



FirstSpirit™

Your Content Integration Platform

Technical Datasheet

FirstSpirit™ Version 4.2

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1 Introduction

The existing Technical Datasheet is valid for the currently released FirstSpirit release version of 4.2.

FirstSpirit™ Version 4.x has been designed as an enterprise content management system for application in complex IT landscapes, and supports various operating systems, Java runtime environments, and databases. To guarantee high software quality and to ensure that FirstSpirit™ runs in all supported configurations, regular tests are carried out within the scope of quality assurance.

Due to the extremely large number of different versions or patch levels of supported third party products (e.g. by the second quarter 2010, there were already 20 versions for approximately 9 operating systems for Sun Java JDK 1.6.0, often in 32-bit and 64-bit versions), it is unfortunately not possible, even with the most advanced software test methods, to regularly and completely test all the supported software configurations (see *FirstSpirit Whitepaper on Version 4.x*, section 8.2 "Test complexity").

However, to guarantee the planning security required for introducing FirstSpirit, e-Spirit defines a variety of reference configurations whose functionality is regularly tested. The chosen variety of reference configurations displays a selection of already used FirstSpirit installations which have been adapted and extended over time.

Quite often a real scenario will display deviations when compared to the reference configurations (especially for an existing system architecture). In order to also offer planning security in this case to the company which is introducing FirstSpirit, a significantly more extensive number of system configurations are defined as "supported". In contrast to reference configurations, not all "supported" system configurations are regularly tested for their functionality. However, e-Spirit does assure that problem elimination measures will be carried out if problems arise with a configuration which has been defined as "supported".

In a few cases, incompatibilities in certain system configurations have been noticed. These system configurations are defined as "Not supported".



This results in the following term definitions used in this document:

- **"Supported"**: Our aim is for FirstSpirit to run in all system configurations which are defined as "supported". Generally, the term "support" is loosely defined and means that e-Spirit will try to eliminate all the problems which occur during FirstSpirit application in a supported system configuration. Prerequisites for error elimination are:
 - Reproducibility of the problem
 - Current maintenance contract with system configuration option (if necessary, incl. remote maintenance access to production and test systems as well as a license assignment for third party products)

If error elimination is not possible (e.g. for technical reasons), the system configuration will be defined as "Not supported" in the next version of the Technical Datasheet.

- **"Reference"**: In this reference system configuration, FirstSpirit is released without any restrictions. e-Spirit carries out regular tests for this system configuration to ensure that any incompatibility is usually detected prior to delivery. If necessary, mechanisms which avoid occurring errors in third party products and, thus, prevent problems during interaction with FirstSpirit will be integrated into FirstSpirit for reference system configurations.
- **"Not supported"**: A list of system configurations which are known to lead to problems or which are expected to cause problems. e-Spirit will NOT take measures to eliminate possibly occurring problems. If a system configuration is not listed here, it does not mean that it is supported, but only that there is no specific information at present.
- **"Removed from maintenance"**: Configurations of this kind have been supported in an earlier version of FirstSpirit 4.x, but have been removed from maintenance in the current FirstSpirit release version. This means that from the current FirstSpirit release version on, we will no longer test whether these versions still function correctly with new features implemented in FirstSpirit and users are no longer entitled to debugging for these configurations. All earlier FirstSpirit versions 4.x can however, in principle, run with these versions removed from the maintenance. We will also try to enable new functions in the current FirstSpirit version to run with the configurations removed from the maintenance, but there is no guarantee of this. The maintenance of these configurations will expire completely with version 5.0



2 System requirements: Short overview

This chapter resumes the most important system requirements for FirstSpirit. Detailed information about references, recommendations and restrictions etc. will follow in Chapter 3.

