Quality Function Deployment And Server Task Automation

Submitted By

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Quality Function Deployment And Server Task Automation

Major Project

Submitted in partial fulfillment of the requirements

for the degree of

Master of Technology in Computer Science and Engineering

Submitted By

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May 2015

Certificate

This is to certify that the major project entitled **"Quality Function Deployment And Server Task Automation"** submitted by **Jain Manojkumar P. (Roll No: 13MCEC29)**, towards the partial fulfillment of the requirements for the award of degree of Master of Technology in Computer Science and Engineering of Institute of Technology, Nirma University, Ahmedabad, is the record of work carried out by him under my supervision and guidance. In my opinion, the submitted work has reached a level required for being accepted for examination. The results embodied in this project, to the best of my knowledge, haven't been submitted to any other university or institution for award of any degree or diploma.

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Statement of Originality

I, **Jain Manojkumar P.**, Roll. No. **13MCEC29**, give undertaking that the Major Project entitled "**Quality Function Deployment And Server Task Automation**" submitted by me, towards the partial fulfillment of the requirements for the degree of Master of Technology in **Computer Science & Engineering** of Institute of Technology, Nirma University, Ahmedabad, contains no material that has been awarded for any degree or diploma in any university or school in any territory to the best of my knowledge. It is the original work carried out by me and I give assurance that no attempt of plagiarism has been made. It contains no material that is previously published or written, except where reference has been made. I understand that in the event of any similarity found subsequently with any published work or any dissertation work elsewhere; it will result in severe disciplinary action.

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Signature of Student

Date:

Place:

Endorsed by

Prof. Prajakta Rathod

(Signature of Guide)

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See that you acknowledge each one who have helped you in the project directly or indirectly.

- Jain Manojkumar P.

13MCEC29

Abstract

Product development and deployment is an important process of every business work activity. The main aim to perform these activities is to increase profits, integrate, balancing and utilize all the available resources of company in an efficient manner to increase the quality of product. In Oracle Retail all the products are deployed on different hardware with variety of OS platform. So at each configuration step of product deployment great care needs to be taken to complete process safely and successfully. The aim of first phase of this project is to design few mock retail product deployment and development on different hardware with different architectural platforms. This process is divided in different phases covering every detail of configuration process to make this complex deployment task very easy for oracle clients and increase customer satisfaction.This phase include the post deployment smoke testing for each retail application for new release and outage.

The next phase includes the automation of server task through transformation application. Server task automation enables users to perform advanced automation tasks across servers. One of the important tasks of transformations tool is to changes/updates to monitor server state, concurrent sessions, deployment status, domain monitoring, machine configuration and emails the issues. This phase includes automation of nodemanager configuration process for each machine.

Abbreviations

QFD	Quality Function Deployment
RSB	Retail Service Backbone
RWMS	Retail Warehouse Management System
SIM	Store Inventory Management
RIB	Retail Integration Bus
HTTP	Hyper Text Transfer Protocol
SOAP	Simple Object Access Protocol
WAP	Wireless Access Protocol
JSP	Java Server Page
DBMS	DataBase Management System
JMS	Java Message Services
JDBC	Java Database Connectivity
WLST	WebLogic Scripting Tool
JDK	Java Development Kit
SOA	Service Oriented Architecture
GUI	Graphical User Interface
CUI	Character User Interface
NM	Node Manager

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Chapter 1

Introduction

1.1 General

Oracle has become the driving force behind many of the popular retail giants in recent times by delivering business value for many large and midsized companies worldwide. Oracle Retail provide best solution to optimize operations across online commerce and mobile channels. Oracle Retail provides a Integrated, complete, open combination of retail applications and storage and server solutions.Oracle Retail well known client are Tesco, Espirit, Dubai Duty Free, Aditya Birla and Aravind Mills.

1.2 Need for the project

Though Oracle has been consistently trying to make the product deployment process easy and simple to understand on a generic level, it has been observed that clients and customers have still been facing issues like providing correct values for environment variables during deployment, inability to understand some technical terms, finding out which files to modify during the configuration process etc.. By increasing the usability of the guides and improving the implementation process, a customers valuable time and energy is saved, the companys integrity is maintained and the companys revenue and profitability directly increase. Therefore, I have been rolled-on for performing the entire deployment process from scratch as they would be able to do so in an unbiased manner without having any pre-conceived notions regarding product configurations, setup etc. and hence provide more effective feedback. On the other side weblogic server is use to host application where some utility require to make it more efficient in case of breakdown. so the

customer can use application at any time without doing any manual work.

1.3 Objective of study

The main purpose of this project is to help improve implementation and deployment ease of Oracle Retail products plus future releases for clients and customers by having interns perform the process manually and provide feedback for improvements. Currently, the product deployment processes are geared for people with a strong technical background having a substantial amount of experience in the field. The aim of the project is to lower or reduce these requirements by enhancing the current process within one portion of the deployment process which starts with user creation and ends with launching/verifying the product. This phase include the post deployment smoke testing to test retail application environment is up or not. The next phase includes the implementation of server task automation. Server task automation enables users to perform advanced automation tasks across server.

Chapter 2

Literature Survey

2.1 Oracle Retail Products

RETAIL WAREHOUSE MANAGEMENT SYSTEM (RWMS)

The RWMS product provides the coordinate movement of information and merchandise throughout the distribution process. It ensures the best utilization of resources, space and people. It is one of the most important components of supply chain planning of the Oracle Retail products.

The important benefits of RWMS are:

- Inventory management component of RWMS provide accurate and timely data to increased efficiency of planning and allocation process.
- It reduces the lead times by accelerating flow of merchandise through supply chain.
- It increase labor productivity by providing efficient optimization algorithms and workload monitoring activities.
- RWMS support all types of merchandise flow like pick by line, flow through and cross dock. Also it supports all type of facets of grocery.

STORE INVENTORY MANAGEMENT (SIM)

Retail SIM product provides multi-channel and real time access to centralized inventory of all the channels. It is now very easy for store manager to managing physical inventory,

performing in-store operation, conducting stock count and transferring stock by using oracle retail SIM product.

The important key benefits of this product are:

- It manages the store labor expenses very easily to reduce the costs.
- It control inventory to reduce the carrying costs
- It provide in store location level tracking system to prevent stock outs and overstock.
- It improve customer satisfaction and service by maximizing staff availability

RETAIL INTEGRATION BUS (RIB)

The main aim of this Oracle RIB product is to provide real time messaging service. The key points for this service are guaranteed sequential delivery, one time delivery within customer group without any errors. This ensures the messaging infrastructure tuned for the high reliability, volume and availability needs of the oracle retail.

The main benefits of this product are quick integration, real volume support and guaranteed delivery.

2.2 Weblogic Server Concept

The first java based weblogic application server was created by WebLogic company (from 1995 to 1998)[3].

2.2.1 Features of Weblogic Server

- Standard Leadership

  Weblogic server provides comprehensive support for deployment and implementation of application.

- Rich Client Option

  It supports Web browser and all HTTP Client.It support SOAP client and WAP (Wireless Access Protocol) based mobile device.

- Advanced and Flexible Web Services

  Advanced platform available for web service deployment as a component of heterogeneous application.

- Enterprise e-business scalability

  JavaBeans business components are available for efficient use of critical resources through Weblogic server clustering and connection sharing

- Robust Administration

  Weblogic server provides a console to manage and configure all services running on server.

- E-commerce-read security

  It provides SSL (Secure Socket Layer) support to encrypt data transmitted across server and client. Maximum development and deployment flexibility

  It provides integration facility for database, development tools and other supporting tools.

2.3 Weblogic Server Application Architecture

Weblogic server is advanced and reliable server for deploying and developing multitier enterprise application. Application services are centralizes as web server, business components and backend systems and database. In multitier architecture, Weblogic operates in the middle tier as shown in figure 2.1.

2.3.1 Software Component of multitier architecture

- Client Tier

  This tier contains programs which can be executed by users using web browsers. Using HTTP protocol browser can request service from Weblogic server. Client can access web services by deploying servlet and JSP pages in Weblogic server.

