

# **State Portal and SSDG Project**

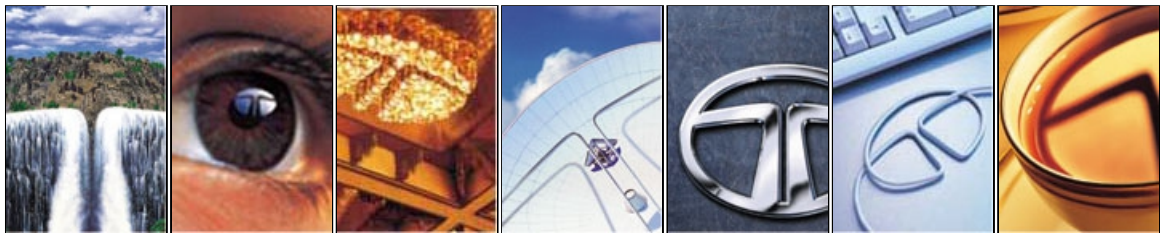
## **Implementing Electronics Forms Application, State Portal and State Service Delivery Gateway**

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### **System Administration and Maintenance Manual**

**Version 1.0**

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**TATA CONSULTANCY SERVICES**

**March 2014**

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**March 2014**

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## ABOUT THE DOCUMENT

### Purpose and Scope of this Document

The System Administration and Maintenance Manual documents all the information required to familiarise the System Administrators with the features and functionalities of the State Portal and State Service Delivery Gateway (SSDG) and all its integrated components for the purpose of administering the system with ease. The guide includes screenshots wherever relevant.

The data specified in this document forms the basis for development of the proposed application.

### Organisation of this Document

This document is organised into three chapters and they are:

**Chapter 1: Introduction**, provides a brief tour of the software used in the entire system.

**Chapter 2: System Administration and Maintenance** lists the steps to be followed to operate the software including screenshots wherever required.

### Conventions used in this Document

It is necessary to be familiar with the conventions used in this guide to understand the system completely and easily.

- The verb **type** has been used for field values that has to be typed in.
- **Bold** face has been used to highlight names of menus, windows, tabs, buttons, options, list boxes, fields, keys and points of emphasis.
- Notes and Supplemental Information sections have been used to provide related but important information.

### Other Documents to be read along with this Document

This document should be read along with the following documents:

- Installation Manual
- Operational manual

## Target Audience for this Document

The target audience for this document is envisaged as follows:

- Concerned officials and System Administrators of the JAPIT
- Other officials as deemed necessary by the senior management of JAPIT
- TCS team involved with development of the system
- Other external consultants who are involved with this project

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## **Abbreviations**

<b>Term</b>	<b>Description</b>
DBA	Database Administrator
GUI	Graphical User Interface
JAPIT	Jharkhand Agency for Promotion of Information Technology
LDAP	Lightweight Directory Access Protocol
MIS	Management Information System
SP	State Portal
SSDG	State Service Delivery Gateway
SSO	Single Sign On
SWAN	State Wide Area Network
TCS	Tata Consultancy Services



# 1 INTRODUCTION

## 1.1 Overview of the System

This chapter presents an overview of the software used in State Portal and e-Form Application and also specifies the purpose of the software. .

The State Portal and e-Form Application uses the following software with the features and their intended use mentioned as follows:

- **Red Hat Linux:** All the software installed will be on Red Hat Enterprise Linux operating system platform.
- **Liferay:** Portal building open source software based on Tomcat application server.
- **Open LDAP:** Open source directory server to keep user authentication information integrated with Berkley DB as back end database server.
- **Open SSO:** Open source Single Sign On server.
- **Apache HTTP server:** Open source web server to host the portal through Internet.
- **MySQL Database Server:** Open source database software to meet the database requirement.

## 1.2 Proposed Benefits of the System

The State Portal integrated with e-Form application will provide the following benefits:

- Easy access to information by higher authorities of Jharkhand Government.
- Accurate record keeping (validation is imposed before recording data in the system)
- Data consistency (data is entered at one point and referenced at other places)
- Consolidation of department wise data for overall monitoring
- Online e-Form submission
- Reduction in manual effort in terms of:
  - Information maintenance
  - Reports generation
  - Inter-departmental communications

### 1.2.1 Interfaces with Other Systems

The application of the State Portal and e-Form Application will be linked to the following applications:

*Interfaces with other custom applications:*

- State Service Delivery Gateway (SSDG)
- National Service Delivery Gateway (NSDG)

## 2 SYSTEM ADMINISTRATION AND MAINTENANCE

This section describes the administration and maintenance of different infrastructure software and application software of State Portal and SSDG framework.

