to open the Create League form.
6. Specify a unique League Code, following the same rules as event codes (all lowercase letters & numbers and underscores, no whitespace).
7. Specify a League Name and set the region information.
8. Click "Create League" to create the new League.
9. For your newly created League, click on the "Add/Remove Teams" button to open the Add Teams page.
   a. Use the “Add Individually” tab to add teams by typing in the team number and hitting the “Add” button. Note that if there is team data associated with the team number, this information will appear in the team listing. If the team number is new the other fields will be empty in its listing.

   b. You can also click on the “Find by State/Province” tab to add teams by region.

10. When finished, click "Done".
    a. This returns you to the League form.
    b. Click "Back to League List" in the top left corner to return to the Manage Leagues page.

11. Repeat steps 4-9 for each additional League for your region.

12. When complete, click the "Export Leagues" button at the top of the page.
    a. The file will be downloaded to the user's Downloads folder, and the file’s name will end with the suffix “_leagues.db”.
    b. This League database file can now be sent to your first League meet.

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Important Note: To avoid duplicate Event Codes for League Meets, it is recommended that League managers establish a naming format before their first League event and tell their scorekeepers what Event Codes to use for their respective events. One possible format would be the following,

\[\text{[region]}\_\text{meet}[\#]_\text{[year]}\]

For example, in the Granite State region, meet #1 for the year of 2018 might be “granite_meet1_18”.

Also note that the “Export Leagues” button will export the team data for the Leagues from the current event. It will also export match/meet data from previous league events that it may have (from a file import). The “Export Leagues” button, however, will not export the match data from the Event that is currently being scored. If you want to include the match data from the event that is currently being scored, you must use the “Download Archive File” button in the Event Dashboard (which is explained in the section below).

15.2. Running a League Event
League events are similar to a non-League event, but the scorekeeper might need to important League data from a previous League event before scoring the new event. League data files may contain League team information and meet data. Also, after a League event is complete, the scorekeeper will need to export the event data to a file to be used for calculating team ranks at subsequent League events.

1. Create the event as normal, ensuring that "League Meet" or "League Tournament" is selected as the Event Type.
   a. Make sure that you specify a unique Event ID when creating the event.
   b. Use the Event ID format that was agreed upon or recommended for your region.
2. From the Event Dashboard, select "Manage Leagues".
3. Use the "Choose File" button at the top to select the data file provided by your Event Manager/League Manager. After selecting the file, click "Import League Data" to import the data.
4. The League Data Import page shows a list of leagues and events that will be imported from the selected file.
   a. Green is a new league/meet that will be imported.
   b. Red is a duplicate league/meet that will not be imported.
   c. If a league or meet is yellow, a data mismatch has occurred, and it will present several options.
d. Note that each import item can be expanded to show a brief explanation by clicking on the “+” symbol.

Figure 113 - Green items are new, red items are duplicate and yellow items have data conflicts.

5. If everything looks ok (nothing highlighted in yellow), click "Import".
6. After importing all files (you can import more than one), return to the Event Dashboard via the link at the top-left corner of the screen.
7. Click "Add/Edit Teams" to add/edit teams for your event.
   a. This page defaults to "Find by League".
   b. Select a league from the dropdown, and it will present a list of teams in the league to add to the event.
   c. Add teams to the event’s team list by selecting the checkbox.

Figure 114 – You can select a League and then add teams from the selected League using the “Find by League” tab.

d. Alternatively, you can add teams individually by typing in the team number and pressing “Add” on the “Add Individually” tab.

e. You can also add teams by region using the “Find by State/Province” tab.

8. After adding teams, select "Done", and proceed with the event as normal.
9. After the event is complete, archive the data to a file by selecting the last item on the Event Dashboard, "Download Archive File".
   a. The archived event data (which includes league lists and scoring data) should be downloaded to the Downloads folder of the scorekeeper computer.
   b. Send the downloaded file to your League Manager/Affiliate Partner (so the data can be used for future League events in the season).
   c. Note that this archive data file includes the current Event’s match data and can be imported into the next League Meet to incorporate this data into the League rankings.

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**Important Note:** Scorekeepers at meets should not edit the league team list unless instructed to do so. If they believe the list is wrong, they should leave it and notify the League Manager after the event. An incorrect league team list will not affect match data, as long as the event’s team list is correct.

### 15.3. Managing Parallel League Meets

If two events are played in parallel involving the same league, the data will need to be combined after both events have occurred.

*FIRST* recommends that in advance of a set of parallel league meets, someone who is designated as a “League Manager” create a League data file (using the dummy event method described in the section entitled *Creating Leagues for Your Region*, see page 70) that will be shared with both parallel events.

The scorekeepers at each event should use import this League data file at their respective events and score their matches normally. After both events are complete, the event data from each event should be forwarded to the League Manager, who will import these two events files and generate a new, combined event file that can be used for future League events.

Use the following steps to important the dual event data and combine them into a single event data archive file.

1. Create a dummy event, in the same manner as before.
2. On the Manage Leagues page, import the data files from each event, 1 at a time. The second set of imported items will show red/duplicate league lists, and possible some duplicate meets. This is OK.
3. If a league is yellow, it means they were edited by the scorekeeper at one of the events. The system gives several options, the one you most likely want to choose is the **merge** option. After the import is complete, edit the league to view the team list, and make any adjustments as needed.
4. If an event is yellow, it likely means two events were created with the same Event Code. The system will let you change the Event Code for the one that is being imported.
5. After all data is imported, use the "Export Leagues" button to download a file containing the merged data. This file can be imported by the scorekeeper at the next League event.