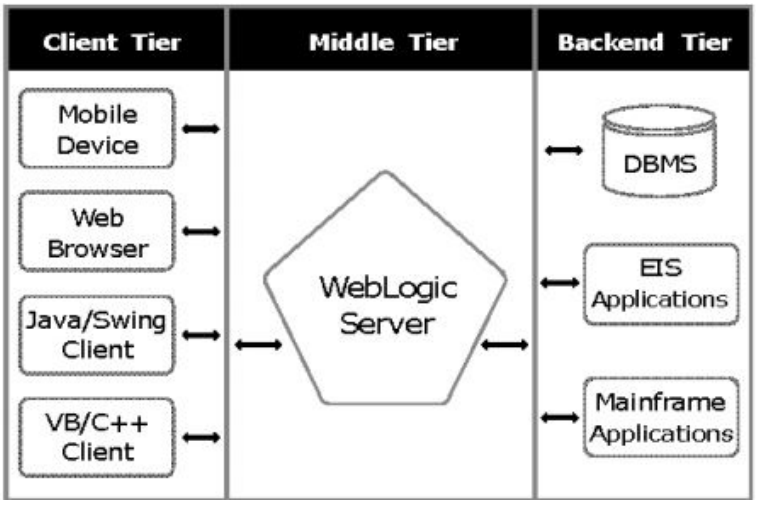


Figure 2.1: Three-Tier Architecture [1]

- Middle Tier

  This tier contains Weblogic servers and other server to serving client application. All middle tier applications require high reliability, performance and scalability in middle tier so middle tier is critical in the enterprise system.

- Backend Tier

  This tier contains mainframe applications, database system and other resources. Weblogic server is used to protect direct access to backend application by end users.

2.4 Weblogic Server Services

- Weblogic Server as a Web server

  A web server is an entity deployed on Weblogic server. Using jar utility we can pack all web application files into single war file. To define run-time parameters and security settings, different set of deployment descriptors are defined.

  Weblogic server provide virtual hosting, fail over and replication management, load balancing and proxy server configuration features as web server.

  Weblogic server can handle multiple requests mapped to different virtual host.

- Weblogic Server Security Services.

  Weblogic server provides advanced security design for all application servers due to its flexible security architecture. It provides security policies and procedure which maintain confidentiality, availability and integrity of the server and data.

- Weblogic Server clusters A group of weblogic server instance work together and formed cluster to provide powerful web application platform. This provide high availability and scalability to all java application. Using proxy server web client able to connect with Weblogic server to use web services.

- Server Management and Monitoring There are two way to monitor and configure Weblogic servers. First one is using Administration console and other one is using command line interface. Using web browser application we can manage server security, Weblogic server services and monitor services.

Some of the basic terms related to Weblogic server have been explained below:

Domain: A Weblogic Domain is a collection of all the server instances which are logically related and manage using same configuration artifacts[3]. The domain general structure is as shown in Figure 2.2

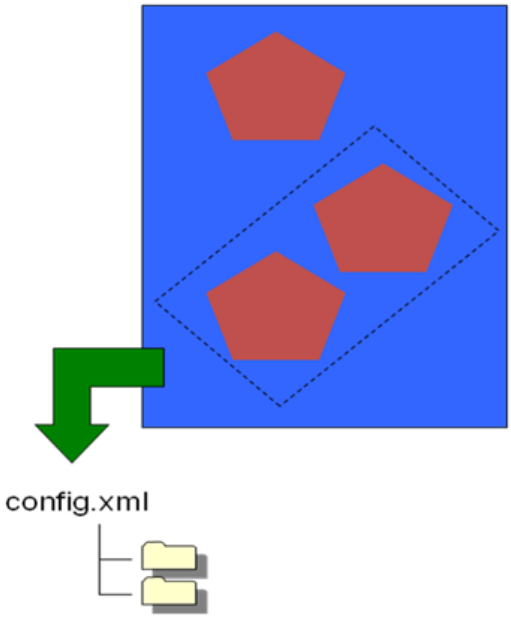


Figure 2.2: Domain Structure

Server: The weblogic server is a main key component used to host resources and application. These applications can be JMS, JDBC, Web services and Enterprise Apps[3]. Managed and Administrative servers are two types of weblogic server.

Administration Server: The administration console run on web browser is hosted by Administration server[3]. It also performs the following tasks:

- It provide feature of start and stop servers from one central location.
- This server enables feature of migrate services and server within a domain.
- Within a domain you can deploy application using this server.

In any weblogic domain there can be only one administrative server because it need not to run all times. This server is used for deployment changes and making configuration to a running domain. An administrative server controls only one domain[3].The Administration server general structure is as shown in Figure 2.3

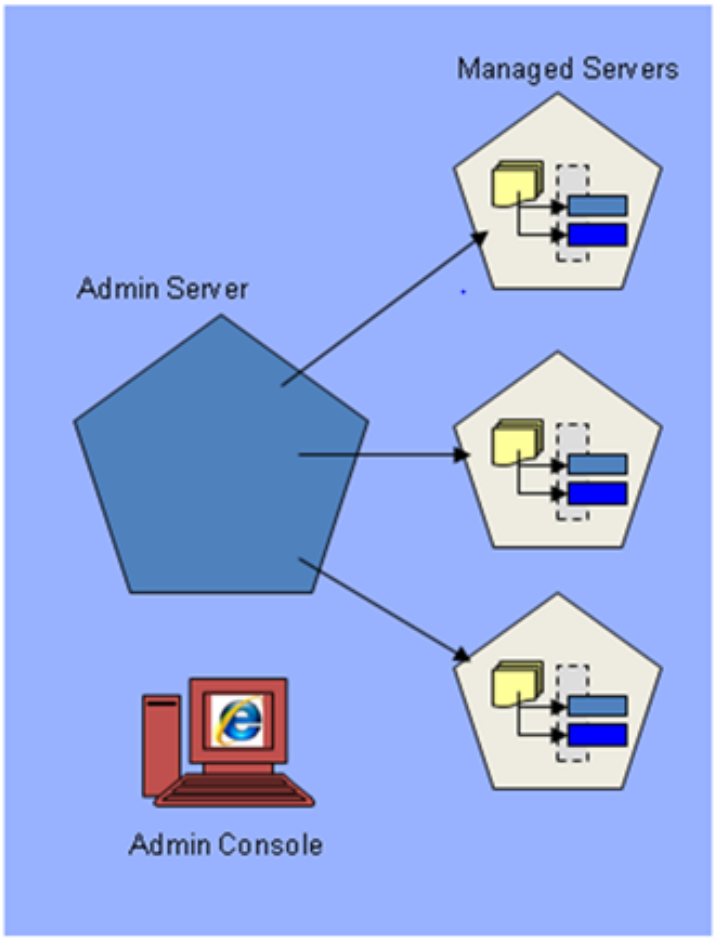


Figure 2.3: Administration Server Structure

Managed Server: All the resources and application are hosted on managed server which is running instance. Managed servers are the real working host of a domain[3]. All

the managed server in single domain are independent and they are created as per application requirement. The main aim to add more managed server in domain is application isolation. The Managed server general structure is as shown in Figure 2.4

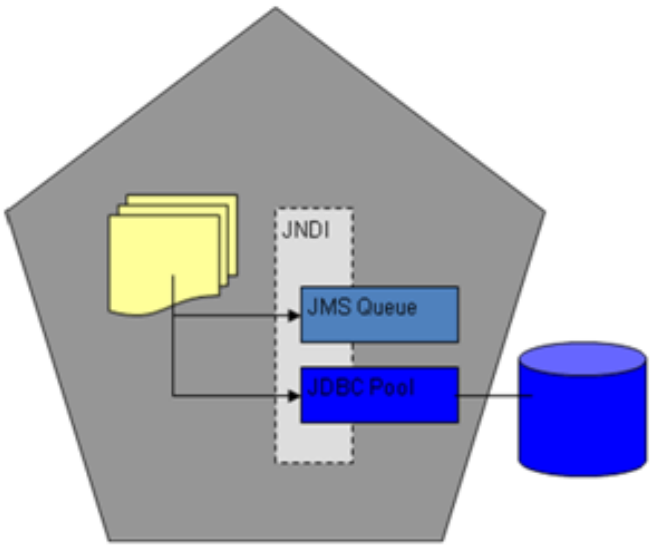


Figure 2.4: Managed Server Structure

The work process between Administration server and Managed server is as below:

- The configuration data of domains and managed server are store in the administration server.
- There is local copy of configuration data in each managed server.
- To synchronize the configuration between Managed server and administration server, managed server connects with administration server whenever it starts.
- All the configuration changes are sends to managed server by administration server every time when it changed.

