Department of Veterans Affairs (VA)

Benefits Claims Decision Support System (BCDSS)

System Administration Guide & Technical Manual



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# Introduction

This document describes the system administration functions required to install, deploy, and maintain the Benefits Claims Decision Support System (BCDSS) application which is to be used for ingestion of Department of Veterans Affairs (VA) historical claims data.

***Note:*** As a living document, this document will undergo continual refinement based on feedback from BCDSS team users and other evaluators.

## Purpose

The purpose of the *BCDSS System Administration Guide & Technical Manual* is to provide instructions for preparing platforms on the BCDSS software build and for deploying the BCDSS application to a point where the application can be successfully run.

## Scope

The scope of information in this document is to explain BCDSS application deployments and maintenance of all BCDSS components (e.g., EARs, JARs, WARs and DB Changes). This document will be kept current for the software produced in each sprint of the development cycle, as well as for each release of the product.

This guide assumes baseline virtual machines have been created with the appropriate Operating System (OS) (e.g., Windows Server 2012, Red Hat Enterprise Server, etc.) and application software (e.g., Apache Tomcat, Oracle database, etc.). The instructions in this guide deal with the configuration of the baseline Virtual Machines (VMs) and the deployment of the BCDSS application.

The installation of required application software components are explained in a separate [BCDSS\_Installation Guide and Release Plan](https://bcdssteam.atlassian.net/wiki/download/attachments/13959189/BCDSS_Installation%20Guide%20and%20Release%20Plan.docx?api=v2) document.

## Assumptions and Dependencies

Users of this document are assumed to have a working knowledge of the target platform OSs and their native editors (e.g., VI, Eclipse, Putty etc.,), and the Commercial-Off-The-Shelf (COTS) software applications used by the application.

The FTL team must configure a consistent image of BCDSS so that development and testing can occur in a common fashion.

# System Overview

## System Application

The VA established the BCDSS project to demonstrate the feasibility of using automation and predictive models to calculate the Combined Disability Determination (CDD) for specific conditions contained within Veteran claims for disability compensation. Such capabilities could help the VA improve the quality and consistency of its current claims adjudication decisions, and potentially could provide Veterans with the ability to obtain the likely outcome of their claims for benefits at the time of filing. Both outcomes could significantly improve the veteran experience and the efficiency of VA’s claims adjudication process

The BCDSS system is responsible for the ingestion of VA historical claims data and the current claim for the application of a predictive model for the automated claim adjudication and rating. The current pilot scope addresses ear and knee predictive models stored within a managed library, to claims with related historical claimant data to produce issue-specific CDDs for supplemental claims for increases.

## Development Tools

This section provides all required tools for the development and testing of the BCDSS application. Instructions for how to download and install all tools required to contribute to the BCDSS application can be found on [GitHub](https://github.com/VHAINNOVATIONS/BCDS).

Java SE Development Kit 8u91

Java Platform, Standard Edition (Java SE) lets you develop and deploy Java applications on desktops and servers as well as in today's demanding embedded environments. Java offers the rich user interface, performance, versatility, portability, and security that today's applications require.

Ant 1.9.4

Apache Ant is a Java library and command-line tool whose mission is to drive processes described in build files as targets and extension points dependent upon each other. The main known usage of Ant is the build of Java applications. Ant supplies a number of built-in tasks allowing to compile, assemble, test and run Java applications. Ant can also be used effectively to build non Java applications, for instance C or C++ applications. More generally, Ant can be used to pilot any type of process which can be described in terms of targets and tasks.

Maven 3.2.1

Apache Maven is a software project management and comprehension tool. Based on the concept of a Project Object Model (POM), Maven can manage a project's build, reporting and documentation from a central piece of information.

GIT 2.8.1 64-bit

GIT is a free and open-source distributed version control system designed to handle everything from small-to-very-large projects with speed and efficiency.

SourceTree 1.8.3

A free GIT & Mercurial client for Windows or Mac.

Oracle SQL Server 11g (11.2 xe)

Oracle Database 11g Express Edition (Oracle Database XE) is an entry-level, small-footprint database based on the Oracle Database 11g Release 2 code base. It's free to develop, deploy, and distribute; fast to download; and simple to administer.

