

# SHIPTools Technical Specifications

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## **1 Introduction**

SHIPTools is a customizable web-based management system intended to help SHIP team members save time by collecting and calculating National Performance Reporting, systematically training team members and supporting beneficiary outreach activities.

## **2 System Architecture Description**

SHIPTools is a standard web-based application, accessible via any modern web browser. The web servers, along with the associated application servers and database servers are hosted at a Tier 1 Internet hosting facility. No software needs to be installed on the client systems.

The high-level view of the system consists of three physical layers:

- Client Browser
- Web/Application Server
- Database Server

## **3 Client System Requirements**

This section identifies the minimum technical requirements of SHIPTools from the point of view of the client machines. These include the desktop and/or laptop machines being used by the various levels of users, ranging from volunteers to administrators.

### **3.1 Hardware and OS Requirements**

SHIPTools is accessible via any Windows, MacOS, Linux, or Unix system with a working connection to the Internet. A printer is necessary for any printing functions, such as printing labels or reports. While SHIPTools should function fully using many different operating systems, it is only tested and officially supported on Windows 2000, Windows XP, and Mac OS X.

### **3.2 Software Requirements**

The only software needed to access SHIPTools is a modern web browser. While SHIPTools should function fully using many different versions of browsers, it is only tested and officially supported with Microsoft Internet Explorer 6.0 and above, Apple Computer Safari 1.0 and above (on MacOS only), and Firefox 1.0 and above.

### **3.3 Support and Maintenance Requirements**

There are no specific system support requirements to keep the system running. SHIPTools is hosted and maintained at a separate hosting facility and all routine maintenance, backups, and updates are performed by the hosting provider staff. See Hosting System Environment below for more details.

Full back-ups of the database data are conducted daily and stored on the server's RAID hard drive and from there backed-up by the hosting partner. Source files are backed-up to the repository when ever there is a change in the code. The repository also receives a full back-up on a daily basis.

Tier 2 Technical support for SHIPTools is provided by the Health Assistance Partnership (HAP) via email and over the phone. HAP staff provide training to SHIP staff so that they are prepared to handle Tier 1 questions that may arise. Tier 1 questions involve lost username and password issues and general levels of access issues. Tier 1 issues become Tier 2 issues when escalated to HAP staff from SHIP staff.

### **3.4 Personnel Requirements**

There are no specific personnel requirements for the use of SHIPTools. All administrative functions, including adding and modifying organizations, users and roles can be done within the system itself by non-technical users.

## **4 Hosting System Environment**

### **4.1 Introduction**

SHIPTools is installed on a server residing at a Tier 1, secure hosting facility. The operating system, server software, and application configuration is installed and maintained by offsite technical administrators. The hosting environment houses all of the components necessary for the proper functioning of SHIPTools. The hosting environment is secure and reliable. Security is provided by the use of login names and passwords and a firewall is employed to keep the system safe from outside threats. The data contained in SHIPTools uses at least 128 bit encryption via a secure socket layer.

### **4.2 Hosting Provider Requirements**

The hosting provider maintains a high performance, high availability environment with 24x7 support, redundant power and Internet connectivity, and a secure facility. They perform nightly backups and any other scheduled maintenance that may become necessary.

### **4.3 Hosting Provider**

The server software is not dependent on any specific feature of any particular hosting provider and can easily be installed on any system from a single office-based machine to a fully scaled cluster of web servers, application servers, and database servers residing at a Tier-1 facility.

## **5 Detailed Technical Architecture**

### **5.1 Web Server**

The web server is on a high-powered Linux machine running Apache 2.2 or above. Communication between the client browsers and the web servers is done via http.

### **5.2 Application Server**

The application server is on a high-powered Linux machine running Apache Jakarta Tomcat version 5.5 or above. Communication between the web servers and application servers is done via mod\_jk.

### **5.3 Database Server**

The database server is on a high-powered Linux machine running MySQL 5.0 or above. Communication between the application server and database server is done via jdbc.

### **5.4 Application Architecture**

The application has been built using standard enterprise software development methodologies and open source software libraries and servers. Specifically, the system is built as a J2EE application using the Spring Framework for overall system integration, logging, and transaction management; the Apache Struts MVC framework for the web application controller and view; and the Apache iBatis SqlMap framework for database access and object-relational mapping. These frameworks, as well as the overall development methodologies, were selected because they all have been accepted by the industry as high performance, scalable, stable, and maintainable; defined below. Full system-level testing is conducted throughout the development cycle.

The architecture and design of the system meet the following five key goals:

- **Performance:** The System meets specific performance goals with respect to average response time and system uptime.
- **Portability:** The System has the ability to be deployed on a variety of hardware and operating systems to accommodate maximum flexibility and growth.

- Scalability: In addition to performing well under load, the System is able to scale well as more users come online. In addition to scaling well in terms of memory and storage on a single server, the system is designed to support load-balancing, fail-over, replication, and hot swappable server hardware.
- Extensibility: The system is customizable and extensible such that new functionality can be added on an ongoing basis. It allows for new features to be added with relative ease and without disrupting existing features or existing users.
- Maintainability: The system is easily maintainable from a remote site and any routine maintenance needed (backups, database index rebuilds, etc) is designed to result in minimal downtime.

### **5.5 Privileges and Roles**

SHIPTools contains privileges and roles to provide access to the functionality and information stored within the system. A privilege, or "priv," is a specific privilege that is assigned to a user that gives them permission to do something with a specific data item owned by a particular user, org, or site.

A "role" is a named group of privileges. This is the level of detail that is displayed on the add/edit team member page for users that are allowed to assign roles. Each role contains one or more privileges. When a role is granted, it is associated with a specific user, org, region, or site. This selection is then passed on to each priv within the role. The list of privileges is fixed across the system, but the roles are site-specific. When a new site is created (and at any time after), the list of roles, along with the privileges per role, are set up in the database.

Certain sites may not have all SHIPTools functionality enabled. In this case, certain privileges would not be available for granting. In general, this would be handled through the privilege grouping in the roles, so a role at a site could never include a privilege that the site does not have enabled.