Node Manager: Node Manager is a process running on a physical server. This process enables us to up, down, restart and suspend managed server instances[3].Node Manager run on each server which hosts weblogic instance. It can control any server of same physical server without associate with any fix domain. It is key component for simple or

automatic server migration on any physical server. The node manager general structure is as shown in Figure 2.8

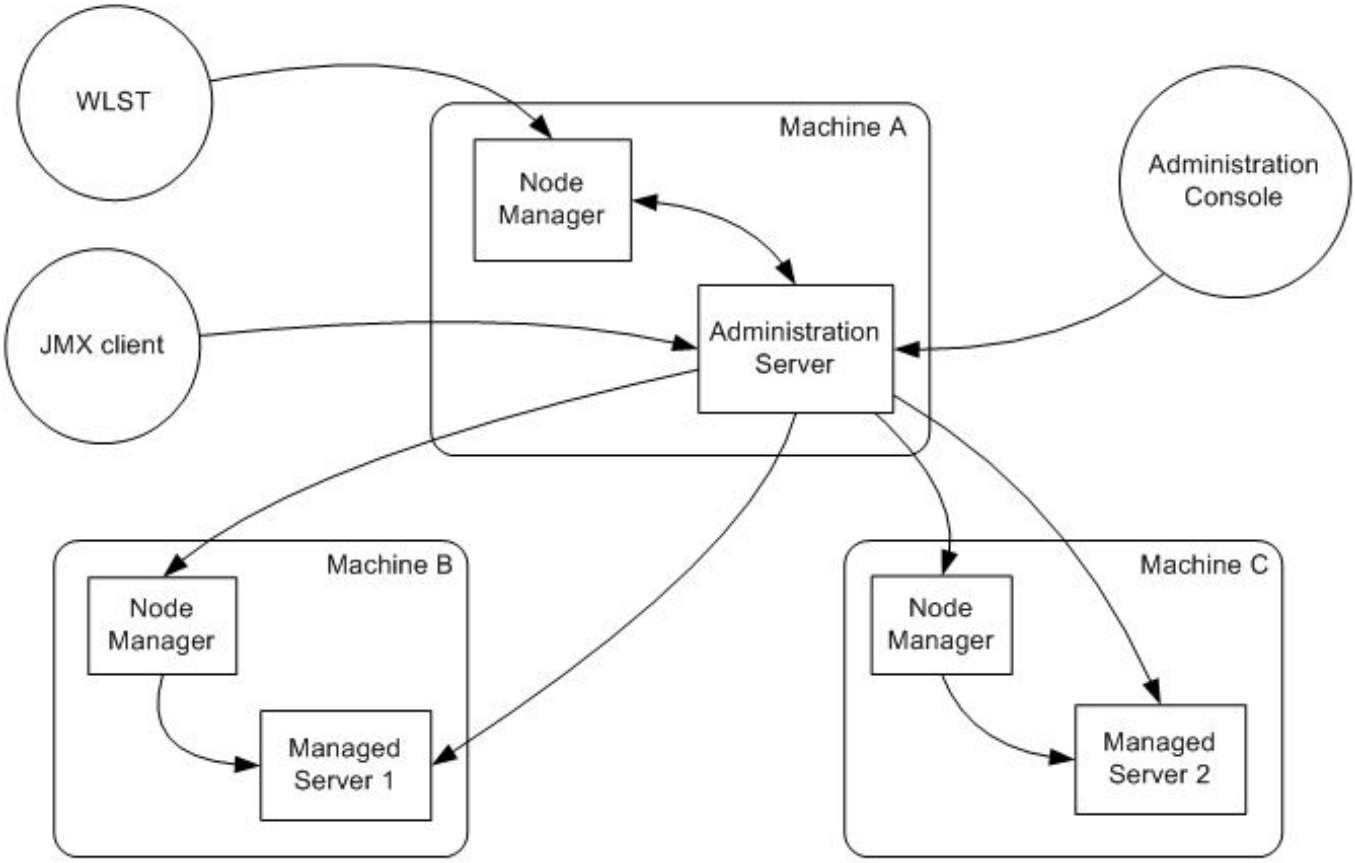


Figure 2.5: Node Manager Structure [2]

Machine: A machine is actual physical hardware used to associate managed servers and computers. Machine is use by node manager whenever failed managed servers are restarted.

Service Configuration: Many oracle retail applications depend on other services like JDBC, JMS. These services must be configuring in a weblogic domain to run retail application properly. The process to do this process is as below:

- As per the requirement of application select and configure the service in weblogic server domain.
- Every service must be target to specific weblogic instance.
- According to Administration tool, implement the instance of the service on each weblogic server.

- Two of the most important administration tools used are:

- Administration Console: This tool is used to monitor and configure weblogic server, application and domains on browser. It is hosted by the Administration Server in the domain. It is opened in a web browser using the URL HTTP://hostname:portnumber/console e.g. http://10.12.123.12:17001/console1

2.5 WebLogic Scripting Tool

WLST is used to monitor and configure Weblogic server, application and domain based on Jython scripting language[5]. It is used for making repetitive task to automated process. WLST can be used as Administration console online or command line configuration in offline mode[5].

Using WLST offline we can create domain templates, new domains, configuration changes in the config directory.

Different modes to invoke WLST commands

- Interactive Mode

  In interactive mode, command will show output on same command-line prompt[5]. So this mode can be used to verify configuration option before creating scripts.

- Script Mode

  In this mode, sequence of commands in python file is executed directly instead of single command[5].

  Using python script we can deploy application, configure WebLogic server and applying setting to multiple nodes. We can apply all scripting features like loop and flow control, conditions, procedure.

- Embedded Mode

  In this Embedded mode we write WLST commands with java scripts using WLST[5].