### 2.1 Maintaining and Administering Linux / CentOS Server

In State Portal and SSDG framework, Redhat Enterprise Linux Server release 6.2 and CentOS release 5.5 are used as operating system platform. Both the systems can be operated and maintained using the same sets of command. The operating system root user has super user privileges. While the system administration or maintenance job is done in operating system, mostly root user account is used for following purposes:

1. **Checking the Server Space:** The server hard disk spaces need to be checked regularly for smooth running of the system. There is sufficient space allocated to each mount point of the system. It is to be checked whether any mount point is increasing abruptly or having limited space., If something like that happens, corrective action needs to be taken immediately. Old and unnecessary log files may be cleared and extra high capacity hard disk might be added. The server spaces can be checked with the help of the following command:

```
-bash-3.2$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda8        5.9G  358M  5.2G   7% /
/dev/sda7        5.9G  141M  5.4G   3% /tmp
/dev/sda6        5.9G  1.6G  4.0G  28% /var
/dev/sda5        5.9G  141M  5.4G   3% /opt
/dev/sda3        9.7G  3.1G  6.1G  34% /usr
/dev/sda2        9.7G  151M  9.1G   2% /home
/dev/sda1        289M   16M  259M   6% /boot
tmpfs            988M     0  988M   0% /dev/shm
/dev/sda10       183G   91G   84G  53% /SSDG
```

2. **Checking Memory Utilisation:** To check memory utilisation of the server, execute the following commands to get the detailed view of the system memory utilisation. There are two types of memory allocated to each server - Physical Memory which is known as RAM and SWAP Memory which acts as virtual memory. The memory utilisation can be checked using the following command:

```
# free -m
              total        used         free       shared    buffers     cached
Mem:           1975         1944           31           0           91        1418
-/+ buffers/cache:
Swap:          3074           0         3074
```

```
# vmstat
```

```

procs-----memory-----swap-----io-----system-----cpu-----
r b swpd free buff cache si so bi bo in cs us sy id wa st
0 0 164 32036 93380 1452972 0 0 4 7 2 8 0 0 100 0 0

# top
top - 19:05:51 up 26 days, 2:10, 2 users, load average: 0.00, 0.00,
0.00
Tasks: 129 total, 1 running, 128 sleeping, 0 stopped, 0 zombie
Cpu(s): 0.0%us, 0.2%sy, 0.0%ni, 99.8%id, 0.0%wa, 0.0%hi, 0.0%si,
0.0%st
Mem: 2022664k total, 1990132k used, 32532k free, 92844k buffers
Swap: 3148700k total, 164k used, 3148536k free, 1452964k cached

  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM    TIME+  COMMAND
    1 root        15   0  2072   620  532  S   0.0   0.0   0:04.99  init
    2 root        RT  -5     0     0     0  S   0.0   0.0   0:00.09  migration/0
    3 root        34  19     0     0     0  S   0.0   0.0   0:00.00  ksoftirqd/0
    4 root        RT  -5     0     0     0  S   0.0   0.0   0:00.00  watchdog/0
    5 root        RT  -5     0     0     0  S   0.0   0.0   0:00.12  migration/1
    6 root        34  19     0     0     0  S   0.0   0.0   0:00.00  ksoftirqd/1
    7 root        RT  -5     0     0     0  S   0.0   0.0   0:00.00  watchdog/1
    8 root        10  -5     0     0     0  S   0.0   0.0   0:00.00  events/0
    9 root        10  -5     0     0     0  S   0.0   0.0   0:00.01  events/1
   10 root        11  -5     0     0     0  S   0.0   0.0   0:00.00  khelper
   11 root        10  -5     0     0     0  S   0.0   0.0   0:00.00  kthread
   15 root        14  -5     0     0     0  S   0.0   0.0   0:00.00  kblockd/0
   16 root        11  -5     0     0     0  S   0.0   0.0   0:00.04  kblockd/1
   17 root        15  -5     0     0     0  S   0.0   0.0   0:00.00  kacpid
   99 root        14  -5     0     0     0  S   0.0   0.0   0:00.00  cqueue/0
  100 root        14  -5     0     0     0  S   0.0   0.0   0:00.00  cqueue/1
  103 root        10  -5     0     0     0  S   0.0   0.0   0:00.00  khubd
  105 root        16  -5     0     0     0  S   0.0   0.0   0:00.00  kseriod
  172 root        15   0     0     0     0  S   0.0   0.0   0:02.84  pdflush
  173 root        15   0     0     0     0  S   0.0   0.0   0:02.84  pdflush
  174 root        10  -5     0     0     0  S   0.0   0.0   0:06.75  kswapd0
  175 root        12  -5     0     0     0  S   0.0   0.0   0:00.00  aio/0
  176 root        12  -5     0     0     0  S   0.0   0.0   0:00.00  aio/1
  339 root        11  -5     0     0     0  S   0.0   0.0   0:00.00  kpsmouse
  370 root        14  -5     0     0     0  S   0.0   0.0   0:00.00  ata/0
  371 root        14  -5     0     0     0  S   0.0   0.0   0:00.00  ata/1
  372 root        14  -5     0     0     0  S   0.0   0.0   0:00.00  ata_aux
  376 root        10  -5     0     0     0  S   0.0   0.0   0:00.00  scsi_eh_0
  377 root        10  -5     0     0     0  S   0.0   0.0   0:45.87  scsi_eh_1
  378 root        10  -5     0     0     0  S   0.0   0.0   0:00.00  scsi_eh_2
  379 root        10  -5     0     0     0  S   0.0   0.0   0:00.00  scsi_eh_3
  380 root        10  -5     0     0     0  S   0.0   0.0   0:00.00  scsi_eh_4
  381 root        10  -5     0     0     0  S   0.0   0.0   0:00.00  scsi_eh_5
  388 root        12  -5     0     0     0  S   0.0   0.0   0:00.00  kstriped
  401 root        11  -5     0     0     0  S   0.0   0.0   0:01.10  kjournald
  426 root        10  -5     0     0     0  S   0.0   0.0   0:00.02  kauditd
  459 root        13  -4  2480   936  388  S   0.0   0.0   0:00.10  udevd

