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SAMPLE WIZARD™

Technical Guide

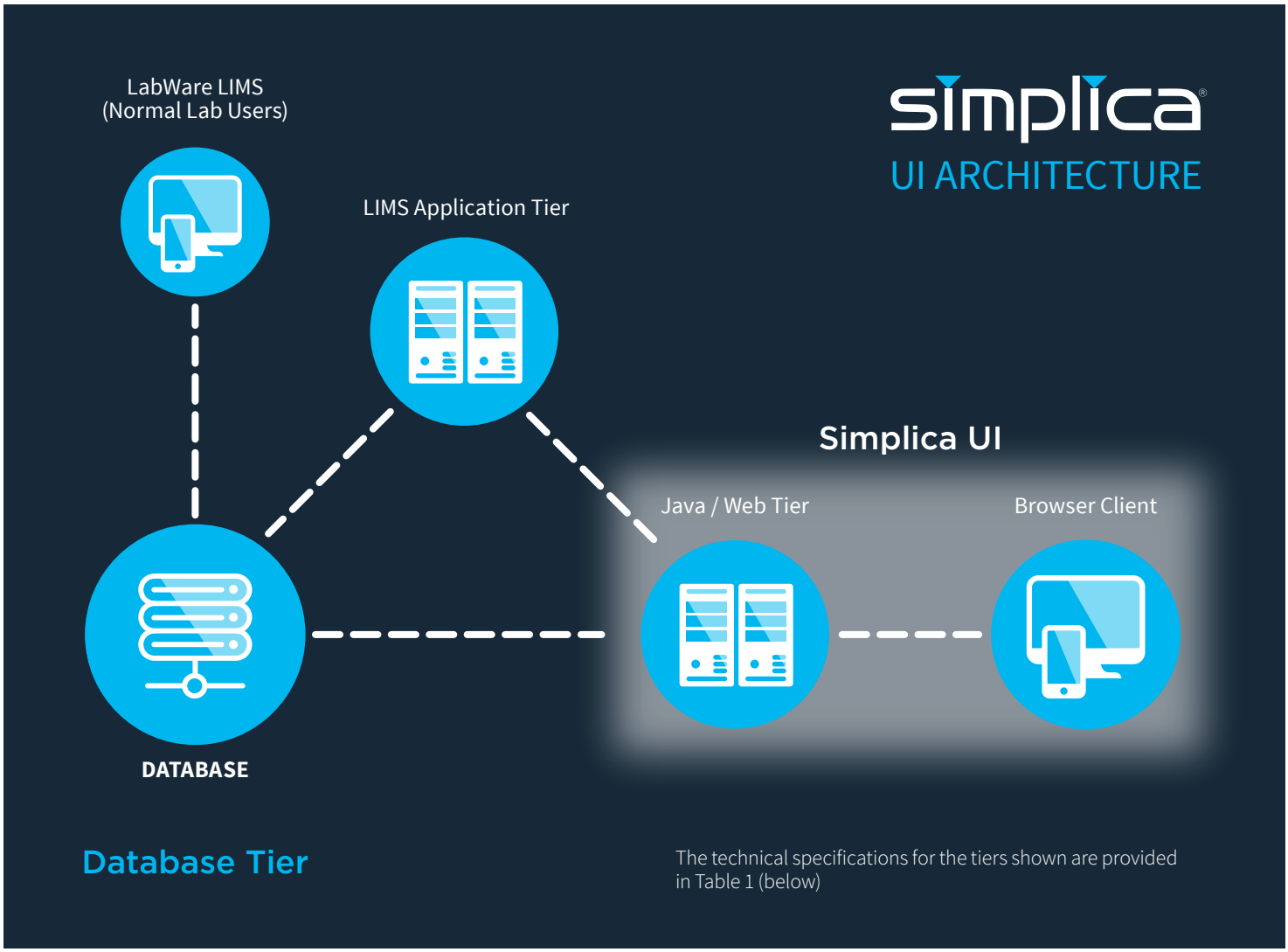
SAMPLE WIZARD IS A WEB PORTAL APPLICATION FOR LABWARE LIMS. SAMPLE WIZARD EXTENDS THE LABWARE PLATFORM TO USERS OUTSIDE THE LAB – STREAMLINING SAMPLE SUBMISSION AND MAKING IT EASY TO FIND SAMPLES AND GET RESULTS. THE APPLICATION RUNS ON ANY DEVICE THAT HAS A BROWSER. THIS GUIDE IS FOR CUSTOMERS PLANNING A SAMPLE WIZARD DEPLOYMENT AND INTERESTED IN ARCHITECTURE, INFRASTRUCTURE AND DEPLOYMENT REQUIREMENTS.

ARCHITECTURE

Sample Wizard is a web application utilizing HTML 5 and other modern browser technologies to create a rich user experience without special software or plugins. It can be deployed on any recent Java Web server environment such as Apache Tomcat, IBM WebSphere or JBoss. Because it is uses pure web technologies, customers can host Sample Wizard on their own infrastructure or on any cloud service provider.

The overall architecture showing the interaction with LabWare LIMS is shown in Figure 1. Sample Wizard is not a stand-alone application - it is designed to work in real-time with LabWare LIMS and any LabWare supported database. This architecture closely models the LabWare WebLIMS / Web 7 system. Read operations are optimized by going directly to the database while write operations are generally invoked through the LIMS tier.

