



# Installation Manual

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## **Disclaimer**

This document is intended to support administrators, technology managers or developers using and implementing Smarten. The business needs of each organization will vary and this document is expected to provide guidelines and not rules for making any decisions related to Smarten. The overall performance of Smarten depends on many factors, including but not limited to hardware configuration and network throughput.

## Preface

Smarten Installation Manual is part of the documentation set for **Smarten Augmented Analytics Suite Version 5.x.x.xxx**.

This manual contains information on installing and configuring Smarten on supported operating system platforms.

### Related Documents:

Smarten-Technical-Specifications	This guide contains information on minimum recommended hardware and software platforms for running Smarten
Smarten-ApplicationServer-Optimization-Guidelines	Performance tuning: WildFly Application Server
Smarten-Securing Application Server	Document describes how to secure WildflyAS

#### Note:

Throughout this manual, Smarten Augmented Analytics is abbreviated as Smarten.

## Contents

<b>1</b>	<b>About this Manual.....</b>	<b>5</b>
a.	Scope and Organization of Topic Areas.....	5
b.	Conventions Used .....	5
<b>2</b>	<b>Smarten Installation Kit.....</b>	<b>5</b>
<b>3</b>	<b>Prerequisites and Compatibility .....</b>	<b>6</b>
a.	Product Key to run Smarten application .....	6
<b>4</b>	<b>Extracting the smarten-5.x.x.xxx.zip file .....</b>	<b>6</b>
<b>5</b>	<b>Deploying Smarten on Application Servers .....</b>	<b>6</b>
a.	Java Environment.....	6
b.	Deploying Application Server.....	7
c.	Configuring Application Server .....	7
d.	Deploying Smarten on Application Server.....	10
e.	Configuring Apache Spark.....	10
f.	Running Application Server from command prompt .....	10
g.	Running Application Server as system service .....	11
<b>6</b>	<b>Configuring Product Key.....</b>	<b>12</b>
<b>7</b>	<b>Running Smarten.....</b>	<b>12</b>
<b>8</b>	<b>Upgrading Smarten from Previous Version .....</b>	<b>13</b>
a.	Take Backup and Uninstall Previous Version.....	13
b.	Install Smarten v5.x.x.xxx .....	13
c.	Upgrading from 4.5 version .....	13
d.	Clear Cache from Previous Installation .....	13
e.	Configure Product Key.....	13
f.	Verify upgrade.....	13
<b>9</b>	<b>Uninstalling Smarten.....</b>	<b>13</b>
<b>10</b>	<b>Appendix.....</b>	<b>14</b>
a.	Setting the Heap Size.....	14
b.	Obtaining MAC Address on different operating environments.....	15
c.	Using 32-bit Data sources on Windows x64 system .....	17
<b>11</b>	<b>Product and Support Information .....</b>	<b>17</b>

## 1 About this Manual

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This document contains information and a step-by-step guide on installation and configuration of Smarten on supported operating systems.

### a. Scope and Organization of Topic Areas

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Chapter 2	Smarten Installation Kit
Chapter 3	Prerequisites and Compatibility
Chapter 4, 5	Extracting the Smartenzip file and Installation of Smarten
Chapter 6	Configuring product key
Chapter 7	Running Smarten
Chapter 8	Upgrading Smarten from Previous Version
Chapter 9	Uninstalling Smarten
Chapter 10	Appendix
Chapter 11	Product and Support Information

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### b. Conventions Used

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The manual uses typographical conventions in the text to help you distinguish between the names of files, instructions, and other important notes that are relevant during installation.

- The names of file directories and files are presented in boldface font  
For example,  
`/system.properties: system.properties file`
- Important notes are indicated in blue font color and format  
For example,

**Note:**

If you don't know on which port your WildFly JNDI service is running, you can find it in `standalone.xml` file.

- In the manual, the file name "smarten-5.x.x.xxx.zip" is mentioned at various places. The number "5.x.x.xxx" represents the Smarten product version number.