2.1 FirstSpirit Server

Operating systems:

- Microsoft Windows 2003 / 2008 Server
- Linux (Red Hat / SuSE / Debian or similar)
- Sun Solaris 9 / 10, IBM AIX 5 / 6

Hardware:

- Server systems on the basis of Intel/AMD, Sun Sparc or IBM Power PC

We recommend the usage of a current multi-core system with a high performing hard disk system and at least 16 GB RAM. The use of virtualisation software is technically feasible for the operation of the FirstSpirit server in fact, but e-Spirit disadvises this principally.

Java:

- Sun Java JDK 1.6 (Update 14 or newer) for Windows / Linux / Solaris or
- IBM JDK 1.6 (only for AIX 5 / 6)

The use of other JDKs is principally not supported by e-Spirit. Using a 64-Bit JDK is recommended URGENTLY.

Databases:

- MySQL 5.0 / 5.1
- Microsoft SQL Server 2005 / 2008
- Oracle 10 / 11
- IBM DB2 8 / 9
- PostgreSQL 8

(optional) HTTP / Application server:

- Apache 2
- Microsoft Internet Information Server (IIS) 6 / 7
- Apache Tomcat 6.0

2.2 FirstSpirit JavaClient / Server and project configuration

Operating systems:

- Microsoft Windows Vista / 7



- Linux Desktop
- Mac OS X 10.6

Hardware:

- Performance class Intel P4/2.8GHz or higher with at least 768 MB main storage free for JavaClient

In combination with the function "Integrated Preview" the requirements will increase: in this case, >1GB free main storage and a multi-core system from performance class Intel C2D/E6600 and a monitor with high definition (>1440px width) are recommended.

Java:

- Sun Java JRE 1.6 (recommended: update 18 or newer, 32-bit) or
- Apple JRE 1.6 (only for Mac OS X)

Limitations:

Integrated Preview: For technical reasons, the use of a 32-Bit-JRE is mandatorily required for the Integrated Preview under Windows, at the moment. The Integrated Preview on the basis of Microsoft products (Internet Explorer, Office, Windows Media Player) is only available on Windows platforms. The OpenOffice integration is currently in BETA test phase.

Linux Desktop and Mac OS X 10.6: The complex graphical user interface of the JavaClient is in some details different or restricted under Linux / Mac OS (e.g. programme menu under Mac OS, Drag & Drop). For the Integrated Preview only the Mozilla Firefox engine is available under Linux and Mac OS X. The OpenOffice integration is not available under Mac OS X and still instable under Linux. AppCenter applications are not supported under Mac OS and Linux!

2.3 FirstSpirit WebClient

Operating systems:

- Microsoft Windows Vista / 7
- Linux Desktop
- Mac OS X 10.6

Web browser:

- Microsoft Internet Explorer 7 / 8
- Mozilla Firefox 3.5 / 3.6

Hardware:

- at least 512 MB main storage free for WebClient



3 System requirements for FirstSpirit

This chapter describes the system configurations in which FirstSpirit is able to run in detail. The individual product components of different system configurations are described for this.

3.1 FirstSpirit JavaClient and Server and project configuration

The editorial system JavaClient and the FirstSpirit application for the server and project configuration require a Java runtime environment in order to be executed on the client system.

A web browser with "Java Web Start"¹ is required for starting the JavaClient and the application for server and project configuration via the so-called start page. Via Java Web Start, software updates of FirstSpirit products are automatically transferred during start-up of the client systems². An individual installation/update of the FirstSpirit JavaClient is, therefore, not required. Java Web Start is part of the Java Runtime Environment (JRE) of Oracle since version 1.6.0.

All the used HTTP proxy servers have to be configured in a way that ensures that changed objects are recognized and treated as such. This applies to the start of the JavaClient via Java Web Start as well as for the preview function and WebEdit.

