OSS/BSS Suite
Installation Guide for Unix and Windows

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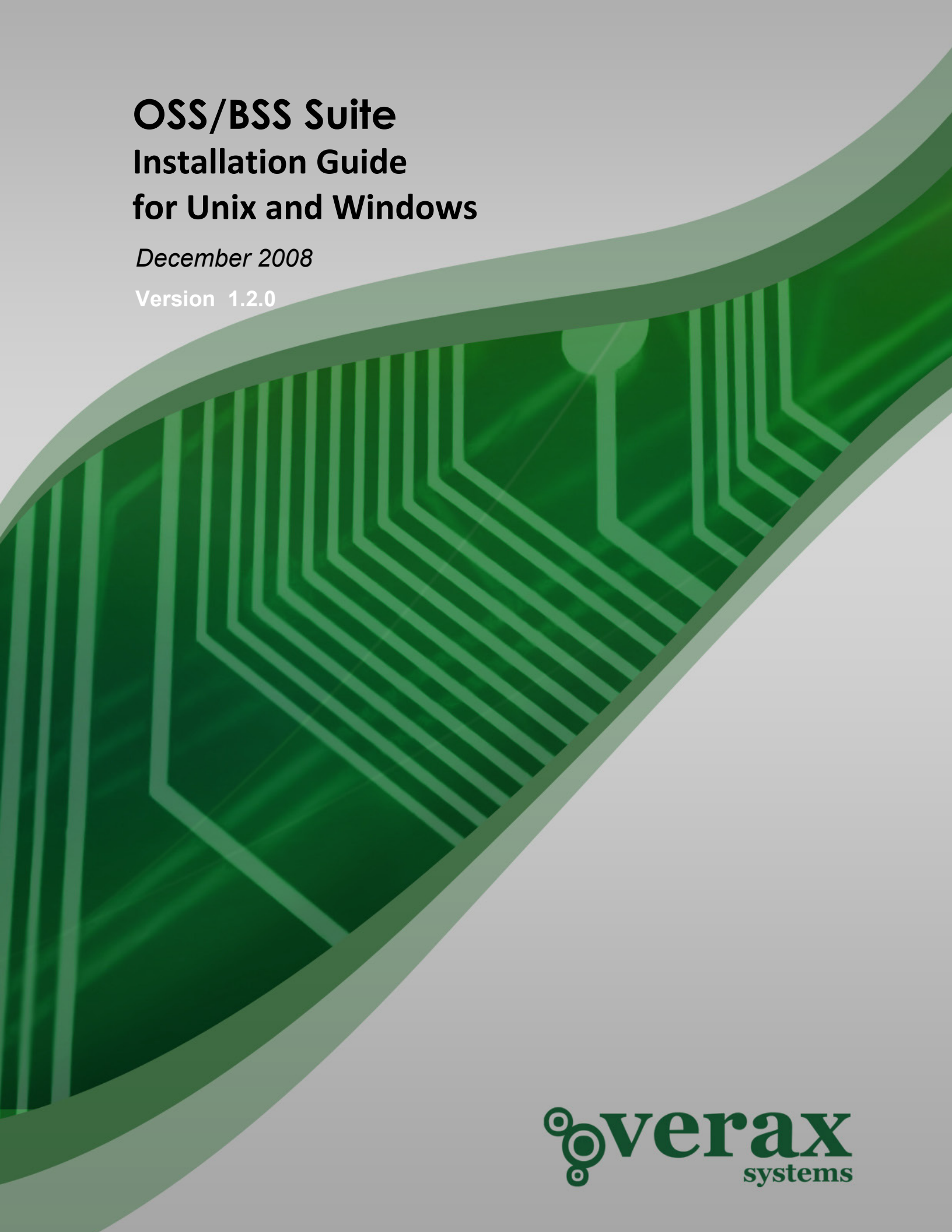

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CONFIDENTIAL AND PROPRIETARY INFORMATION

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How to use this guide?

This installation guide contains description of the installation procedure of applications included in the OSS/BSS Suite. The order of sections in the guide corresponds to the sequence of steps required to install and configure the applications.

Purpose and scope

The installation guide contains installation and configuration steps required only to **bootstrap** the applications. Detailed configuration and fine-tuning instructions as well as usage instructions for particular applications are provided in their on-line help documentation: administration and user guides.

Notation used

Source code, commands, user-entered data, on-screen messages and user interface elements (menus, choice lists, etc.) are shown using Courier font. In order to improve readability indentation has been used, for instance:

```
int main() {
   int i = 0;
}
```

! **This notation (Information) is used to indicate important information.**

This notation (Warning) is used to flag actions that can lead to loss of data, system malfunction, etc.

ⓘ This notation (Hint) is used to indicate additional information.