## 2 Smarten Installation Kit

---

The Smarten installation kit is delivered in a compressed zip file that includes all the files required for installation.

The Smarten installation kit contains the following file:

- smarten-5.x.x.xxx.zip file

Reference: **Installation Manual>Prerequisites and Compatibility**

## Note:

Review all prerequisites for installation and configuration settings before installing Smarten.

## 3 Prerequisites and Compatibility

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Please refer to Smarten Augmented Analytics Technical Specifications guide for details on prerequisites and compatibility with hardware and software platforms for running Smarten.

### a. Product Key to run Smarten application

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The Smarten application runs successfully after installing a valid product key. To obtain a valid product key, contact Technical Support at [support@smarten.com](mailto:support@smarten.com).

You will need to provide following details:

- Server MAC address
- Company Name
- Contact Person

For guidelines on how to obtain MAC address on different operating environments:

**Appendix >>Obtaining MAC Address on different operating environments**

## 4 Extracting the smarten-5.x.x.xxx.zip file

---

Installation instructions should be followed in the correct sequence to complete successful installation of Smarten.

Extract the **smarten-5.x.x.xxx.zip** file on system using zip extraction software. After extraction, the extracted files are stored in the **smarten-5.x.x.xxx** directory.

The **smarten-5.x.x.xxx** directory contains the following directories/files:

**smarten.war**—Contains all the required Smarten application files. Need to deploy this folder on the application server.

**Docs**—Contains guides and reference documents provided in Smarten documentation kit.

**Docs/Sample files**—Contains sample import formats.

**data**—This folders contains application metadata folder

After extracting **smarten-5.x.x.xxx.zip** successfully, the next step is to deploy the Smarten application on application server.

Refer to **Deploying Smarten on Application Servers** for step-by-step instructions on deploying Smarten.

## 5 Deploying Smarten on Application Servers

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### a. Java Environment

---

Smarten is only compatible with Oracle Java Distribution JDK, and the recommended version is JDK 1.8.X.

Download and Install the latest version from

<http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-1880260.html>

Choose Windows or Linux 32-bit or 64-bit version of JDK, depending upon your operating system.

Platform specific installation instructions are available at

<http://docs.oracle.com/javase/8/docs/webnotes/install/>

## Setting JAVA\_HOME on Windows environment:

Windows OS is a GUI-based operating system, and The JAVA\_HOME variable is used by Smarten to find the Java Development Kit installation.

Follow the instructions below to edit PATH of system variable from GUI.

- 1) Open System property Window
- 2) Click Advanced --> Environment variables
- 3) Click New on System Variable section
- 4) Add Variable Name: JAVA\_HOME and Variable value: C:\Program Files\Java\JDK1.8.x\
- 5) Add Java into PATH as: %JAVA\_HOME%/bin

## Setting JAVA\_HOME on Linux environment:

The Linux Operating System is a command-based operating system, so users will need to run command to export JAVA\_HOME variable and its value.

Run the following command to edit PATH of system variable on Linux.

```
Shell:> export JAVA_HOME=/opt/java/jdk_1.8
```

```
Shell:>export PATH= ${PATH}:{JAVA_HOME}/bin
```

## b. Deploying Application Server

---

Smarten is compatible with the WildFly application server, and the recommended version for the WildFly application server is WildFly-11.

Download WildFly from <http://download.jboss.org/wildfly/11.0.0.Final/servlet/wildfly-servlet-11.0.0.Final.zip>

Installation instructions and getting started guide for WildFly application server can be found on <https://docs.jboss.org/author/display/WFLY/Documentation.html>

Reference: **Smarten-SecuringApplication Server**

### Note:

Please make sure that you have enough space and permission on drive to access all files and folders of application server installation directories.

## c. Configuring Application Server

---

Deployment of Smarten requires modification of some configuration parameters.