2.6 How Node Manager Work ?

2.6.1 Starting an Administration Server

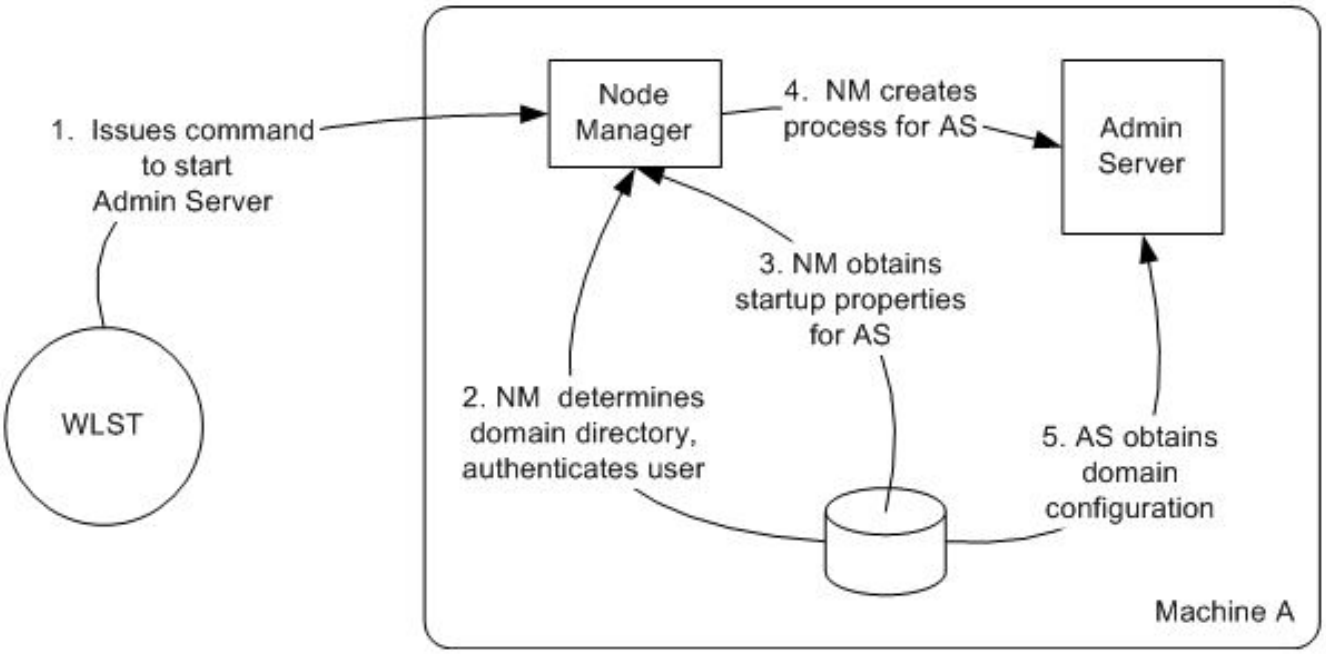


Figure 2.6: Starting an Administration Server [2]

- In first step, valid user connect to the node manager process using WLST command nmConnect which require username and password to authenticate user[2]. Using boot.properties file, authentication process can be skipped.
- Nodemanagere.domains file is used to look up the domain directory.
- startup properties file is look up by nodemanager to start Administration server process and after getting properties file it create process.
- All domain configuration of that Weblogic instance obtain by Administration server from config directory.

2.6.2 Starting a Managed Server

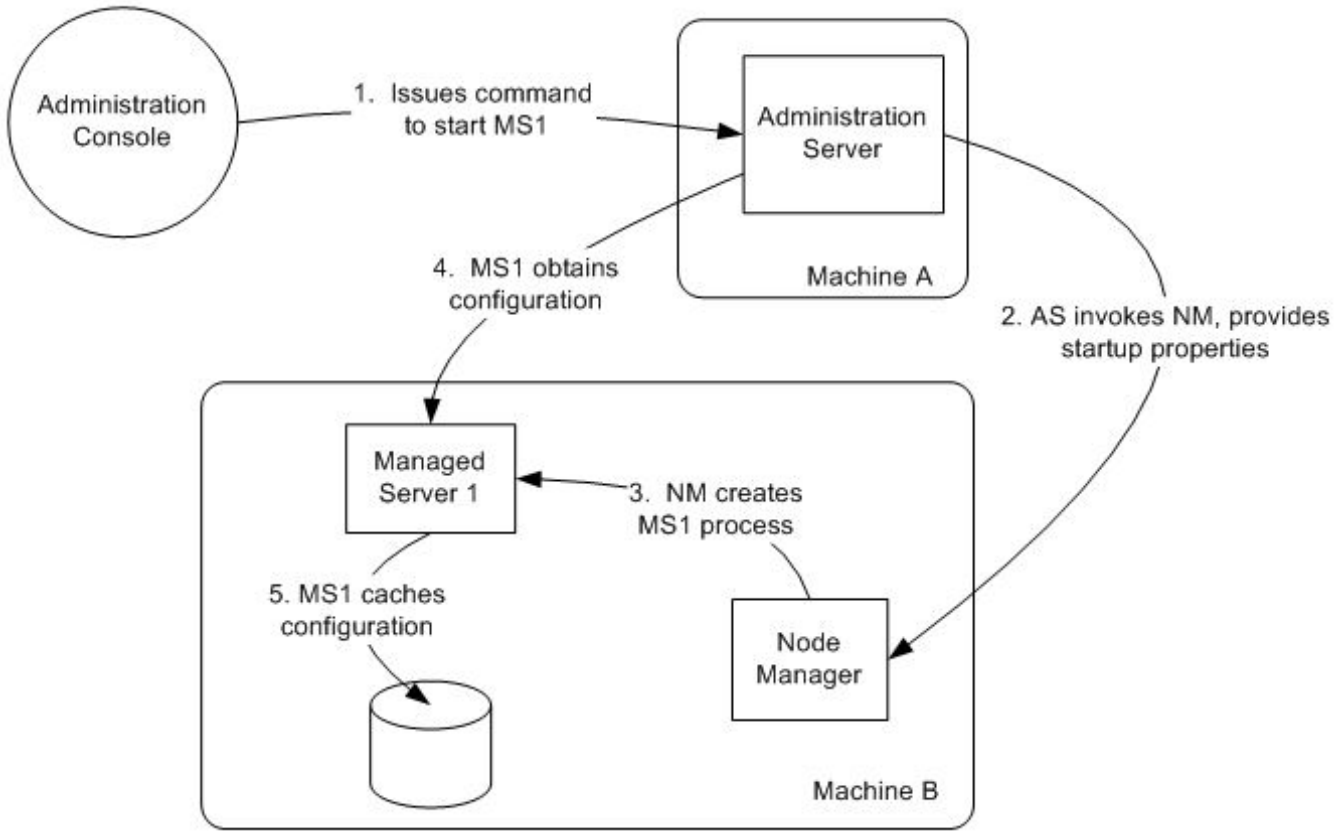


Figure 2.7: Starting a Managed Server [2]

- Managed Server can be start using Administration Console by issuing start command.
- After issuing start command to Managed Server it will propagate to node manager on particular machine with its wstart properties.
- Node Manager Process starts the Managed Server using root directory. Managed Server update its configuration data if there is any change or update in configuration information after communicate with Administration Server