Logotypes are used to flag information pertaining to a particular type of operating system:

 Linux  Sun Solaris  Microsoft Windows  IBM AIX

Intended audience and guide overview

This installation guide is indented for system administrators or other IT personnel responsible for OSS/BSS Suite product installation.

The guide consists of the following chapters:

- **Chapter 1, Introduction**, contains general product information required for installation.
- **Chapter 2, System requirements**, describes hardware and software required to run the OSS/BSS Suite applications, both on the server and client sides. It also contains information on system sizing.
- **Chapter 3, System installation**, describes OSS/BSS Suite installation procedure from prerequisites to first time run of the system.
- **Chapter 4, System configuration**, describes initial configuration steps required to bootstrap the system such as populating database with initial data.

Once all the steps described in chapter 4 (System configuration) have been completed, the system is up and running. For further information refer to on-line guides (Administrator Guide and User Guide) OSS/BSS Suite application. On-line help is available in each application by pressing the F1 key.

1 Introduction

Verax OSS/BSS Suite allows telecommunications operators to define, provision, monitor and bill services in convergent, multi-play environments. Verax OSS/BSS Suite is a modern, cost-effective network, service and customer management solution that can be quickly deployed. It is characterized by high ROI and low operating costs and is targeted for the telecommunication and corporate IT services and infrastructure enabling companies to immediately take benefits of their competitive advantages.

Verax OSS/BSS Suite is built according to a three-tier application design principle and consists of:

- **Presentation tier** (a.k.a. the front-end) responsible for presenting the user interface. Verax OSS/BSS Suite front-end applications (simply referred to as the applications) run in a web browser and are built using the industry-standard Adobe Flex technology in order to provide best operator productivity and user experience.
- **Business logic** tier (a.k.a. the back-end) consisting of services and batch processes. Services constitute interface to the system (for instance, there are separate services for user management, security, event logging, NMS alarms, etc.). OSS/BSS applications interface with the business logic exclusively via services. Application/service interaction is achieved via Adobe Lifecycle Data Services. OSS/BSS services are running the application server context (the OSS/BSS Suite uses Apache Tomcat server by default, however other types of Java application servers can be used, such as IBM WebSphere – please contact Verax Systems' technical support for further information). Batch processes are non-interactive processes (such as alarm aggregation counters) which run without user interface under the control of the Batch Manager service.

- **Data tier** which provides database access. Verax OSS/BSS Suite use both object-oriented access (used by services and batch processes) and direct relational access (used by batch processes). The direct relational access is used where performance issues are critical (e.g. performance data aggregation, substantial data inserts, etc).

Verax OSS/BSS Suite general architecture is presented below.

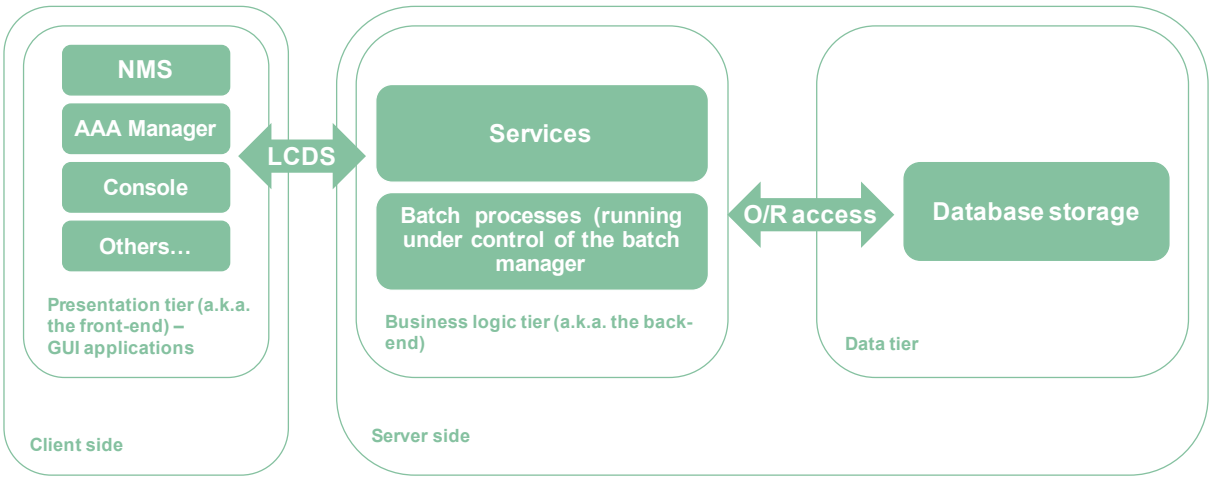

Figure 1: Verax OSS/BSS architecture.

2 System requirements

ⓘ System sizing (calculation of CPU power, RAM, disk space, database type and parameters) is strictly dependent on the amount of processed data. For instance, in case of the NMS the amount of data processed is dependent on number of managed network elements; in case of the AAA Manager number of servers and users on each server is crucial to size the system. Please contact Verax Systems' technical support in order to obtain detailed sizing information for your particular needs.