Please follow the steps below.

- **Change memory settings**

This setting allocates more memory to WildFly on server resources, ensuring better performance for resource-intensive processing tasks.

Open file standalone.conf from path shown below and make changes.

**For Linux**

WILDFLY\_HOME/bin/standalone.conf

**For Windows**

WILDFLY\_HOME/bin/standalone.conf.bat

This will allow you to modify Java VM heap size parameters (-Xms and -Xmx) (where Xms is minimum heap size, Xmx is maximum heap size)

For example, to allow 14 GB of heap memory,

JAVA\_OPTS="-Xms14G -Xmx14G"

For other details:

**Appendix> A > Setting the Heap Size**

Reference: **Application Server Optimisation-Guidelines>Performance Tuning and Optimization**

- **Change settings from localhost to IP Address**

By default, WildFly is bound with localhost. Users cannot access the WildFly server using an IP address. To change WildFly server access from localhost to any specific IP address and to bind it to network interface(IP Address) instead of localhost, follow the steps below.

Open file standalone.xml from path shown below and make changes:

WILDFLY\_HOME/standalone/configuration/standalone.xml

```
<interface name="management">
  <inet-address value="${jboss.bind.address.management:0.0.0.0}"/>
</interface>
<interface name="public">
  <inet-address value="${jboss.bind.address:0.0.0.0}"/>
</interface>
<!-- TODO - only show this if the jacob subsystem is added -->
<interface name="unsecure">
  <inet-address value="${jboss.bind.address.unsecure:0.0.0.0}"/>
</interface>
```

**Note:**

The IP address 0.0.0.0 will allow WildFly to bind all IP addresses in system.

- **Change HTTP port(default 8080)**

Use this setting to modify WildFly HTTP port value (by default port 8080). If another program running on your server uses port 8080, WildFly cannot use port 8080. In such cases, change this setting to allocate some other port number to WildFly.

Open file standalone.xml from path shown below and make changes.



```
WILDFLY_HOME/standalone/configuration/standalone.xml
<socket-binding-group name="standard-sockets" default-interface="public" port-
offset="${jboss.socket.binding.port-offset:0}">
.....
<socket-binding name="http" port="80"/>
</socket-binding-group>
```

- **Configure HTTP POST related parameters (max-post-size and max-parameters)**

In Wildfly, maximum post size and maximum number of parameters are defined on listener for HTTP POST requests. By default max-post-size is limited to 10 MB and max-parameters is limited to 1000, but you can change that by configuring these parameters as shown below.

Turn off the Wildfly server , while modifying this file.

Open file standalone.xml from path shown below and make changes.

WILDFLY\_HOME/standalone/configuration/standalone.xml

```
<subsystem xmlns="urn:jboss:domain:undertow:1.2">
<buffer-cache name="default"/>
<server name="default-server">
<http-listener name="default" max-post-size="5000000"max-parameters="2000" socket-
binding="http"/>
<host name="default-host" alias="localhost">
<location name="/" handler="welcome-content"/>
<filter-ref name="server-header"/>
<filter-ref name="x-powered-by-header"/>
```

- **Configure Smarten Application to support different language**

By default, Smarten considers OS locale and localization settings. To change entire application encoding to support other language, configure parameter as shown below.

### On Linux

/bin/standalone.conf

Add two parameters marked in bold as shown below

```
set "JAVA_OPTS=-Xms10G -Xmx30G -noverify -XX:MaxPermSize=256M -XX:NewRatio=2 -
XX:PermSize=64m -XX:+UseG1GC-Duser.language=ar -Dfile.encoding=UTF-8"
```

### On Windows

/bin/standalone.conf.bat

Add two parameters marked in bold as shown below

```
set "JAVA_OPTS=-Xms10G -Xmx30G -noverify -XX:MaxPermSize=256M -XX:NewRatio=2 -
XX:PermSize=64m -XX:+UseG1GC-Duser.language=ar -Dfile.encoding=UTF-8"
```

## d. Deploying Smarten on Application Server

---

Copy smarten.war and smarten.war.dodeploy file from extracted folder to deployment directory of WildFly.