Oracle SQL Developer 4.1.3 – 64 bit

Oracle SQL Developer is a free integrated development environment that simplifies the development and management of Oracle Database in both traditional and Cloud deployments. SQL Developer offers complete end-to-end development of your PL/SQL applications, a worksheet for running queries and scripts, a DBA console for managing the database, a reports interface, a complete data modeling solution, and a migration platform for moving 3rd party databases to Oracle.

Tomcat Apache Server 8.x

The Apache Tomcat software is an open-source implementation of the Java Servlet, JavaServer Pages, Java Expression Language, and Java WebSocket technologies, which have been developed under the Java Community Process.

The Apache Tomcat software is developed in an open and participatory environment and released under the Apache License version 2. It will provide the web-application platform for BCDSS.

Eclipse Mars 4.5.2

The BCDSS development team uses Eclipse which provides IDEs for nearly every language and architecture such as Java, C/C++, JavaScript, PHP etc., These platforms deliver the most extensive collection of add-on tools available for software developers.

SoapUI 5.2.1

The BCDSS development team uses SoapUI for testing webservices. It is an open-source web-service testing application for Service-Oriented Architectures (SOA) and Representational State Transfers (REST). Its functionality covers web service inspection, invoking, development, simulation and mocking, functional testing, load and compliance testing.

## System Organization

This following table describes the organization of the BCDSS system components and the interactions.

The BCDSS Development Integration and Pilot environments are configured on the below FTL server with separate instances of Application server and Database.

|  |  |  |  |
| --- | --- | --- | --- |
| **Component** | **Operating System** | **Server Name** | **Description** |
| Application server | Windows 2012 server | 96.127.74.35 | Apache Tomcat 8.0.x |
| Database server | Windows 2012 server | 96.127.74.35 | Oracle 11g |

## Information Inventory

As part of the project scope, the BCDSS maintains Dev and Pilot environments on the FTL sandbox server. Each environment consists of a Tomcat application server and Oracle database.

### Resource Inventory

TBD

### Report Inventory

TBD

## Processing Overview

The BCDSS system is a web-based application that will utilize an approved and modern framework of technologies. The modeling engine performs the analysis of the Claim data utilizing the models.

The application has three user roles and responsibilities, i.e., Rater, Modeling Agent, and Administrator.

The BCDSS pilot implementation uses the VA’s FTL-GC Sandbox (Amazon-based) cloud environment. The BCDSS application will not integrate with the real-time Veterans Benefits Management System (VBMS) web-services as part of the pilot implementation. Instead, mock web-services will be developed by the BCDSS team to test the service integration.

## Communications Overview

The application users connect to the BCDSS Web Application with a web browser. The web browser uses Hypertext Transfer Protocol (HTTP) with Transport Layer Security Layer (TLS)/Secure Sockets Layer (SSL). The certificate of the server is provided to the browser to enable the user to verify the identity of the server and encrypts communications between the browser and the server.

## Security

The BCDSS system uses Spring Security to implement a role-based access control model based upon HTTP Session Authentication. BCDSS system uses both a username and password as the credential set. This state-full mechanism uses a token system stored within the server’s session context that is provided by the client’s cookie store.

# Systems Administration

The system administrators are able to manage user access and user permissions to the BCDSS application.

## User and Group Accounts

The Application has the following user roles and responsibilities.

Table 1: Users and Roles

|  |  |
| --- | --- |
| **User Group** | **Description** |
| Model Agent | Executes routine to verify that a new model conforms to system specifications  Makes controlled edits to existing models within the system |
| Rater | Applies the models under the control of the system |
| Administrator | Creates new users  Provides user permissions  Defines what formats and destinations are available for predictive models |

### Adding/Deleting Users

TBD

### Setting User Permissions

TBD

### Adding/Deleting User Groups

TBD

### Setting User Roles/Responsibilities

TBD

## Server Administration

The BCDSS application has two Tomcat servers and two Oracle database server instances to serve the Dev and Pilot environments.