2.6.3 Shutting Down a Server

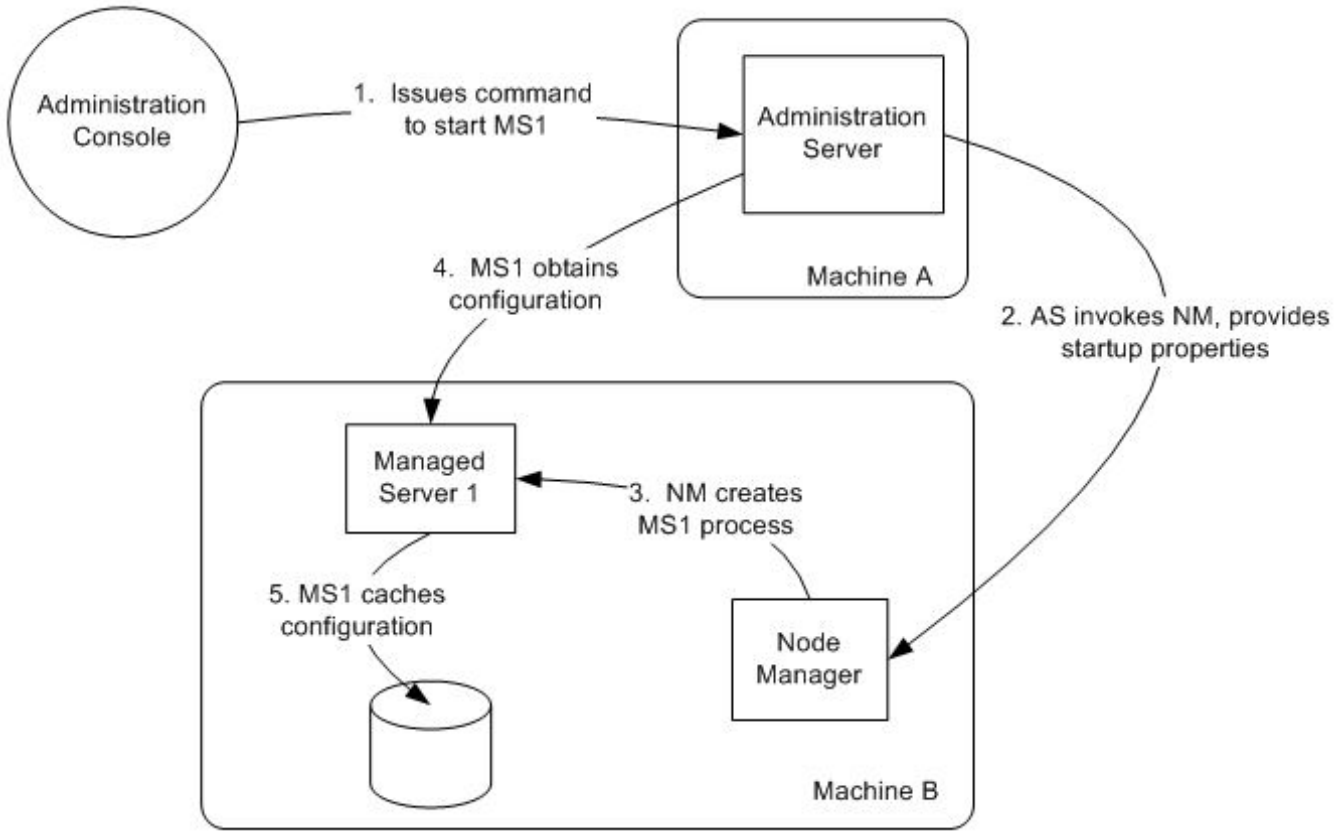


Figure 2.8: Shutting Down a Server [2]

- Managed Server can be stop using Administration Console by issuing shutdown command.
- Administration Server contact with Node Manager on machine to shutdown Managed Server if it failed to contact Managed Server directly. After getting request from Node Manager, operating system kill Managed Server by ends its process.

2.6.4 Operation after System Crash Recovery

- It is very important to restart Managed server after system crash to use deployed application successfully. For that some changes are required in Node Manager Configuration.
- To successfully start Node manager after system crash, CrashRecoveryEnabled property must be set to true in nodemanager.properties file locate in node man-

ager directory[2]. Restart the Administration server using Node Manager and all Managed Server using Administration server only after setting above property.

- Node Manager check the nodemanager.domains file to determine each domain after system is restarted to insure clear shutdown of all servers. It will search for lock file created by Node Manager for Weblogic Server process and process ID for that process. If no process is found then it will restart the server.

Chapter 3

Quality Function Deployment

3.1 Hardware and Software Requirements

Hardware Requirements:

- Operating system :Windows 7
- Memory : 1GByte or higher
- Processor : 2.6GHz
- Networking : At least 10Mbps data rate intranet

Software Requirements:

- Oracle (Sun) Java Runtime Environment : JDK 1.7.0+ 64 bit
- Browser : Microsoft Internet Explorer version 11/24
- Database Server OS : Linux 6 for x86-64

Database Server 11gR2 : Oracle Database 11gR2 (11.2.0.4)

Application Server Operating System : Linux 5 (x86-64)

Application Server

- Oracle Fusion Middle ware 11g Release1 (11.1.17)

- Oracle Web Logic Server 11g
- Oracle Forms Services 11g
- Oracle BI Publisher 11g (11.1.1.7)
- Web Logic Scripting Tool (WLST)
- Oracle Internet Directory (ODI)

Software Tools : MobaXterm,VNC Viewer,WinSCP

3.2 Deploying an Application to Managed server

The major steps involved in migration of application from the integrated oracle weblogic server to an environment separate from the development enviornment[6].

- Package the application. For Java EE, ADF(Application Development Framework), and WebCenter Portal applications, you package the application in an EAR file. For Oracle SOA(f service-oriented architecture) Suite, you package the application into a JAR or ZIP file.
- Set up your environment. This includes Installing and configuring a domain and a Managed Server that is configured with the correct domain template. For example, if you are deploying an Oracle SOA Suite application, the Managed Server must use the Oracle SOA Suite domain template. The appropriate domain template is applied when you create the domain using the Configuration Wizard. Alternatively, you can extend a domain to use another domain template

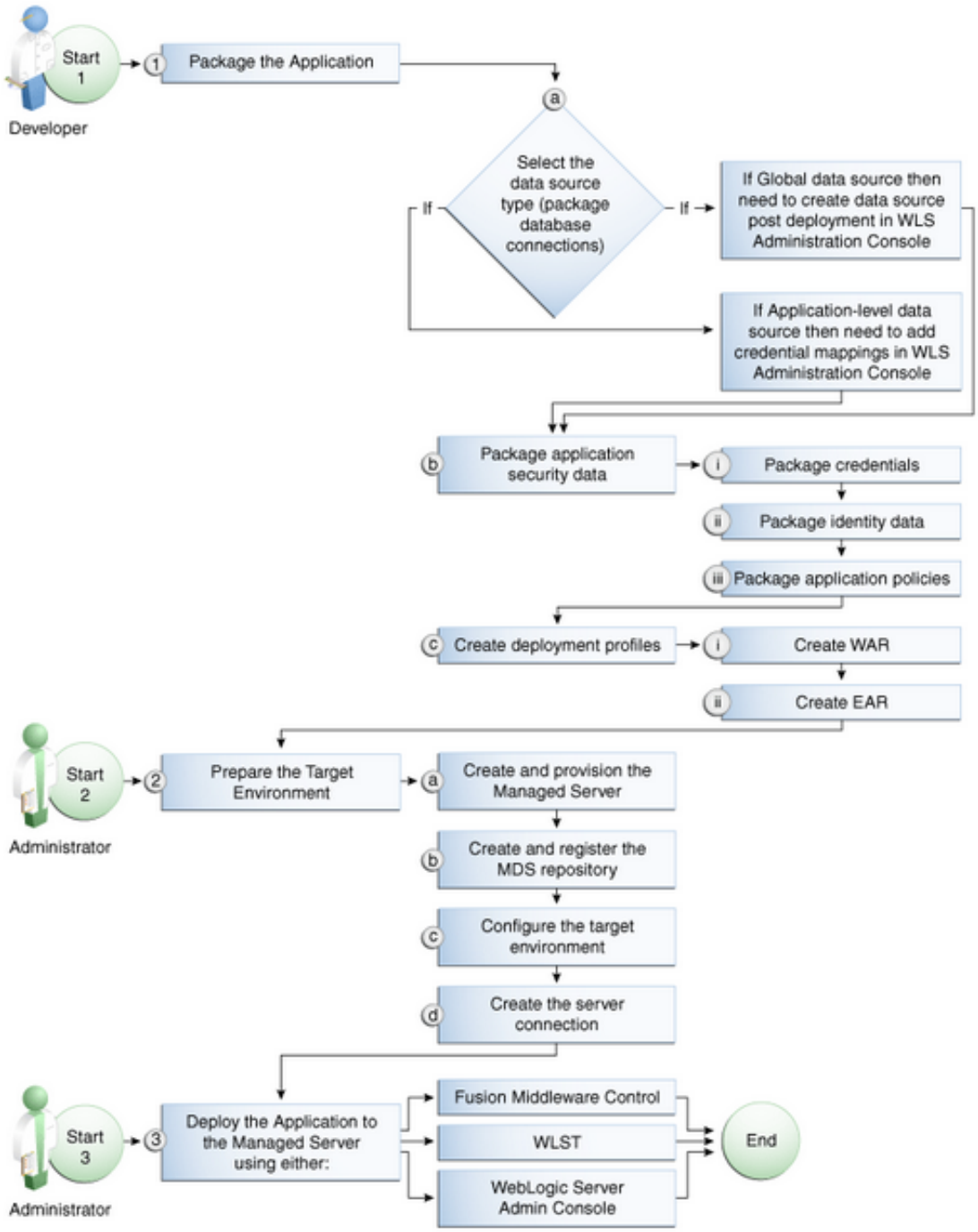
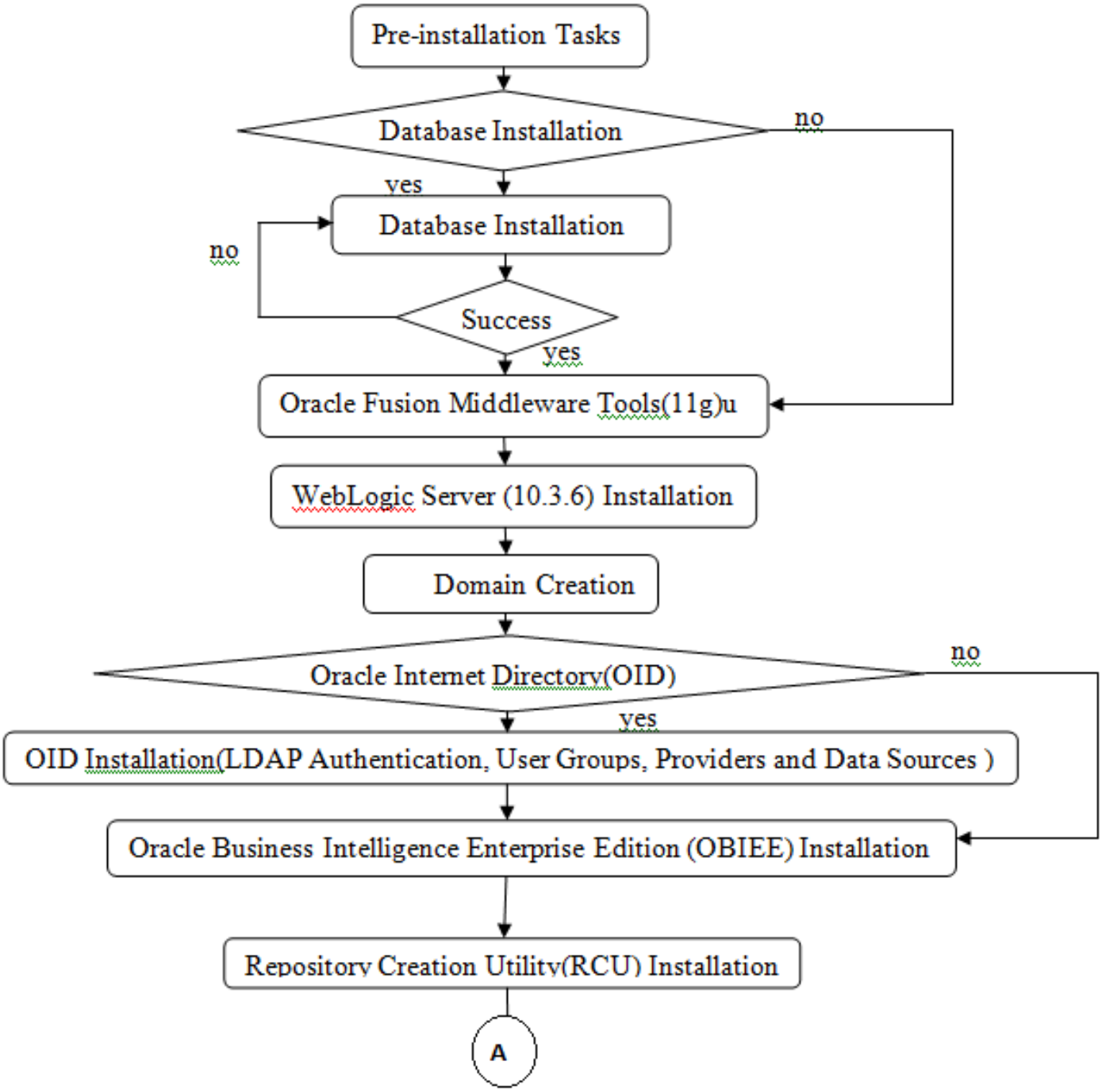