### On Windows and Linux

WILDFLY\_HOME/standalone/deployments/

### On Linux

Give execute permission to

WILDFLY\_HOME/standalone/deployments/smarten.war/phantomjs/linux/phantomjs

To mark this file executable:

chmod -R 775 WILDFLY\_HOME/standalone/deployments/smarten.war/phantomjs/linux/phantomjs

### Configure Smarten URL for JPG/PNG/PDF export functionality

Open file dbconf.properties from path shown below

WILDFLY\_HOME/standalone/deployments/smarten.war/conf

Make appropriate changes in below URL parameter as per Smarten URL:

*system.contextURL=http://localhost/smarten*

## e. Configuring Apache Spark

---

### On Windows

Copy "winutils.exe" from "WILDFLY\_HOME/standalone/deployments/smarten.war/docs" folder to "%JAVA\_HOME%/bin" location.

Follow below steps to add HADOOP\_HOME environment variable.

- Open System property Window
- Click Advanced --> Environment variables
- Click New on System Variable section
- Add Variable Name: HADOOP\_HOME and Variable value: C:\Program Files\Java\JDK1.x.x\

### On Linux

No specific configuration is needed in case of Linux.

## f. Running Application Server from command prompt

---

### On Windows

To start WildFly AS on Windows Server, run standalone.bat file from command prompt

WILDFLY\_HOME/bin/standalone.bat

To stop WildFly AS on Windows Server, run jboss-cli.bat file from command prompt

WILDFLY\_HOME/bin/jboss-cli.bat --connect command=:shutdown

### On Linux

To start WildFly AS on Linux run standalone.sh file from shell prompt

WILDFLY\_HOME/bin/standalone.sh

To stop WildFly AS on Linux run standalone.sh file from shell prompt

WILDFLY\_HOME/bin/jboss-cli.sh --connect command=:shutdown

## g. Running Application Server as system service

---

### On Windows

WildFly comes with Windows service executable as part of WildFly installation package to run the WildFly Application Server as a windows service.

Launch the Windows command line and execute the following command to install and register the service:

WILDFLY\_HOME/bin/service/service.bat install

Open Server Manager > Configuration > Services and verify that the WildFly service was registered.

Change the Startup Type for this service to Automatic if you wish to keep this service Automatic. Start the WildFly service.

### On Linux

#### RPM Based Linux ( Red Hat , Centos , Fedora )

- cp wildfly/bin/init.d/wildfly-init-redhat.sh /etc/init.d/wildfly
- mkdir -p /etc/default
- cpwildfly/bin/init.d/wildfly.conf /etc/default
- cd /etc/default
- Edit file wildfly.conf and uncomment following parameters
- vi /etc/default/wildfly.conf

*JAVA\_HOME=/usr/java/jdk1.8.0\_21 (The default path of JDK Installed in your system)*

*JBOSS\_HOME=/usr/share/wildfly.11.Final ( Location of Wildfly folder)*

*JBOSS\_USER=root(Change user from wildfly to user having rights on wildfly folder.  
Recommend user will be root)*

*JBOSS\_MODE=standalone*

*JBOSS\_CONFIG=standalone.xml*

*JBOSS\_CONSOLE\_LOG="/var/log/wildfly/console.log*

- chmod 775 wildfly/bin/standalone.sh
- chmod 755 /etc/init.d/wildfly
- chkconfig --add wildfly
- chkconfig --level 2345 wildfly on
- Use command /etc/init.d/wildfly start or service wildfly start command to start wildfly service

#### Debian Based Linux ( Ubuntu , debian )

- cpwildfly/bin/init.d/wildfly.conf /etc/default/wildfly
- Edit file wildfly.conf and uncomment following parameters
- vi /etc/default/wildfly.conf