### 16. Managing Awards

If you are running an event that is not a League Meet, then your Event Dashboard should include a step that allows you to manage awards for your event. Press the “Manage Awards” button to begin the awards management process.

![Manage Awards]

*Figure 115 - Press the “Manage Awards” process to start the awards management process.*

When you first launch the Awards Manager, the system will default to the “Give Awards” screen (see figure below).
The “Give Awards” screen lists all of the awards that are defined for the current event in the order that they are to be given. Awards that are highlighted in red must be given per FIRST rules. Awards that are highlighted in green have already been “given” (i.e., that already have winners assigned).

16.1. Giving an Award
When you are ready to give an award to a team, select the award by clicking on it on the “Give Awards” screen. After you have selected the desired award, enter the required information for each team or individual. You can also enter text to describe why the winner was selected in the “Winner Justification section”.

Figure 116 – “Give Awards” screen of Awards Manager.
Figure 117 - Click on the "Edit" button to edit the selected award.

Press “Save” to save your changes.

Figure 118 - After assigning winners and providing justification text, press "Save" to save the award information.
16.2. Managing the List of Awards
You can click on the “Manage Awards” button to modify award. You can also modify the order of the awards by clicking on an award listing, and then using the mouse to drag it to its new location in the presentation order.

Note: The mandatory awards are supposed to be presented in the original order as listed by the system. Also note that the system will not let you edit or delete a mandatory award, you can only edit optional awards.

![Awards Manager](image)

Figure 119 - You can edit optional awards. You can also reorder the awards by clicking on and dragging the award name.

Once you have finished managing your awards, you can return to the “Give Awards” screen to continue giving the awards (i.e., assigning winners for the awards).

16.3. Viewing / Printing the Awards Script
Once you have given out all the awards (i.e., once you have assigned winners to each award) the list on the “Give Awards” screen should be green.

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Figure 120 - Once you have assigned winners for each award, the list should turn all green.

Press the “View/Print Script” button to view the award script. Press the “Print” button to print the script.

Figure 121 – Press the “View/Print Script” button to view the awards script.
16.4. **Presenting the Awards**
Press the “Present Awards” button to begin the presentation process.

To reveal an award, simply click on the Award name and the Audience Display should display the Award name (but not the users). Clicking on the 3rd place winner, will reveal the third-place winner on the Audience Display. Clicking on the 2nd Place winner will reveal the second-place winner on the Audience Display. Clicking on the 1st Place winner will reveal the first-place winner on the Audience Display. If you’d like to reveal all of the winners at once, simply click on the 1st Place winner.
17. Reviewing Match Results

If you navigate to the event home page, you can click on the “Match Results” link under the “Event Info” category to view the Match Results for the currently selected event.

The Match Results page displays the available match results for the currently selected event. You can press the “Print” button to print these results.
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18. Troubleshooting the System

18.1. Accessing the System Logs
It can be helpful to access the system logs and review messages from the FIRST Tech Challenge Live scorekeeping server. The output from the scorekeeping server is redirected to a text file in a subdirectory within the software directory. To access the log files, in the main program directory the FIRST Tech Challenge Live software look for a subdirectory named “bin”. Double click on the “bin” subdirectory to view its contents.

![Open the bin subdirectory.](image)

You should now see a directory called “logs”. Double-click on the logs folder to view its contents.
Gracious Professionalism® - “Doing your best work while treating others with respect and kindness - It’s what makes FIRST first.”
Figure 131 - Log files contain useful information for troubleshooting.
19. Appendix A – Resources

**Game Forum Q&A**
http://ftcforum.usfirst.org/forum.php
Anyone may view questions and answers within the FIRST® Tech Challenge Game Q&A forum without a password. To submit a new question, you must have a unique Q&A System User Name and Password for your team.

Volunteers that apply for a specific volunteer role will receive an email from FTCTrainingSupport@firstinspires.org with their username and password to the forum. You will receive access to the forum thread specific to your role.

**FIRST Tech Challenge Game Manuals**

**FIRST Headquarters Pre-Event Support**
Phone: 603-666-3906  
Mon – Fri  
8:30am – 5:00pm  
Email: Firsttechchallenge@firstinspires.org

**FIRST Tech Challenge Event On-Call Support**
These numbers are available for event personnel only. Please do not call these numbers if you are a team looking for a ruling, a decision, or assistance. We trust that you will not misuse this resource.

- Day of Event Robot Control System and Scoring System Support: 603-206-2450  
- All other Day of Event support: 603-206-2412

**FIRST Websites**
FIRST homepage – www.firstinspires.org  
FIRST Tech Challenge Page – For everything FIRST Tech Challenge.  
FIRST Tech Challenge Volunteer Resources – To access public Volunteer Manuals.  
FIRST Tech Challenge Event Schedule – Find FIRST Tech Challenge events in your area.

**FIRST Tech Challenge Social Media**
FIRST Tech Challenge Twitter Feed - If you are on Twitter, follow the FIRST Tech Challenge Twitter feed for news updates.  
FIRST Tech Challenge Facebook page - If you are on Facebook, follow the FIRST Tech Challenge page for news updates.  
FIRST Tech Challenge YouTube Channel – Contains training videos, Game animations, news clips, and more.  
FIRST Tech Challenge Blog – Weekly articles for the FIRST Tech Challenge community, including Outstanding Volunteer Recognition!  
FIRST Tech Challenge Team Email Blasts – contain the most recent FIRST Tech Challenge news for Teams.

**Feedback**
We strive to create support materials that are the best they can be. If you have feedback regarding the scorekeeper system FTC Live, please report issues to FIRST Tech Challenge Github

If you have feedback about this manual, please email firsttechchallenge@firstinspires.org. Thank you!