Figure 3.1: Deployment Process Flow [3]

- Creating any necessary schema in an existing database.
- Registering the MDS Repository with the Oracle WebLogic Server domain, if your application uses the MDS Repository. For example, Oracle SOA Suite and Oracle WebCenter Portal applications require MDS. Some ADF applications involve customization using MDS

- If your application uses a database, set up the JDBC data sources.
- For Oracle SOA Suite, create connection factories and connection pooling
- Create a connection to the target Managed Server.
- From Oracle JDeveloper, you can deploy your applications to Managed Server instances that reside outside JDeveloper. To do this, you must first create a connection to the server instance to which you want to deploy your application.
- Create a configuration plan or deployment plan, which contains information about environment-specific values, such as JDBC connection strings or host names of various servers.
- Migrate application security, such as credentials, identities, and policies
- create a deployment profile. A deployment profile packages or archives a custom ADF, WebCenter Portal, or SOA application and associated files so that the application can be deployed to an Oracle WebLogic Server Managed Server instance. Deployment profiles are created at the project and application level.
- Migrate Oracle JDeveloper extensions for Oracle SOA Suite and Oracle WebCenter Portal
- Deploy the application to a Managed Server.


Pre-installation Tasks
Database Installation
no
yes
Database Installation
no
Success
yes
Oracle Fusion Middleware Tools(11g)u
WebLogic Server (10.3.6) Installation
Domain Creation
Oracle Internet Directory(OID)
no
yes
OID Installation(LDAP Authentication, User Groups, Providers and Data Sources)
Oracle Business Intelligence Enterprise Edition (OBIEE) Installation
Repository Creation Utility(RCU) Installation
A