*JAVA\_HOME=/usr/java/jdk1.8.0\_21 (The default path of JDK Installed in your system)*

*JBOSS\_HOME=/usr/share/wildfly.11.Final ( Location of Wildfly folder)*

*JBOSS\_USER=root(Change user from wildfly to user having rights on wildfly folder.  
Recommend user will be root)*

*JBOSS\_MODE=standalone*

```
JBOSS_CONFIG=standalone.xml  
JBOSS_CONSOLE_LOG="/var/log/wildfly/console.log
```

- cp wildfly/bin/init.d/wildfly-init-debian.sh /etc/init.d/wildfly
- sudo chown root:root /etc/init.d/wildfly
- sudo chmod +X /etc/init.d/wildfly
- sudo update-rc.dwildfly defaults
- sudo chown -R root:root /wildfly
- chmod 755 wildfly
- chmod 755 /etc/init.d/wildfly
- chmod 755 -R wildfly/bin/

## 6 Configuring Product Key

To configure the product key in Smarten,

- Copy the license.bin file in data/license/ directory

Restart the application server if it is already running.

This will complete the successful deployment of Smarten. Now you are ready to run Smarten.

Reference: **Installation Manual>Prerequisites and Compatibility>Product Key to run Smarten application**

## 7 Running Smarten

Make sure the application server is running and Smarten application is successfully installed before running Smarten.

All types of users, including Administrators, can log in from the same URL.

Open web browser and type URL

http://<host name>:<port number>/smarten/

For example, <http://10.0.0.85:8080/smarten/>

Log in to application using default credentials provided

Enter Username – **admin**

Enter Password – **admin**

**Note:**

This is the default password setting in Smarten for Administrator user. It is recommended to change the password after first login.

For more information about changing Password and Administration settings, refer to Smarten Administrator Manual and Smarten User Manual.

## 8 Upgrading Smarten from Previous Version

---

To upgrade Smarten from Previous Version, follow the steps given below.

### a. Take Backup and Uninstall Previous Version

---

Take the backup of existing application data directory and uninstall Smarten, referred in **Uninstalling Smarten**.

### b. Install Smarten v5.x.x.xxx

---

Install Smarten v5.x.x.xxx as per instructions given in the **Installation Manual**.

### c. Upgrading from 4.5 version

---

- Contact Smarten support team for upgrade

**Note:**

If user has not changed the data directory path, it will be located under the folder `smarten.war`

### d. Clear Cache from Previous Installation

---

Remove cached application directory from the Application Server's cache root.

For WildFly Application Server, remove tmp directory from the path below.

`WILDFLY_HOME\standalone\tmp\`

### e. Configure Product Key

---

Except for minor releases and internal releases within the same version, your product license key for the previous version may not work with the new version of Smarten.

If you have not received your product license key for the new version, contact Technical Support at [support@smarten.com](mailto:support@smarten.com) and configure the product license key as referred to in **Configuring Product Key**.

### f. Verify upgrade

---

- Start your Application Server
- Run Smarten user interface for Administrator and other user types with the credentials. User authentication details, including login ID and password from previous version, will seamlessly work with new version.

For further assistance, contact technical support at [support@smarten.com](mailto:support@smarten.com)

## 9 Uninstalling Smarten

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To uninstall Smarten application, follow the steps below:

## For Application Server

- Stop application server if it is already running
- Go to application server deployment directory containing the **smarten.war** directory as referred on **Deploying Smarten on Application Servers**
- Before proceeding further, it is recommended to take a backup
- Now delete smarten.war directory to uninstall Smarten

For further assistance, contact Technical Support at [support@smarten.com](mailto:support@smarten.com)

## 10 Appendix

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### a. Setting the Heap Size

---

System performance is greatly influenced by the size of the Java heap available to the JVM. This section includes key guidelines to help determine the optimal heap size for Smarten implementation.

