



systems

Q5 SYSTEMS

Q5SMS Application

Technical
Requirements



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MINIMUM SERVER HARDWARE REQUIREMENTS:

- These hardware requirements are for implementations where Q5SMS is self-hosted within the customer's infrastructure
- Virtual machines can be used, but please ensure the performance is near equivalent or better as the hardware requirements below. Only limited support can be provided for virtual machine (VM) environments. If problems arise from poor performing VM environments, then it is the customers sole responsibility to resolve.
- Q5 Systems does not guarantee support for High Availability (HA) implementations, if this is something the client wants to pursue then any issues involving High Availability implementations will be the client's responsibility to resolve.

Items **not** covered by Q5 Support include, but are not limited to:

- ▲ Architectural design of Q5SMS within a HA implementation
- ▲ Configuration of individual components to implement HA
- ▲ Problems that cannot be replicated in non-HA environments
- ▲ Performance problems arising from HA implementations

OPTION 1: SINGLE SERVER CONFIGURATION:

CPU:	Xeon E3 2Ghz (Gen 5) or equivalent\better
Ram:	12 GB or more
Storage:	80GB – High performance SSDs are highly recommended
Network:	40 Mbps
Operating Systems:	Windows Server 2012 R2 (x64) Windows Server 2016 (x64) Windows Server 2019 (x64)

OPTION 2: TIERED SERVER CONFIGURATION:

APPLICATION SERVER:

CPU:	Xeon E3 2Ghz (Gen 5) or equivalent\better
Ram:	6 GB or more
Storage:	40GB
Network:	40 Mbps
Operating Systems:	Windows Server 2012 R2 (x64) Windows Server 2016 (x64) Windows Server 2019 (x64)

DATABASE SERVER:

CPU:	Xeon E3 2Ghz (Gen 5) or equivalent\better
Ram:	8 GB or more
Storage:	60GB – High performance SSDs are highly recommended
Network:	40 Mbps



Q5SMS - Safety Management System Technical Specs

Operating Systems:

Windows Server 2012 R2 (x64)

Windows Server 2016 (x64)

Windows Server 2019 (x64)

For more details regarding database server requirements, please visit Microsoft's Hardware and Software Requirements for Installing SQL Server:

<https://docs.microsoft.com/en-us/sql/sql-server/install/hardware-and-software-requirements-for-installing-sql-server>



Q5SMS - Safety Management System

Technical Specs

SOFTWARE REQUIREMENTS:

RUNTIMES AND FRAMEWORKS:

- Java Developer Kit (JDK) 8 x64 or Java Runtime Environment (JRE) 8 x64 bundled with Server JVM
- Dot Net Framework 3.5
- Microsoft Visual C++ 2019 Redistributable (x64) (Required for Apache HTTPD)
- Crystal Report Runtimes (will provide)

PROGRAMS AND SERVICES:

Database servers:	Microsoft SQL Server 2016 Microsoft SQL Server 2017 Microsoft SQL Server 2019
Java Servlet Container:	Apache Tomcat 8.5.x x64
Web Front End (Optional):	Apache 2.4.x x64
SMTP Server:	SMTP Service (Must support PLAIN Authentication)

MS SQL SERVER DATABASE CONFIGURATION NOTES:

A static port must be used (E.g. default 1433) to avoid conflicts.
Dynamic ports can't be used as they will cause connectivity issues.
It is recommended that MSSQL is installed on a separate server from the Q5 application
The default SQL instance must be used - named instances are not guaranteed to work.

Typical database starting size is 1GB and average growth is 1GB per year - this is highly dependent on use

IN HOUSE DEVELOPED APPLICATIONS:

Java EE Application:	Q5 will provide war file for Tomcat
Report Server:	Q5 uses Crystal Reports 9 and (.net3.5)
Quartz Server:	Q5 will provide war file for Tomcat

TOMCAT REQUIREMENTS:

MSSQL Driver:	mssql-jdbc
Spring Framework Driver:	spring-instrument-tomcat
JVM Memory:	1 GB

AUTHENTICATION:

- Q5 can be configured with any authentication framework supported by Spring Security.
- By default, all users are authenticated against a user/hash pair in the Q5SMS database
 - ▲ The hashing algorithm used is “PBKDF2WithHmacSHA512”
 - ▲ Every hash is randomly salted upon hash creation
- Q5SMS uses a configurable role-based security model
 - ▲ Role configuration is stored within the Q5SMS database.

APPLICATION LOGS:

Security and system logging are built using Apache log4j.