3.1.1 Java environment

- **Supported:**
 - Sun Java 6 (JRE 1.6) in the 32-bit version with Java Web Start, as well as the 64-bit version, however with limitations when using the Integrated Preview (see Chapter 3.1.4 page 10)
 - Apple JDK (version: in each case the version which is included in the used Mac OS)

¹ Further information: <http://java.sun.com/products/javawebstart/>

² Method: http://en.wikipedia.org/wiki/Java_Web_Start



- **Reference:** Sun JRE 1.6.0_23 for Windows 32-bit with Java Web Start
- **Removed from maintenance:** Sun JDK 1.5
- **Not supported:** Java implementations of other manufacturers (e.g. IBM)

Incompatibilities with specific Java versions: FirstSpirit is released for a main version of a JDK, e.g. Sun Java 6 (JDK 1.6) or IBM JDK 1.5. Regular updates of JDK are issued as part of the debugging in JDK; these updates are checked within the scope of quality assurance to ensure they are compatible with FirstSpirit. In very rare cases, incompatibilities can occur due to errors in JDK, which cannot be handled in programming terms. This is not a FirstSpirit error! In this case we recommend falling back on an older JDK version or – if available – using a newer JDK version. Please contact the FirstSpirit Helpdesk if you have any questions about known problems.

- Because of a bug of the signature check in Java Web Start for the FirstSpirit JavaClient the following versions of Sun Java Web Start (part of the JRE) can not be used: 1.6.0_14, 1.6.0_15, 1.6.0_16 and 1.6.0_17.
- With FirstSpirit Version 4.2R2, the 32-bit version of **JDK 1.6.0_18** was released for FirstSpirit-JavaClient. Unfortunately, this JDK (like all JDKs since 1.6.0_14) also contains fatal errors. But as customers want an updated JDK release for JavaClient, e-Spirit has implemented a special strategy for circumventing a JDK error, which was intensively checked within the scope of the FirstSpirit Version 4.2R2 release tests. The Sun JDK 1.6.0_18 can therefore be released for use in JavaClient. A release for older FirstSpirit versions (before Release 2) is **not** possible because it is too risky to transfer the error environment into stable version lines. Further, it is also possible that there are still places in FirstSpirit in which the error has not yet been circumvented. The error in Sun JDK is primarily manifested in the shift buttons (radio buttons), which do not respond (or unexpectedly respond) to a status change. This bug is reported at Sun. In addition, VM crashes can currently occur due to still unclarified conditions.
- In some interim Versions of 4.2R4 and in 4.2R2, the menu bar of the JavaClient can be displayed incorrectly when using **JDK 1.6.0_23**: The menus or menu items are too close and have no space between. This cosmetic defect is corrected with Version 4.2.428. It is not planned to port back this to older FirstSpirit Versions.



3.1.2 Operating system

- **Supported:**
 - Microsoft Windows 7 (32 and 64-bit)
 - Microsoft Windows Vista SP2 (32- and 64-bit)
 - Mac OS 10.6 (only Intel) (with limitations, see below)
 - Linux (with limitations, see below)
- **Reference:** Microsoft Windows 7 (32-bit)
- **Removed from maintenance:** Microsoft Windows XP
- **Not supported:** Microsoft Windows 98, Microsoft Windows ME, Microsoft Windows NT4, Windows 2003, Windows 2000



The FirstSpirit JavaClient and the application for the server and project configuration can be operated both on 32-bit and on 64-bit platforms. Operating in 64-bit environments may result in higher administrative efforts because the use of the Integrated Preview in the JavaClient still requires native 32-bit applications at the moment.

Notes about using Microsoft Windows 7 and Vista: If Microsoft Windows 7 or Vista is used, the NTLM login module, via which the NTLM authentication is made at the FirstSpirit server, can only be used if the Windows 7 security settings are lowered. Login via Kerberos-Ticket (integrated Windows login) is possible in combination with Mozilla Firefox and Microsoft Internet Explorer from V4.2R2 and in this context is the preferred variant.