#### Setting the Initial and Minimum Heap Size

`-Xms<size>`

`-Xms` sets the initial and minimum size of the heap. It is recommended to set maximum heap size.

**For example,**

```
java -Xmx64m -Xms64m myClass
```

#### Setting the Maximum Heap Size

`-Xmx<size>`

As a rule, set the maximum heap size as high as possible. Make sure it is not high enough to cause page faults for the application or certain other applications on the same system. Set the maximum heap size by using the `-Xmx` command-line option.

**For example,**

```
java -Xmx64m -Xms64m myClass
```

A normal initial heap size is recommended to be 80% of the physical available memory.

#### Heap Sizing Guidelines

Heap size should be determined based on hardware platform, operating system, and other applications running on hardware, and the available resources—mainly physical memory available to Smarten. Some guidelines based on these criteria are listed below.

**Table 1: Heap Limitation by Platform**

Platform	Amount of Heap You Can Run
<b>32-bit platforms (IA32)</b>	On 32-bit platforms running on normal operating systems, processes are limited to less than 2GB. Additionally, the heap must share this memory with memory used, including JNI memory used by the application, generated code, thread stacks, heap control, and other internal structures. Although it can run with 1.8GB of heap, it is seldom recommended.

	<p>On Windows, start with /PAE or /3GB, which enables the process size to be larger. For more information in /PAE and /3G, refer to <a href="http://www.microsoft.com/whdc/system/platform/server/PAE/PAEmem.msp">http://www.microsoft.com/whdc/system/platform/server/PAE/PAEmem.msp</a></p> <p>The heap should be in consecutive memory, which limits it to less than 2GB.</p> <p>Some Linux operating systems support larger process size by default (for example, Red Hat Enterprise Linux 4.0), and others can be started with the huge page kernel, which allows process to run with heaps as large as 2.7GB.</p>
<b>64-bit platforms (x86_64 and IA64)</b>	<p>64-bit platforms are not physically limited by the pointer size, and the process size can grow to the supported limit. The limit is usually the amount of memory installed, but there can be further limitations imposed by different versions of the operating system (different releases support different amounts; for example, Windows 2003/Itanium only support 16GB, unless running the EE variant).</p>

## Encountering OutOfMemory Errors

When encountering out of memory errors, it is recommended to increase the maximum heap size by following the guidelines listed above.

## b. Obtaining MAC Address on different operating environments

The following instructions will help users obtain the MAC address of the server. MAC addresses usually have a XX-XX-XX-XX-XX-XX format, where each group of XX is a hex number (between 00 and FF).

Reference: **Installation Manual>Prerequisites and Compatibility> Operating Environment**

On Windows platform, follow the steps to get MAC address:

1. Open the command prompt
2. Type "**ipconfig /all**"(if the information scrolls off the screen, type "**ipconfig /all | more**")
3. The number next to **Physical Address** is the required MAC address

### Note:

Find the default network adapter to know the MAC address. Default network adapter is displayed first.

The MAC Address is displayed in the following format: 00-16-EC-E1-2E-92

### Example "ipconfig /all" output:

Ethernet adapter Wired:

Connection-specific DNS Suffix. : smarten

Description . . . . . : VIA PCI 10/100Mb Fast Ethernet Adapter #2

Physical Address . . . . . : 00-16-EC-E1-2E-92

...additional output removed.

On **Linux platform**, follow these steps to get MAC address:

1. As a root user (or user with appropriate permissions)
2. Type "ifconfig -a"
3. The number next to the HWaddr is the required MAC address

**Note:**

From the information displayed, find eth0 (this is the default first Ethernet adapter).