Based on the default configuration, the relevant logs to the Q5SMS application will be found in the following paths:

<TomcatInstanceInstallPath>\logs

<TomcatInstanceInstallPath>\webapps\<Webapp-Name>\WEB-INF\logs

Notes:

- The default Q5 client tomcat installation path is often - but may not necessarily be: “C:\Q5SYSTEMS\APACHE\TOMCAT\instances\Tomcat8_01-1”
- The web app name is often “ROOT” in customer self-hosted environments

EXTERNAL RESOURCE ACCESS

The following addresses are **required** to be accessible from the server hosting the Q5SMS Application:

- <https://www.google.com/recaptcha/api/siteverify>
- <https://www.google.com/recaptcha/api.js>
- <https://maps.googleapis.com/maps/api/js>

The following addresses are recommended to be accessible from the server to facilitate installation and updates:

- <https://adoptium.net/> (For Java Builds)
- <http://apache.mirror.iweb.ca/tomcat/> (For Tomcat Windows Build)
- <https://www.apachelounge.com> (For Httpd Windows Builds)
- <https://aka.ms/> (For Microsoft Runtimes)

BACKUPS AND RESTORABILITY

Implementation of backups, including schedule and design, is the sole responsibility of the customer hosting the Q5SMS application.

Required Backups for data restorability are as follows:

- To ensure no data is lost It is highly recommended to regularly backup all SQL databases provided with the Q5SMS application.



Q5SMS - Safety Management System

Technical Specs

Additional but unnecessary locations to backup:

- Log files may be backed as per client discretion. Please see the paths listed in the APPLICATION LOGS section for details
- It may be beneficial to keep a full copy of the Q5SMS application for ease of restoration. The location is as follows: <TomcatInstanceInstallPath>\webapps\<WebappName>
- If a full application backup is not desired, but the client wishes to keep the current web application configuration files. Configuration files can be found in the following locations:
 - ▲ <TomcatInstanceInstallPath>\webapps\<WebappName>\WEB-INF\web.xml
 - ▲ <TomcatInstanceInstallPath>\webapps\<WebappName>\META-INF\Context.xml
 - ▲ <TomcatInstanceInstallPath>\webapps\<WebappName>\WEB-INF\classes\client.properties
 - ▲ <TomcatInstanceInstallPath>\webapps\<WebappName>\WEB-INF\classes\struts.xml
 - ▲ If JASIG-CAS services are implemented (default: false):
<TomcatInstanceInstallPath>\webapps\<WebappName>\WEB-INF\classes\resources\security_cas.xml



CLIENT / USER DEVICE REQUIREMENTS (SELF-HOSTED OR Q5-HOSTED):

MINIMUM CLIENT HARDWARE REQUIREMENTS:

Client machines must be capable of running Edge, Firefox, Safari, or Google Chrome.

Q5 SUPPORTED WEB BROWSERS:

Q5 supports the latest versions of:

- Edge
- Firefox
- Chrome
- Safari

MOBILITY:

ONLINE - WEB APPLICATION:

Device: Any device that has web browser capabilities
Modules: All Q5SMS modules

OFFLINE – LAPTOP APPLICATION:

Device: Any Windows or MAC operating system
Modules: Full Functionality – Audit/Inspection
Available Ram: 512 MB
Hard Drive: 750MB free
Network: 128 Kbit
Runtimes: Java Runtime Environment (JRE) 1.8 (x64 only)

OFFLINE – APPLE (IOS):