Notes about using Mac OS X and Linux: Mac OS X and Linux are officially supported from this release version on, however, with restrictions: Only the basic FirstSpirit functions are regularly tested under these two operating systems within the scope of our quality assurance, which continues to focus on Microsoft Windows. Especially under Linux, there are a large number of interfaces (window managers), for which a complete functional test involves a great deal of time and effort. Therefore, more operating-system related problems can occur during regular work with Mac OS X and Linux than under Microsoft Windows, however, as far as technically possible, these will be removed within the scope of the software maintenance. Due to serious



differences to Windows-based systems (especially with respect to interface libraries), there are also, e.g. restrictions in Drag & Drop functions and with regard to the integration of native applications, e.g. in the Integrated preview.



*The functionality of AppCenter applications under **Mac OS** and **Linux** can not be guaranteed. For this reason, these platforms are not supported for AppCenter applications.*

Apart from the Mac OS version 10.6, version 10.5 can also be used, however, this is not officially supported by FirstSpirit.

If non-Latin characters in FirstSpirit-JavaClient are to be used under Linux (i.e., e.g. Chinese characters), the Java package (JRE) with Sun-JVM of the respective Linux distribution must be used, e.g. the packages "sun-java6-jre", "sun-java6-plugin" or "sun-java6-fonts" from Debian/GNU and Ubuntu or "java-1_6_0-sun-1.6.0" and "java-1_6_0-sun-plugin-1.6.0" from SUSE and Red Hat. Operation of the JavaClient under other Java systems such as OpenJDK, GNU Java or Apache Harmony is not supported.

3.1.3 Hardware

- Performance class "Pentium 4 with 2.8GHz" or higher
- 768 MB main memory or more available for the FirstSpirit JavaClient
- In combination with the function "Integrated Preview" the requirements will increase: in this case, >1GB free main storage and a multi-core system from performance class Intel C2D/E6600 and a monitor with high definition (>1440px width) are recommended.

3.1.4 System requirements for the Integrated preview

The function "Integrated preview" in the JavaClient accesses the following third-party software:

1. to display the HTML preview: special version of Mozilla Firefox and Microsoft Internet Explorer integrated in JavaClient
2. to display media from the FirstSpirit Media Store of the type PDF and Adobe Flash: the related plug-in of the web browser integrated in the JavaClient



(e.g. Adobe Acrobat Reader or Adobe Flash Player)

3. to display media from the FirstSpirit Media Store of the type DOC, XLS, PPT and OpenOffice files: the related Microsoft Office or OpenOffice application (the OpenOffice integration is currently in the BETA test stage!)

The editor selects which web browser is used for **1. and 2.** directly in JavaClient (under Mac OS and Linux there is no selection option). Both are always started as 32-bit applications. A special version of Firefox integrated in JavaClient is used for use of Mozilla Firefox, so that local installation of Mozilla Firefox on the workstation computer is not necessary. If Microsoft Internet Explorer is to be used, a 32-bit version installation of this browser must be available on the workstation computer. In addition, at present the JRE must always be a 32-bit application in order for the Integrated preview to work (see also Chapter 3.1.1 page 7). Support for 64-bit JREs in conjunction with the integrated preview is planned, but requires throughout 64-bit code, which can not be made available by some components distributors yet.

The display of the file formats listed under 1. and 2. is platform-independent, and is therefore also available under Linux and Mac OS, however, always only in the 32-bit version. However, it is not possible to guarantee that all Browser plug-ins function correctly with the Integrated preview operating system wide. From experience, plug-ins of well-known manufacturers, e.g. Adobe Flash and Adobe Acrobat Reader, do not cause problems.

The display of media, as described under **3.** (so-called "Integrated preview for media") is, on the other hand, only possible under Windows. The application matching the format of the selected medium is used each time, i.e., e.g. Microsoft Word for media of the type DOC, OpenOffice Writer for media of the type ODT (the OpenOffice integration is currently in the BETA test stage!), etc. For this aim, the relevant application must be installed on the workstation computer. A 64-bit JRE can also be used in principle (see also Chapter 3.1.1 page 7), but then the Integrated preview will not be available.