```

3. **Rebooting the Server:** It is suggested to reboot each server atleast once in a month to kill all unnecessary hanged processes for good health of the server. Following command need to be executed to reboot the servers :

```
# shutdown -ry 00
```

## 2.2 Maintaining and Administering Liferay Server

Liferay delivers open source enterprise solutions for portal, content publishing and collaboration. Maintaining and administering Liferay server is easy and simple. Liferay admin user can get into Control Panel from where all the administrative operations can be performed by providing admin login credentials on the Home Page of the portal. The detailed operational manual for Liferay Portal version 6.1 can be downloaded through the following link:

[Liferay Portal version 6.1 Administration Manual](#)

Here are some administrative commands that need to be executed to maintain the Liferay Server:

1. **Starting and Stopping the Server:** Liferay Portal application runs on the Tomcat application server environment. To start the Tomcat application server as well as Liferay application, execute the following command from the bin directory of the respective Tomcat server container:

```
$ startup.sh
```

To stop the server execute the following command from the same directory of the Tomcat application server container:

```
$ shutdown.sh
```

2. **Observing the log:** To view the detailed log of the background processes running on server, go to the logs directory located under the Tomcat application server installation directory. All the local access logs and Tomcat server catalina logs can be found here..

## 2.3 Maintaining and Administering Open LDAP Server

After integrating Open LDAP server with the Liferay Portal and Open SSO server, the following activities need to be performed to maintain or administer the Open LDAP server.

1. **Starting and Stopping the Server:** To start the Open LDAP server on a particular port, execute the following command from the slapd directory of LDAP installation.

```
# ./slapd -d 389
```

To stop the server, simply kill the the server process after identifying the slapd process using the following command :

```
# ps -aef|grep slapd
```

## 2.4 Maintaining and Administering Open SSO Server

The Open SSO server runs on the same Tomcat application server where the Liferay server also runs. Follow the steps mentioned in section 2.2 for maintaining and administering the Open SSO Server.

The detailed Administration Guide for Open SSO server can be downloaded through the following link as well:

[OpenSSO Administration / Operation Manual](#)

## 2.5 Maintaining and Administering Apache HTTP Server

Maintaining Apache HTTP server to work as a web server of the portal or e-Form application is easy and simple. The following steps need to be followed:

1. **Starting and Stopping the Server:** To start / stop the Apache HTTP Server, execute the following command:

```
# service httpd start
# service httpd stop
```

To check whether httpd service is already running or not use the following command:

```
# service httpd status
```

## 2.6 Maintaining and Administering MySQL Database Server

My SQL database server can be easily administered through the following command line utility or by using many freely available GUI tools like MySQL Query Browser and so on. The following activities need to be performed:

1. **Checking the Status of the Server:** To check the status of the MySQL server, execute the following command:

```
# service mysql status
MySQL running (23470) [ OK ]
```

2. **Stopping the Server:** To stop the already running MySQL server, execute the following command:

```
# /sbin/service mysql stop
Shutting down MySQL... [ OK ]
```

3. **Starting the Server:** To start the MySQL server, execute the following command:

```
# /sbin/service mysql start
Starting MySQL.. [ OK ]
```

There are a lot of commands that can be used to administer MySQL database. Refer to MySQL Administrators Guide to get the complete list of commands. The details of using MySQL Query Browser GUI tool to operate MySQL database can be accessed through the following link:

[MySQL Administrators Guide](#)

# End of the Document