2.1 Hardware and operating system requirements

Verax OSS/BSS Suite applications have been written entirely in the Sun Java programming language. Due to Java's portable nature, the OSS/BSS Suite runs on most of modern computing systems. Verax Systems supports the following platforms:

- 32 and 64 bit Linux distributions including: SuSE, RedHat Enterprise and Debian using i386 and x64 architectures.
- Sun Solaris 10 and higher on Intel and SPARC hardware.
- IBM AIX 5 and 6 on IBM Power Systems (formerly RS/6000 and p Series).
- 32 and 64 bit Microsoft systems including: Windows 2000, XP, Server 2003 and Vista.

2.1.1 Server side requirements

Each of the OSS/BSS Suite applications requires 50 MB of disk space for installation and 512 MB of RAM in order to run. For instance, if NMS and Administrative Console are installed, the system requirements would be 100MB of disk space and 2 GB of RAM (1GB for applications and 1GB for the operating system).

💣 The information above does not include database system requirements.

2.1.2 Client stations

All OSS/BSS Suite applications are built using RIA (Rich Internet Application) architecture and Adobe Flex technology. In order to run the applications the client stations must have Adobe/Marcomedia Flash Player installed. In cases when Flash Player is not installed, major internet browsers (Internet Explorer, Google Chrome, and Mozilla Firefox) will download it and install automatically. For other cases, Macromedia Flash Player setup may be downloaded from:

http://www.adobe.com/products/flashplayer/

For comfortable work, client workstation should have about 60-100 MB free RAM and Microsoft CPU index of 1.0.

! **The RIA application size is between 1 and 2 MB. The application loads only once and is stored in browser's cache like any other HTML content (media, images, HTML, JavaScript files, etc.).**

2.1.3 Network

Each computer using OSS/BSS Suite must be connected to TCP/IP network. The server requires a static IP address.

2.2 Additional software

OSS/BSS Suite installation package contains all the required software (such as an application server) and Java Runtime Environment (JRE). The only exception is the database system.

ⓘ Verax Systems recommends installing latest operating system patches as recommended by the particular operating system vendor.

2.3 Database

OSS/BSS Suite supports the following database systems:

- Oracle 10i or higher.
- Oracle Express (with 4GB data size limit).
- MySQL 4 or higher.
- Microsoft SQL Server 2000 or higher (also Express edition).

3 System installation

The installation package contains all OSS/BSS Suite applications.

3.1 Prerequisites

Please check the amount of available disk space before the installation (refer to section 2.1.1 for information on required disk space) and availability of the following TCP ports (application dependent):

- 9000 – Product Catalogue,
- 9200 – Administrative Console,
- 9500 – AAA Manager,
- 9400 – NMS,
- 9300 – SelfCare Portal,
- 9100 – Customer Care and Billing.

3.2 Firewall considerations

In case when the server is located behind firewall, the 1935 port has to be opened. This port is used by Java Messaging Services which are used by the OSS/BSS Suite to receive notifications from the server (such as new alarms, device status changes and others).

💣 When the port is not accessible, the OSS/BSS Suite applications will not start.

3.3 Database server installation

Database system should be installed according to manufacturer's instructions. Recommended name of the database is `ossbss`. The following sections contain information on specific configuration issues.

3.3.1 Oracle

In order to allow on-the-fly backups the database should be created with the BACKUP: COPY YES option.

ⓘ Please check Oracle support for latest patches – Verax Systems recommends installing latest Oracle patch sets.

3.3.2 MySQL

The relational (InnoDB) engine should be used for the database.

3.4 System installation

! The OSS/BSS Suite installation should be started from administrative account – root on Unix systems, administrator (or equivalent on Windows).

In order to install the system, copy installation files to the temporary directory (`/tmp` on Unix or %TEMP% for Windows) and invoke the following command from the directory:

```
./install.sh
```

```
./install.sh
```

```
setup.exe
```

```
./install.sh
```

(This installation uses bundled Apache Tomcat as an application server.

If using IBM WebSphere, please refer to section 3.4.1).

The installation is fully automatic and installs the software to `/usr/local/ossbss-1.2.0` (Unix) or `c:\ossbss-1.2.0` (Windows) directory (referred to the installation directory). Once the installation has been completed the system is ready to be configured.

3.4.1 Installation using IBM WebSphere Application Server

Installation may take place on IBM WebSphere application server (primarily on IBM AIX and AS/400 platforms) for those cases where fault tolerance or clustering features of WebSphere are required. Please note, that the configuration presented below uses a single WebSphere application server to host all applications, whereas the default installation uses a separate Tomcat instance for each application.