Note: Using the Integrated preview for media with Microsoft Office in parallel with the Microsoft Office desktop application (started via Windows) can lead to problems under certain conditions. This is no warranted product feature of the FirstSpirit integration. Either the Integrated preview for office documents in FirstSpirit **or** the Microsoft Office desktop application should be used but **no** mixed operation.



The following table gives a summary breakdown of the compatibilities of operating systems and applications that can be used for the Integrated preview:

	Mozilla Firefox	Internet Explorer	Preview for PDF, SWF etc.	Microsoft Office Applications
Windows 32-bit	+	+	+	+
Windows 64-bit	/ only 32Bit JRE	/ only 32Bit JRE	/ only 32Bit JRE	+
Mac OS 10.6	+	-	/	-
Linux	/ only 32Bit JRE 1.6	-	/ only 32Bit JRE 1.6	-

Legend: (+) compatible (/) with limitations (-) incompatible

3.1.5 Note about the use of virus scanners

When operating the FirstSpirit JavaClient (in the HTTP mode) in system environments with activated internet virus scanner delays in the communication between JavaClient and FirstSpirit Server could be observed (arisen with older versions of NOD V4.0 64-bit under Windows 7). In the socket mode, no delays have been observed, so far. In case of problems you should optionally:

- start the JavaClient in the socket mode
- change the configuration of the virus scanner
- use a new virus scanner.



3.2 FirstSpirit WebClient

The FirstSpirit WebClient is a purely web-based application which sometimes places high demands on the used web browser.

The utilization of special browser extensions, e.g. Active-X components or other plug-ins is not required. The only exception here is the (optional) utilization of WebEdit in Java mode (see below). The activation of Java script is mandatory when using the WebClient.

For dynamic web applications it might, in certain cases, be necessary to carry out special cache settings in the Internet Explorer or in the used proxy server. In addition to this, all the used HTTP proxy servers have to be configured in a way that ensures that changed objects are recognized and treated as such. For detailed information, please refer to the *FirstSpirit Manual for Administrators*.

3.2.1 Web browsers

- **Supported:**
 - Microsoft Internet Explorer 7.0 and 8.0
 - Mozilla Firefox 3.5 and 3.6
- **Reference:** Microsoft Internet Explorer 8.0, Mozilla Firefox 3.6 with Java Web Start
- **Removed from maintenance:**
 - Microsoft Internet Explorer 6.0
 - Mozilla Firefox 2.0
- **Not supported:** Other web browsers, e.g. Opera, Safari, Google Chrome

Note: Depending on the selected authentication model, the FirstSpirit Server might ask the web browser for NTLM authentication. Full transparent support is only provided for this protocol in the Microsoft Internet Explorer. If Microsoft Windows 7 or Vista is used, the NTLM login module, via which the NTLM authentication is made at the FirstSpirit server, can only be used if the Windows 7 security settings are lowered. Login via Kerberos-Ticket (integrated Windows login) is possible in combination with Mozilla Firefox and Microsoft Internet Explorer from V4.2R2 and in



this context is the preferred variant.

Java components can be used in WebEdit optionally, too. For this purpose, the Sun Next Generation Java plug in is required within the web browser which is used for (JRE 1.6.0_10 and higher). The use of this Java plug in for WebEdit is only required in few cases and is in the BETA phase at the moment.

3.2.2 Hardware

- Performance class "Pentium 4 with 2.8GHz" or higher
- 512 MB or more main memory available for WebClient



3.3 FirstSpirit Server

The actual FirstSpirit Server is a pure Java application which, apart from a Java Development Kit (JDK), does not require any additional software products. The utilization of a pure Java runtime environment (JRE) is insufficient for the FirstSpirit Server, since FirstSpirit requires functions which are only included in JDK.