### Creating Directories

TBD

### Building Drive Mappings

TBD

## System Backup Procedures

FTL team is responsible for system backup and restore.

### Maintenance Schedule (Daily, Weekly)

TBD

### Off-Site Storage Procedures

TBD

### Maintaining Backup Log

TBD

## System Maintenance

TBD

### Monitoring Performance and System Activity

TBD

### Installing Programs and Operating System Updates

As part of the pilot scope, the BCDSS application is running on a Windows 2012 server, which is located in VA’s FTL (Amazon-based) cloud environment. The FTL team is responsible for OS patches and system updates.

### Maintaining Audit Records of System Operation

TBD

### Maintenance Reports

TBD

## Security Procedures

TBD

### Issuing IDs and Passwords

TBD

### License Agreements

FTL team is responsible for software licenses.

## Network Maintenance

FTL team maintains the network.

### LAN Design

N/A

### Communications Equipment

N/A

## Inventory Management

The FTL Team is going to maintain inventory management.

### Maintaining Hardware and Software Configurations

N/A

### Installing Software/Hardware (New, Upgrades)

N/A

### End-User Support - Procedures for Support and Contract Information

N/A

### Escalation Procedures

TBD

## Documentation

System administrators can refer to the installation guide ([BCDSS\_Installation Guide and Release Plan](https://bcdssteam.atlassian.net/wiki/download/attachments/13959189/BCDSS_Installation%20Guide%20and%20Release%20Plan.docx?api=v2)) for the application software installation process.

### Troubleshooting Issues

TBD

## Database Maintenance

TBD

### Database User/Group Access

TBD

### Adding/Deleting Users to Database

TBD

### Setting User Permissions for Database

TBD

### Adding/Deleting Groups for Database

TBD

### Re-indexing Database

TBD

### Packing/Compressing Database

TBD

### Data Entry/Modification/ Deletion

TBD

### Database Reporting

TBD

### Database Backup and Restore

TBD

## Application Maintenance

### Application User/Group Access

TBD

### Adding/Deleting Application users

TBD

### Setting User Application Permissions

TBD

### Adding/Deleting Application Groups

TBD

### Procedures to Start and Stop the Application

The Developers are responsible for starting and stopping the application on the Dev environment server for startups and shutdowns. The Dev leads are responsible for the Pilot environment server startups and shutdowns. The Development team is responsible for resolving application deployment issues.

### Application Flow Chart

TBD

### Description of Major Program or Sub-program Modules

TBD

# Appendices

The following appendices supply additional information about this document.

1. Terminology

The following table lists the terminology used in this document.

|  |  |
| --- | --- |
| **Acronym** | **Definition** |
| BCDSS | Benefits Claims Decision Support System |
| CDD | Combined Disability Determination |
| COTS | Commercial Off The Shelf |
| HTTP | Hypertext Transfer Protocol |
| OS | Operating System |
| POM | Project Object Model |
| REST | Representational State Transfers |
| SOA | Service-Oriented Architectures |
| SQL | Standard Query Language |
| TLS/SSL | Transport Layer Security/Secure Sockets Layer |
| VA | Department of Veterans Affairs |
| VBMS | Veterans Benefits Management System |
| VM | Virtual Machine |

1. References

The following documents are referenced in this document and/or provide information that augments the information in this document:

* [BCDSS\_Installation Guide and Release Plan.docx](https://bcdssteam.atlassian.net/wiki/download/attachments/13959189/BCDSS_Installation%20Guide%20and%20Release%20Plan.docx?api=v2)

# Attachments

1. Approval Signatures

This section is used to document the approval of the BCDSS System Administration Manual during the Formal Review. The review should be conducted face to face where signatures can be obtained “live” during the review.

If unable to conduct a face-to-face meeting then it should be held via LiveMeeting and concurrence captured during the meeting. The Scribe should add /es/name by each position cited.

The Business Sponsor and Project Manager are required to sign.

REVIEW DATE:

SCRIBE:

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Signed: Date:

< Business Sponsor >

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signed: Date:

< Project Manager >