! Verax Systems requires IBM Java 1.6 in order to run OSS/BSS applications. Both 32 and 64 bit implementations provided with AIX system have been tested.

All OSS/BSS Suite applications are fully compatible with the IBM WebSphere Application Server (WAS), versions 6.1 and higher. In order to deploy one need to perform the following steps (the sequence has to be repeated for each application separately):

Before installation process has been started it's necessary to reconfigure application properties file (see section 4).

1. As a prerequisite use HTTP browser in order to log into WAS Administration Console (Integrated Solutions Console) on the target server (contact your local systems administrator for login details). Once the WAS Console has been started, go to the `Application` tab and choose `Install New Application` option.

2. Extract the .war (web application) file for each application from the installation files. The names of the war files are:
   - eAAAManager-fds.war (AAA Manager),
   - eAdministratorConsole-fds.war (Administrative Console),
   - eBatchManager-web.war (Batch Manager),
   - eBilling-fds.war (Billing and Customer Care),
   - eNetworkManagementServices-fds.war (Network Management System),
   - eProductCatalog-fds.war (Product Catalogue),
   - eSelfCare-fds.war (Self Care Portal).

NOTE: This file can be specified from local machine or remote server.

3. For each application, a context root has to be specified. The context root is appended to the URL on the server to distinguish the application (e.g. http://localhost:9080/**<context root>**/). Context roots are arbitrary, however Verax Systems recommend using the same names as application .war files (eAAAManager-fds, eBilling-fds, etc.). Click the `Next` button to continue configuration.
4. Specify application name field. This name is only used internally within WebSphere. Verax Systems recommends providing human-readable application names such as AAA Manager, SelfCare Portal, etc. Click the `Next` button to continue configuration.
5. Choose nodes, node agents and cells etc. These values are entirely dependent on local WebSphere configuration. Click the `Next` button to continue configuration.

6. Specify TCP port on which applications are available. Verax Systems recommends using the default WebSphere value (9080). Click the `Next` button to continue configuration.
7. Verify installation settings on summary screen. Click the `Next` button to finalize configuration.

When installation process has been finished all the changes made have to be saved (WAS will show necessary screen for that).

> **! Sometimes it is required to restart the application server once the configuration has been completed and applications do not run – please use Administration Console/Servers/Application servers screen to restart.**

In order to verify the installation process point web browser to each configured application and check if application downloads and displays the login screen. At this stage the application server installation is complete, however the application have to be updated as described in section 4.

4 System configuration

4.1 Database server configuration

In order to complete system configuration database connection parameters have to be set in the `jdbc.ini` file (the file is located in the installation directory). Detailed information on configuration settings is provided in the installation file. Once the system is restarted the OSS/BSS Suite applications will started automatically.

The installation can be verified by starting a web browser and connecting to desired applications, using the following URLs (when connecting to remote host use host name or IP address instead of "localhost"):

- http://localhost:9000/eProductCatalog-fds/ – Product Catalogue,
- http://localhost:9200/eAdministratorConsole-fds/ – Administrative Console,
- http://localhost:9500/eAAAManager-fds/ – AAA Manager,
- http://localhost:9400/eNetworkManagementSystem-fds/ – NMS,
- http://localhost:9300/eSelfCare-fds/ – SelfCare Portal,
- http://localhost:9100/eBilling-fds/ – Customer Care and Billing.

Upon successfully configuration each application should display a login box (do not log in at this stage yet).

! In case of problems with application start, please refer to system logs available in:

`<installation directory>/<application name>/logs/.`

4.2 Population of initial data

The last step of configuring OSS/BSS Suite application is to populate the database with initial data, such as default accounts, security profiles, rights, roles and others. Initial data population should be performed separately for each application according to the procedure described below, starting with the Administrative Console (administrative console also creates core initial data, common for all the applications, such as admin account):

1. Connect to specific application using a web browser.
2. Once the login dialog box appears, press **Alt-Ctrl-Shift-D**. The database population dialog box is displayed.
3. Enter database protection password (the default value is `masterkey`). The database protection password value has to be changed in the `jdbc.ini` file

once the installation has been completed in order to prevent database re-population, which will discard old data.

4. Click the `Create database` button – the database is populated.
5. In order to verify if database has been populated correctly, navigate to the login page (by clicking `Go to login` dialog) and login as user `admin`, with password `pass`.

The procedure has to be repeated for each application.

- In order to prevent possible data loss by re-populating the database, the database protection password has to be changed in the `jdbc.ini`.

4.3 First login

Initially, the OSS/BSS Suite database has only one user account: `admin`. This is a super user account (similar to Unix root) having all privileges in all the OSS/BSS Suite applications. In order to change the password for `admin` start the Administrative Console, select `User Management` and choose change password option for the user.

- Due to security considerations the `admin` password should be changed as soon as possible, preferably immediately after the installation.

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