3.3.1 Java environment

- **Supported:**
 - Sun Java 6 (JDK 1.6), in the 32-bit and 64-bit version³ under Microsoft Windows and Linux, as well as Solaris
 - IBM JDK 1.6 only on AIX
- **Reference:**
 - Sun JDK 1.6.0_23 for Microsoft Windows (64-bit)
 - Sun JDK 1.6.0_23 for Linux (64-bit)
 - Sun JDK 1.6.0_23 for Solaris (64-bit)
- **Removed from maintenance:** IBM JDK 1.5 on AIX
- **Not supported:** Sun Java 5 (JDK1.5), Java implementations of other manufacturers (e.g. IBM JDK on Linux or Microsoft Windows, Apple JDK on Mac OS X for FirstSpirit Server), JDK under IA64

Incompatibilities with specific Java versions: FirstSpirit is released for a main version of a JDK, e.g. Sun Java 6 (JDK 1.6) or IBM JDK 1.5. Regular updates of JDK are issued as part of the debugging in JDK; these updates are checked within the scope of quality assurance to ensure they are compatible with FirstSpirit. In very rare cases, incompatibilities can occur due to errors in JDK, which cannot be handled in programming terms. This is not a FirstSpirit error! In this case we recommend falling back on an older JDK version or – if available – using a newer JDK version. Please contact the FirstSpirit Helpdesk if you have any questions about known problems.

- Due to an error in the Java Hotspot compiler, the following JDK versions cannot be used for the FirstSpirit Server: 1.6.0_10, 1.6.0_11, 1.6.0_12 and 1.6.0_13. Therefore, Version **1.6.0_14 or newer** should be used for the FirstSpirit Server.

³ 64-bit always refers to AMD64 / EMT64 and not IA64 here.



Only the JDK Version 1.6.0_14 or higher can be used for installation of a new FirstSpirit Server under Windows and via RPM under SuSE/RedHat (see *FirstSpirit Installation Instruction*), a corresponding message is output with other JDK versions and the installation cannot be performed. Installation via tar archive on the other hand is also possible with versions below 1.6.0_14.

- Especially for the server, the JDK **1.6.0_23** contains many bug-fixes supplied by the manufacturer. For this reason, it is advised urgently to use this JDK version for the server.
- When using the IBM JDK, at least Version 1.6.0 SR8 must be used, as – due to an error in the JDK – IBM JDKs 1.6.0 SR6 and SR7 cause 100 % CPU utilisation even when idle.

3.3.2 Operating system

- **Supported:**
 - Microsoft Windows 2003 R2
 - Microsoft Windows 2008 Server
 - Microsoft Windows 2008 Server R2
 - Debian GNU/Linux 5.0
 - Suse Linux Enterprise Server 10
 - Suse Linux Enterprise Server 11
 - Red Hat Enterprise Linux 5
 - Solaris 9
 - Solaris 10
 - IBM AIX 5.3
 - IBM AIX 6.1

Note on 64-bit x86 CPU architectures: Only AMD64 and the compatible Intel64 (also known as EMT64) are supported. Intel's deprecated IA64 provides no JDK 1.5 and 1.6 and is therefore not supported by FirstSpirit.

- **Reference:**
 - Microsoft Windows 2008 Server R2 64-bit
 - Suse Linux Enterprise Server 11 64-bit



- **Removed from maintenance:**
 - Microsoft Windows 2000
 - Microsoft Windows 2003 (without "R2")
 - Debian GNU/Linux 4.0
 - Suse Linux Enterprise Server 9
 - Red Hat Enterprise Linux 4
- **Not supported:** Microsoft Windows NT4, operating systems on the basis of IA-64⁴

Note: When using the FirstSpirit Server in 32-bit environments, it has to be taken into account that 32-bit operating systems usually limit the maximum process size to 2 GB (e.g. Windows and Linux). Furthermore, it might (especially under Windows) be possible that not even the main memory provided to the process by the operating system is used due to limitations of the VM implementation. Therefore, approximately 1.6 GB heap memory can usually be used for the VM in a 32-bit environment under Windows. If it is foreseeable that more memory will be required, plan to change to a 64-bit platform in due time (if possible, right from the start). When dimensioning the main memory in a 64-bit environment, it has to be observed that, compared to a 32-bit environment, the main memory requirements of the application can increase by the factor 1.8.