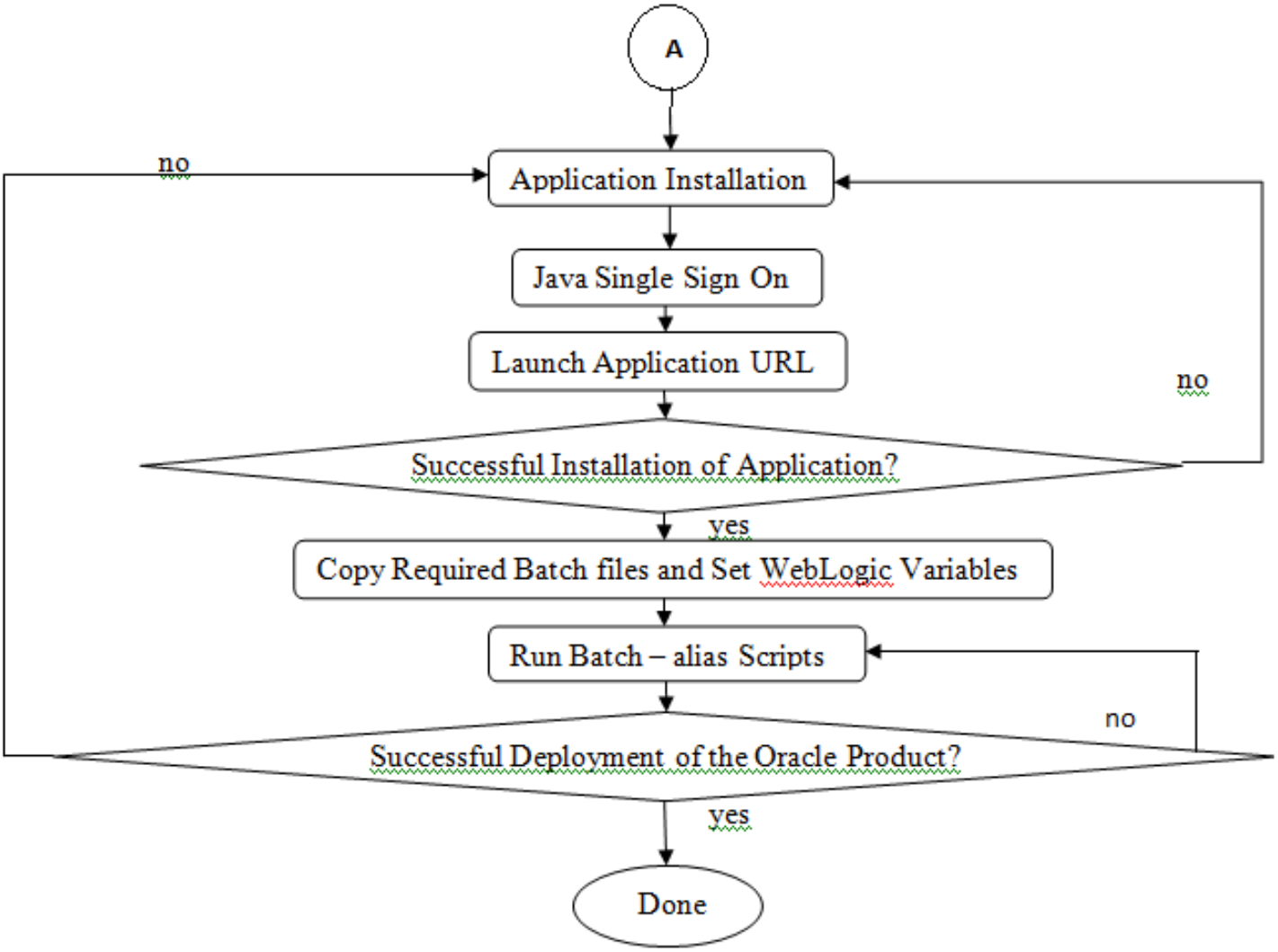


Figure 3.2: Task Structure for QFD

Chapter 4

Server Task Automation

4.1 Secondary Research:

WLST: The weblogic server administrator and user using the Weblogic Scripting Tool (WLST) for manage and monitor different domains and servers. It is completely command-line interface based on Java scripting interpreter, Jython. With this scripting language we can use all the feature of any interpreted language like conditional and local variables, flow control statements and weblogic script function.

The main key point tasks of WLST are:

1. WLST provide facility to copy same domain to different places using existing domain templates and configuration.

2. Using WLST tool all the run time information of servers and domain configuration can be retrieve.

3. It writes all changes of domain configuration in configuration files automatically.

4. For application deployment, WLST is one of the tools to automate this task.

5.One of the key component tasks is to manage the life cycle of all servers with controlling all the server access operation like start, stop and accessing node manager.

4.2 Transformation Utility

- **Aim**:Current weblogic server console handle the single domain and its manages server. But in real scenario one server host the multiple domain and many managed server in each domain. To solve this problem of weblogic server, i work on automated server task utility which can handle the server with multiple domain.

- Basically weblogic server tool run with WLST(Weblogic Scripting Tool) script. Our aim is to provide GUI and CUI to user which can handle multiple domains. To make this task more secure we use Java Server page(JSP) for user interface and business logic. This utility run the shell script in background which invoked WLST script to monitor the server state.

- JSCH(Java Secure Channel) is used to create the channel between shell script and java code. through this library i create the session for each user with its logins credentials. Once the channel is created now user is connected with server.

4.3 Implementation

This tool is developed as a web application front using Java, JSP, Servlet and JavaScript. Thus, it uses MVC architecture where the Model is the back-end shell script, the database while logging into the host and the Java class, the Control is the servlet and the View is represented by the JSP pages and CSS. From the Java class, shell scripts are invoked through JSch (Java Secure Channel) which uses the credentials provided by the database to login to the host. The scripts contain the operations required for the all transformation task.

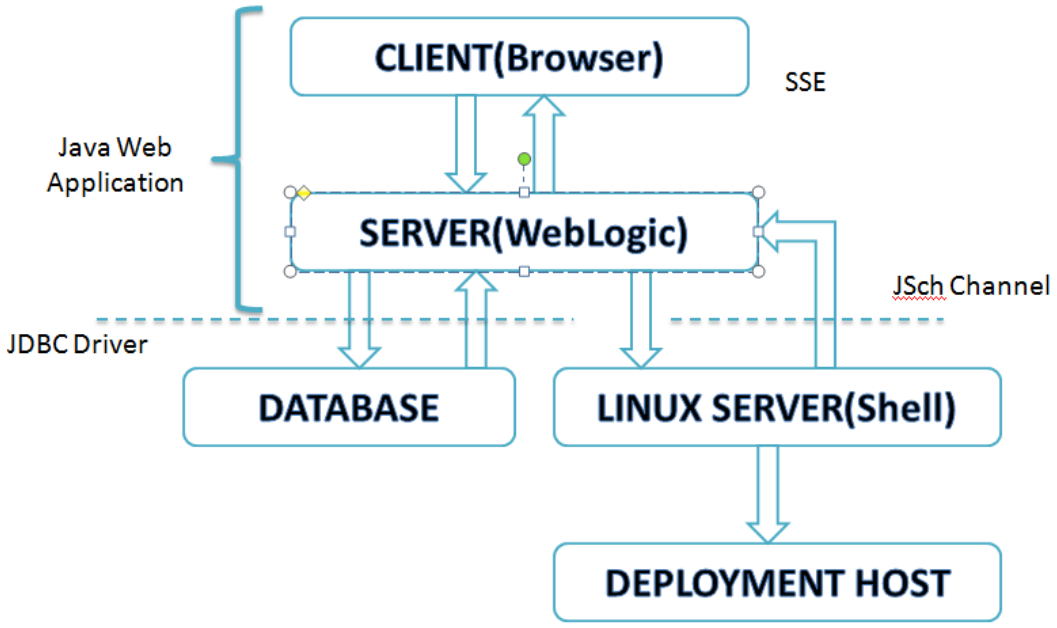


Figure 4.1: System Context Diagram

The block diagram in Figure 5-1 represents the system context diagram of the Transformation tool. It is client-server architecture, with an interaction between the web browser and the back-end servers. There are three servers involved here. The first server is the WebLogic server on which the tool itself is deployed. The second server is the database server. This server contains a database wherein there is a list of all the application hosts and its details (credentials). Once the user enters the name of the application host in the Start page, it is sent to the database to match to the corresponding host and then JSch is used to login to the server using credentials retrieved from the database. The third server involved here is the application server itself into which the user logs in. This is the server on which all transformation operations takes place.

Task perform by this utility are

- Adding new host and user to database who can use the transformation application
- Authenticate the user for utility through Oracle database 11g data for particular server.
- Display all the domains present in particular servers.
- Display all the managed server with each domain and its status.
- Status of all admin and managed servers status for particular domains.
- Based on status of server performing various task(start ,stop ,startall ,stopall , resume)
- Stop all the domain running on a host
- Display the log content of each server to user.
- Providing interface to user where user can change the whatsthereproperties files to change the application host database details. On submitting of these detail this utility check the connection with the database through these details, if it successfully create the connection then only these detail are updated in weblogic server files.
- Checking for boot.properties file is present or not. if it is not present then provide option to create file(Boot.properties file contain logins detail of admin server use to automatically logins to admin server on prompt)

- Provide email notification to user when any operation is performed on server.

In this application Oracle 11g database is used for connecting the session between user and server. Database consist the detail of all authorized user for each host. so if legitimate user found after checking with database it will authenticate to server.

4.4 Transformation Scripts and Functions

To check nodemanager properties file for each Weblogic Server, we developed transformation scripts which is used to checking and setting below properties for each machine.

- Crash Recovery
- Start Script
- Stop Script
- Secure Listner
- Cipher suite

If there is any issue in nodemanager.properties file then it will check by script and that host is listed in without transformation host list.

This without transformation list is configure again using script. By this we transformed each and every domain of host.

To reflect node manager changes into existing environment symbolic link for sysinit.sh is created. sysinit.sh will execute when host restart again. If there is symbolic link issue then it will also reported. Once wrong or empty symbolic link is found then it is created using symbolic link creation script.

There are script to start and stop all domains, nodemanager, start admin server and stop admin. All these scripts are used to implement transformation functions

.

4.4.1 Login to Application Server

This tool displays the page wherein the logins details to be entered into page. one input required is host name of the Application host into which we want to log in order to monitor the domains and perform operations.