The MAC address is displayed in the following format: 00-16-EC-E1-2E-92

**Example "ifconfig -a" output:**

```
eth0    Link encap:Ethernet HWaddr 00-16-EC-E1-2E-92
        inet addr: 10.0.0.85 Bcast: 10.0.0.8 Mask: 255.255.255.0
...additional output removed.
```

On **Solaris platform**, follow the steps to get MAC address:

1. As a root user (or user with appropriate permissions)
2. Type "/sbin/ifconfig -a"
3. The number next to ether is the required MAC address

**Note:**

From the information displayed, find the default Ethernet adapter (it will probably be called le0 or ie0).

The MAC address is displayed in 0-16-EC-E1-2E-92 format, where leading zeros are removed. In this case, the actual MAC address should be noted as 00-16-EC-E1-2E-92.

**Example "ifconfig -a" output:**

---

```
le0: flags=863 mtu 1500
inet 10.0.0.85 netmask ffffffff broadcast 10.0.0.8
ether 0-16-EC-E1-2E-92
```

On **IBMAIX platform**, follow these steps to get MAC address:

1. As a root user (or user with appropriate permissions)
2. Type "netstat -ia"
3. The number below Address is the required MAC address

**Note:**

From the information displayed, find the Primary Ethernet adapter (the name will change based on the Ethernet card installed).

The MAC address is displayed in the following format: 00-16-EC-E1-2E-92

**Example "netstat -ia" output:**

Name	Mtu	Network	Address	Ipkts	Ierrs	Opkts	Oerrs	Coll
ec0	1500	smarten	workgroup 10.0.0.85 00-16-EC-E1-2E-92	5514233	11434	101317	0	14113

...additional output removed.



## c. Using 32-bit Data sources on Windows x64 system

---

The default x64 system does not allow you to create 32-bit DSN (used for JDBC-ODBC connectivity).

In Windows x64 environment, users can create DSN by running the file `odbcad32.exe` located under folder `C:\Windows\SysWow`

Reference: **Installation Manual>Prerequisites and Compatibility> Operating Environment**

## d. Bypass antivirus for smarten folders on windows server

---

When you initially download Smarten, your antivirus software automatically detects java files and does not let the files bypass through the software because it considers them to be a potential threat to your system. This is done to provide security to your system and you can override it by adding an exclusion in your antivirus package. To ensure that Smarten is run smoothly, it is important to make sure that you bypass java files through your antivirus software. Adding an exclusion in your antivirus software depends upon what antivirus software you use.

Below steps show you how you can add an exclusion and are done in reference to **McAfee** antivirus

### Steps to bypass files from Antivirus for Smarten execution:

In order to exclude a folder from your custom or scheduled scan so McAfee doesn't check it for threats please follow below steps:

1. On the Home Page, open the Virus and Spyware Protection drawer
2. Do one of the following:
  - To exclude an item from your custom scan, click **Scan Your PC**, then click **Run a custom scan**.
  - To exclude an item from your scheduled scan, click **Scheduled Scan**.
3. Open the Excluded Files and Folders drawer.
4. Click **Add Folder**.
5. Choose the file you want to exclude from you scan, then click **Open**.

The following are the list of files and folders that needs to be excluded from your antivirus software:

- Smarten installation directory including subfolder
- Java installation folder - **C:\Program Files\Java** including subfolders
- All Java Server Pages files (\*.jsp)
- All JavaScript files (\*.js)

By following the above steps, it will be ensured that all excluded files and folders are successfully bypassed through your antivirus and hence, will allow Smarten to run smoothly.

**Please Note:** Sometimes, even after you bypass the above folders and files, your antivirus signature might still block java application. In this case, you will get an error saying **Permission denied** when you try to run Smarten. Please contact your antivirus support team to troubleshoot the issue from their end when this happens.

## 11 Product and Support Information

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Find more information about Smarten and its features at [www.smarten.com](http://www.smarten.com)

Support: [support@smarten.com](mailto:support@smarten.com)

Sales: [sales@smarten.com](mailto:sales@smarten.com)

Feedback & Suggestions: [support@smarten.com](mailto:support@smarten.com)

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