For the FirstSpirit Server the use of 64-bit operating systems is recommended in general.

3.3.3 Hardware

- Performance class 2x Dual Core AMD Opteron or Intel Xeon or higher
- 4 GB main storage or more available for FirstSpirit Server

⁴ 64-bit always refers to AMD64 / EMT64 and not IA64 here.



3.4 Web and servlet engine / application server

The FirstSpirit Server is a classic Java application which is not operated in an application server. The required standard server services for the FirstSpirit Server are already included in the standard scope of installation. A web browser and a JSP/servlet engine, which run as a part of the FirstSpirit Server in the same VM, are provided by the open source product "Mort Bay Jetty 6.1".

Nevertheless, it might be desired to shift certain FirstSpirit services onto an existing infrastructure. In this case, an integration of external software packages might be necessary.

A servlet engine – which implements the servlet API in version 2.4 – is required for the use of FirstSpirit web applications.

Note: The web applications of the FirstSpirit modules fit principally to the version 2.4, but there may be discrepancies, depending on the specific module.

FirstSpirit supports interaction with the following products:

Web server:

- **Supported:**
 - Apache 2
 - Microsoft Internet Information Server (IIS) 6 / 7
- **Reference:**
 - Apache 2.2
 - Microsoft Internet Information Server (IIS) 7

Servlet engine/Application server:

- **Supported:**
 - Apache Tomcat 5.5
 - Apache Tomcat 6.0
 - Mort Bay Jetty 6.1 (included in the scope of delivery)
- **Reference:** Mort Bay Jetty 6.1



3.5 Databases

The FirstSpirit Server provides an imbedded Apache Derby database which is immediately available after server installation.

Important: This Apache Derby database is not suitable for productive use and should therefore be used for tests only.

Depending on the application scenario, it might be desired to integrate one (or more) external database system(s) via JDBC.

Important: From the current FirstSpirit release version on, integration of JDBC driver files via modules is recommended. They should no longer be filed in the `.../shared/lib` directory, among other things, to enable various versions of a driver to be operated in parallel. See also *FirstSpirit Release Notes Version 4.2 Release 4*.

The following databases can be used with FirstSpirit:

MySQL:

- **Supported:**
 - MySQL 5.0 (Linux and Windows)
 - MySQL 5.1 (Linux and Windows)
- **Reference:**
 - MySQL 5.1.41
- **Removed from maintenance:**
 - MySQL 4.1

Microsoft SQL Server

- **Supported:**
 - Microsoft SQL Server 2005 (only for Windows servers)
 - Microsoft SQL Server 2008 (only for Windows servers)
- **Reference:**
 - Microsoft SQL Server 2008



- **Removed from maintenance:**
 - Microsoft SQL Server 2000 (Windows)

Important: There is no particular database layer for the Microsoft SQL server 2008, the layer for the version 2005 must be used instead.

Oracle

- **Supported:**
 - Oracle 10 (Solaris, Linux, and Windows)
 - Oracle 11 (Solaris, Linux, and Windows)
- **Reference:**
 - Oracle 11.2.0.1.0
- **Removed from maintenance:**
 - Oracle 9 (Solaris and Linux)

IBM DB2

- **Supported:**
 - IBM DB2 8.2 (AIX)
 - IBM DB2 9.x
- **Reference:**
 - IBM DB2 9.7
- **Removed from maintenance:**
 - IBM DB2 8.2 (Linux)

PostgreSQL

- **Supported:**
 - PostgreSQL 8.x (Linux and Windows)
- **Reference:**
 - PostgreSQL 8.4.1