Even though it uses the same architecture, customers do not have to deploy the LabWare web platform to enable Sample Wizard integration. The tiered approach works equally well with any LabWare LIMS client (desktop, browser or Citrix).



SPECIFICATIONS

TABLE 1

WEB TIER

COMPONENT	REQUIREMENT
Operating System	- Any recent Windows, Unix or Linux
Java version	- Java 7 or higher 64-bit
Java Servlet container	- 3.0 or higher
Browser	- Internet Explorer 9 or higher - Any recent versions of Firefox, Chrome, or Safari - Adobe Acrobat Plugin for reports
Simplica Modules	- Dashboard - Samples - Projects - Submit Wizard - Preferences - Reports - Administration - Configuration
Security	- OWASP Top 10 Compliance - HTTPS / SSL / TLS
Single Sign-on (SSO)	- SAML version 2 - OAuth2

LIMS TIER

COMPONENT	REQUIREMENT
Operating System	- Windows Server 2008 or higher
LabWare LIMS	- Version 6 or higher
LabWare Modules	- M0483-Cluster Manager - M0366-WebLIMS (LIMS V6 Only)

DATABASE TIER

COMPONENT	REQUIREMENT
Vendor	- Any database vendor supported by LabWare
JDBC	- 2.0 or higher

CONFIGURATION

Sample Wizard offers deployment options depending on each customer's needs and LIMS implementation. Below are the main parts of the application that are configurable either through the application's user interface, using the database or via simple configuration files.

MANAGING USERS

- There are 2 user models: LabWare users or Sample Wizard users
- There is an Administration Module for managing Sample Wizard users within the application
- User authentication can be set to allow Single Sign-on (SSO) using the SAML version 2 or OAuth2 protocols
- The 'Request a New Account' feature optionally allows new users to sign themselves up and enter a queue for later approval by an administrator

USER INTERFACE OPTIONS

- All main data tables in the application can be customized to show any columns matching the corresponding database table or view
- Data table columns can be configured to add links, images, filters and other dynamic behavior
- Sample Wizard forms are completely configurable (similar to LabWare templates)
- The steps in the submission wizard can be customizable allowing for several prebuilt views and allowing customers to add their own views
- Styling including logos, fonts and colors can be customized to meet branding requirements

INTERFACING TO LIMS

- A Sample Summary or other sample-based report (for example, COA) can be used to show details of a given sample
- New projects and samples can be logged directly into LIMS or stored in temporary tables and logged when the samples are received in the lab
- Analysis records, groups, and variations can be used to organize available tests for a given sample type
- Any report configured in LabWare can be made available in Sample Wizard's Report module

SECURITY

Security is an important consideration for businesses and enterprises. Sample Wizard has 2 primary security mechanisms:

1. Data Security: Filtering the data so users only have access to data records for which they are authorized.
2. Application Permissions: Users are explicitly granted or restricted permissions to access specific application features or functions.

Sample Wizard users can be assigned to groups and/or given a role. For example, users could be grouped by customer records with roles like 'Submitter' or 'Admin'. Groups and roles can have corresponding data access filters (e.g. samples only for a specific customer) which will be applied to all users with that group or role. This is the primary mechanism for restricting data access on a per-user basis.

Application permissions are granted or denied through the administrative interface. In general, permissions work by disabling or removing a navigation item that allows access to a related part of the application.

(continued)

Common permissions include administrative tasks like managing users or resetting passwords and application tasks like submitting samples or running management reports.

The Sample Wizard application complies with best practices for OWASP Top 10 Web Application Security Vulnerabilities.

SYSTEM RECOMMENDATIONS

At right are recommendations for a common system serving 50 concurrent users. Recommended system specifications for smaller or larger user groups would be adjusted from the base implementation provided here. In addition, customers may want to add redundant servers to achieve high-availability or fault tolerance.

DATABASE

The Sample Wizard web application does not have its own database; it simply connects to the existing LIMS database. Sample Wizard supports any database that works with LabWare. Installing Sample Wizard includes creating Sample Wizard-specific database tables and adding a suitable JDBC driver to the Java environment.

Most customers do not need to upgrade their database server. However, because the web application will put an additional load on the existing server, if it is marginal or at capacity just running LIMS, an upgrade to the database server could be needed.

WEB / JAVA SERVER RECOMMENDATION

A single server will meet the needs of most implementations.

COMPONENT	REQUIREMENT
Platform	Linux
Java version	Java 8 (64-bit)
Application Server	Apache Tomcat® 8 (servlet engine)
Processor	Minimum 8 cores
Memory	Minimum 32 GB RAM
Hard Drive Space	250 GB solid state drives in a RAID

LIMS SERVER RECOMMENDATIONS

Most customers need just a single LIMS server. However, depending on the type and frequency of the web application interactions with LIMS (such as running reports or calling LIMS basic), a second server could be needed.

COMPONENT	REQUIREMENT
Platform	MS Windows Server 2012 or higher
LabWare LIMS	Version 6 or higher
Processor	Minimum 12 cores
Memory	Minimum 16 GB RAM
Hard Drive Space	250 GB solid state drives in a RAID

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