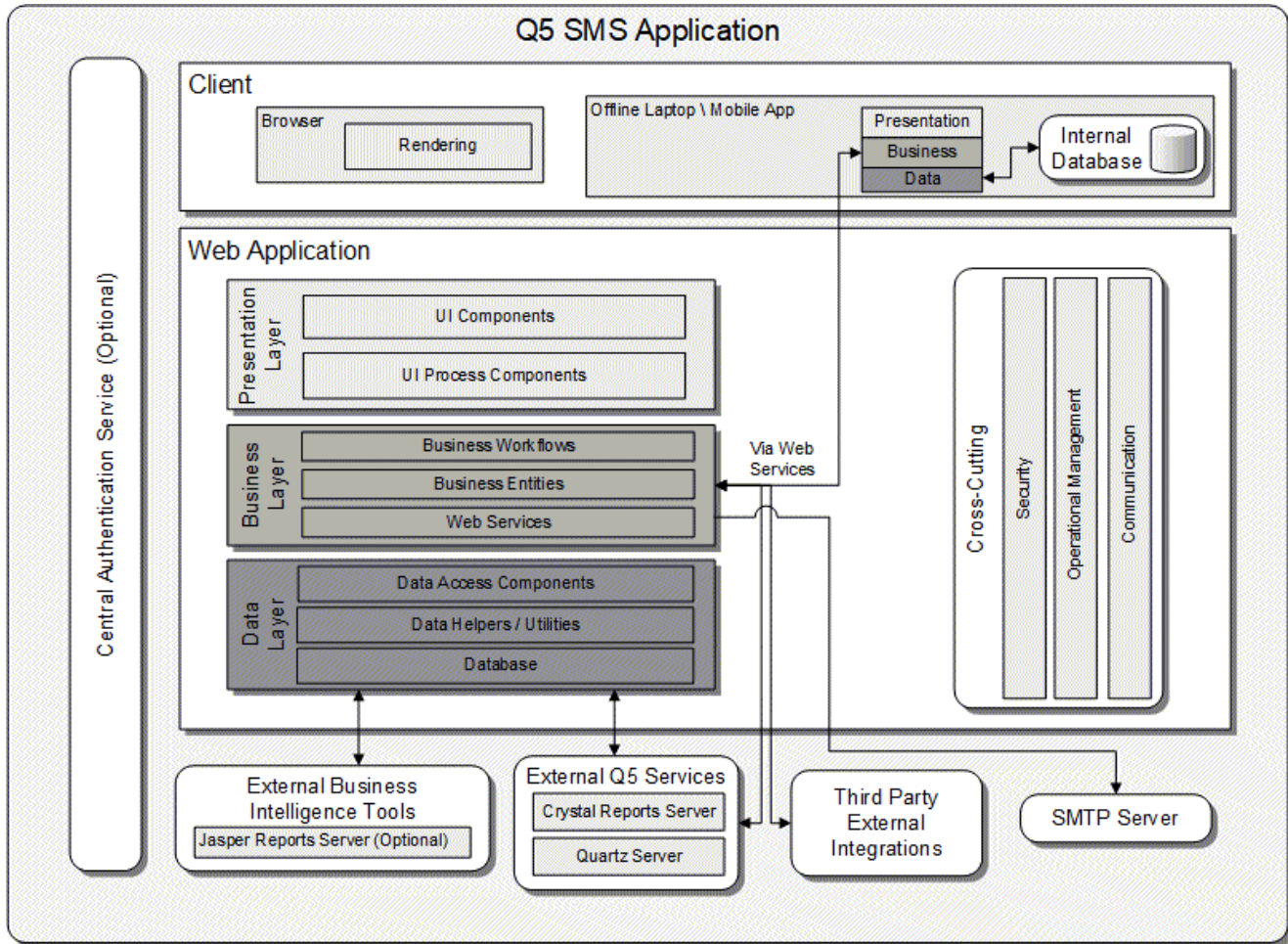
iOS Version: 10 or later
Modules: Basic Functionality – Audit/Inspection, Corrective Action, Event, and Documents

OFFLINE – ANDROID:

Android Version: 11 or later
Modules: Basic Functionality – Audit/Inspection, Corrective Action, Event, and Documents

Q5SMS – APPENDIX A

Q5SMS - APPLICATION LOGICAL TOPOLOGY:





Q5SMS - Safety Management System Technical Specs

Q5 HOSTED – APPENDIX B

ABOUT CANADIAN WEB HOSTING:

Canadian Web Hosting, and its subsidiaries, represent a comprehensive service structure designed to meet their client's most demanding infrastructure and hosting requirements. With proven experience, and stability that is unique for a technology company, Canadian Web Hosting is the leader when it comes to web hosting and cloud hosting specializing in hosting business and enterprise-class clients from around the world. One of only a few SSAE 16 certified service providers in Canada, and with a heavy focus on compliance and business process including Canadian privacy laws (PIPEDA), Canadian Web Hosting delivers a secure and scalable service that helps customers meet their specific business requirements.

Today, Canadian Web Hosting is also one of the fastest growing web hosting companies in Canada, and continues to be recognized for its leadership and technology innovations. Canadian Web Hosting is headquartered in Vancouver, British Columbia, with additional locations in Toronto, Ontario and several data centers located across Canada.

Reference - Canadian Web Hosting :
<https://www.canadianwebhosting.com>

CANADIAN WEB HOSTING DATA CENTERS:

Canadian Web Hosting data centers utilize superior data center infrastructure that includes environmental controls, fire suppression systems, redundant power sources and UPS backup, multi-homed Tier 1 bandwidth, 24/7 security including card entry, video monitoring) as well as technical and monitoring capabilities.

Reference - Compliance Programs and Certifications:
https://www.canadianwebhosting.com/company/sas70_certificates

SERVER LOCATIONS:

Q5SMS Production datacenter:

151 Front Street,
Toronto, ON
M5J 2N1, Canada

Q5SMS Backup datacenter:

555 West Hastings St.
Vancouver, BC
V6B 4N5, Canada

Reference - CWH Data Center Locations:
<https://www.canadianwebhosting.com/company/datacentres>

Q5 HOSTED NETWORK DIAGRAM

Q5 Production Network Infrastructure