4 Appendix

4.1 Recommendations for the system configuration

The FirstSpirit architecture supports a variety of system configurations in the software and hardware area. This section describes some system configurations which are often used and whose utilization is not expected to lead to specific problems:

Operating system (Server): Debian GNU/Linux (AMD64/Intel64), Solaris 10 (AMD64/Intel64)

Java (server): Sun JDK 64-bit 1.6.0_23

Database: PostgreSQL Database Server 8.2 under Linux

Operating system (client): Microsoft Windows 7 32-bit or 64-bit, but with 32-bit JRE

Java (client): Sun JRE 32-bit 1.6.0_23

Web browser (WebEdit): Microsoft Internet Explorer 8.0

4.2 Notes on hardware dimensioning

The FirstSpirit Server has been designed for application in a multiprocessor system and uses the available processors or computing cores efficiently. The application of multiprocessor systems is, therefore, always recommended. Application in 64-bit-capable hardware is also highly recommended, even though it is not required at first (if a 32-bit operating system is being used).

Since the FirstSpirit Server manages almost all the data in a very efficient, file-based repository, it has to be ensured that a high-performance hard disk subsystem is used. In practical use, the best performance is achieved with Fibre Channel RAID systems with a large cache RAM (2 GB cache) and a large RAID6 group in the SAN. Internal RAID systems are also possible. Application of NAS systems and NFS should only occur in individual cases and after a very accurate planning and performance analysis.



It has to be observed that the network bandwidth between the individual server systems is sufficient, especially when using FirstSpirit in a distributed system.

Some "common" FirstSpirit hardware configurations are provided with notes on the expected performance below. It goes without saying that during real application greater deviations may arise.

"Small" FirstSpirit Server: Approx. 3-5 projects (< 50,000 pages and < 5 GB media) with approx. 25-50 editors working in parallel:

- 1 Server with 4 CPU cores (AMD Opteron or Intel Xeon)
- 8 GB main memory
- Internal RAID with 6 disks
- Recommended disk storage 100 GB

"Medium" FirstSpirit Server: Approx. 5-10 projects (< 1,000,000 pages and < 50 GB media) with approx. 250-300 editors working in parallel:

- 2 servers with 4-8 CPU cores each (AMD Opteron or Intel Xeon) for FirstSpirit master server, FirstSpirit preview system and, if required, generation slave
- 16-32 GB main memory
- external RAID, 2GB cache RAM, 12 disks
- Recommended disk storage 300 GB

"Big" FirstSpirit Server: More than 10 projects (> 1,000,000 pages and > 50 GB media) with approx. 500-1000 editors working in parallel:

- 2x Sun midrange multipath server with 32 GB RAM each (e.g. M4xxx Sparc series or X46xx AMD64 series) for FirstSpirit master server and generation slave
- 2x Sun entry level multipath server each with 32 GB RAM each (e.g. T5xxx series with T2 Multithread CPU) for FirstSpirit preview system
- External storage system on SAN basis, > 2 GB cache RAM, > 24 disks
- Recommended disk storage: 600 GB

Note about dimensioning the Java heapsize of the FirstSpirit server and preview system: The practicable maximal size of a Java process is 10 GB at the moment. For this reason, scaling over several smaller systems is more reasonable than using only one big system with more than 32 GB.



4.3 Application of virtualisation software

If FirstSpirit should be used in any kind of virtualisation environment (VMWare WS/GSX/ESX, Microsoft Virtual PC, XEN and so on), please consider that problems (e.g. Performance problems) caused by the additional system complexity can't be excluded. The selected configuration should be evaluated extensively before use – especially in production systems. The optimal solution is to evaluate the configuration in cooperation with e-Spirit. This is particularly recommended if the used virtualization product is not available to e-Spirit.

A FirstSpirit installation for test and evaluation purposes based on virtualisation solutions is possible, but e-Spirit does not provide configuration and optimisation support for any problems (caused by virtualisation products). The reproduction of bugs can be problematic.