Figure 4.2: Login function

4.4.2 Adding new host

Using this feature, we can add the hosts with the correct credentials the credential validation is done by the JSch channel connection if the credentials are wrong, the connection will not be established and we will get an error. Otherwise a row with the host details is entered into the database.

Figure 4.3: Adding new host function

4.4.3 Select Operation

Here User can do various operation for login application host.

Figure 4.4: Operation available in Transformation

4.4.4 Show Domains

This tool provides the function Show Domain which display page loaded with the list of domains present in the host.

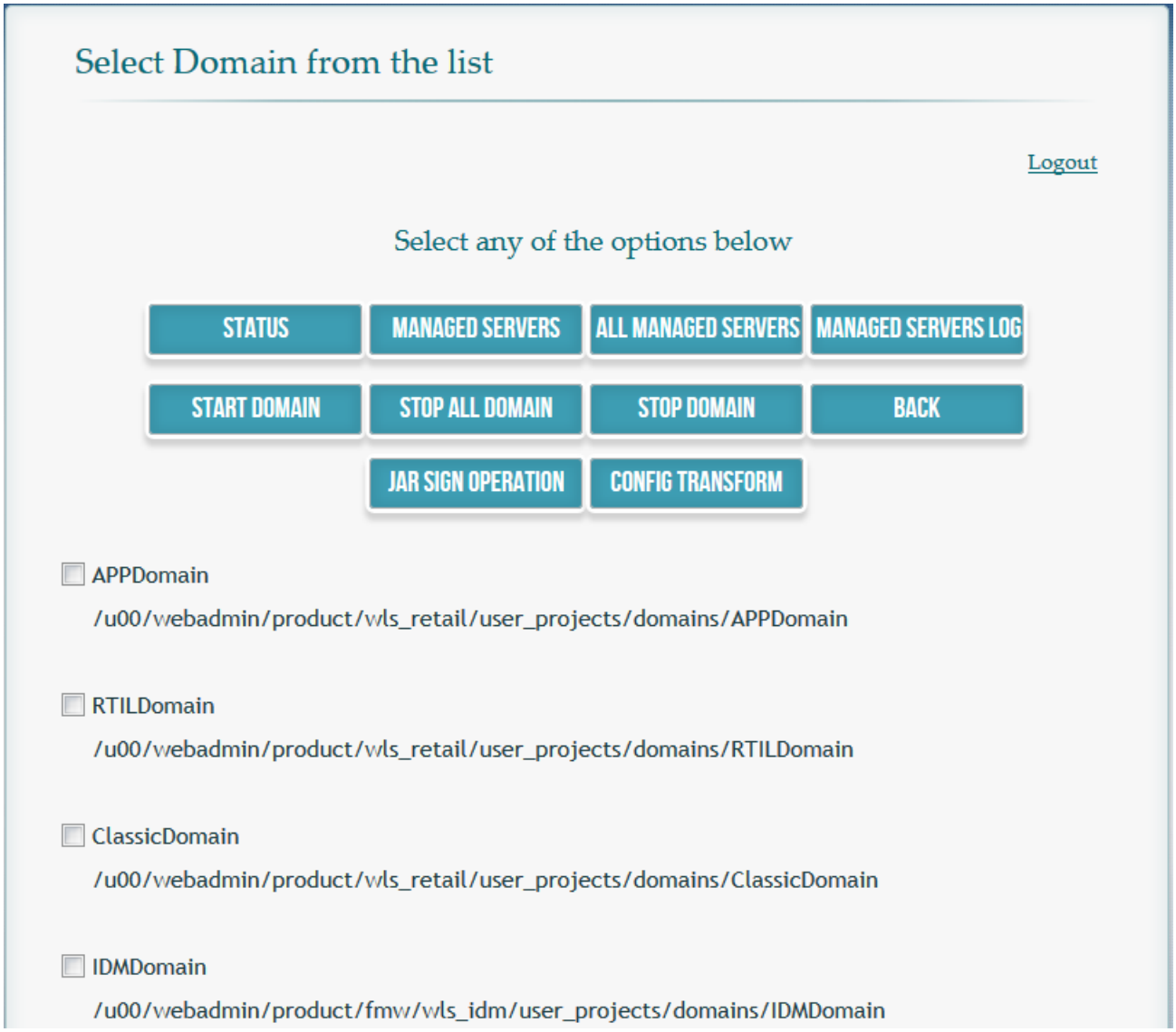


Figure 4.5: Domain list for application host

4.4.5 Status of Managed Server

This tool provide facility to display the status of the selected domain from the list of domains present in that application host. Other Useful information on that page are servers in the domain, port number on which it is running and status of server.

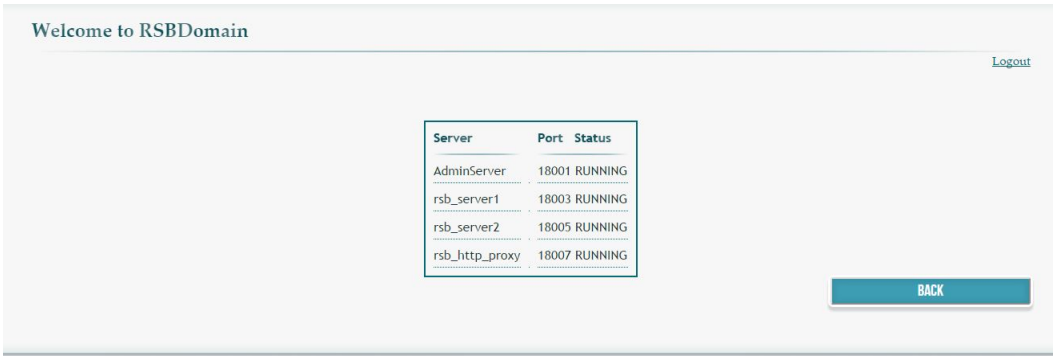


Figure 4.6: Status of Managed Server

4.4.6 Operation on Managed Server

This tool provide facility to loads the list of managed servers of selected domains with options Start, Stop, Startall, Stopall, Server Log and back buttons. Using these options user can either stop/start the managed servers within selected domain.

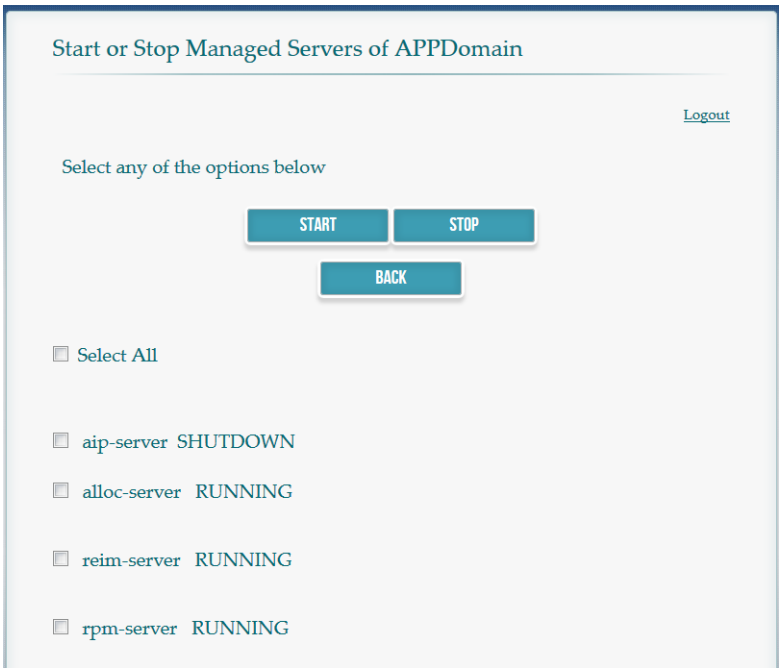


Figure 4.7: Operation on Managed Server

4.4.7 Managed Server Logs

This tool provides function to display the logs page which show the list of the servers in the selected domain of application host. Using Show button we can see the log of Managed Server.

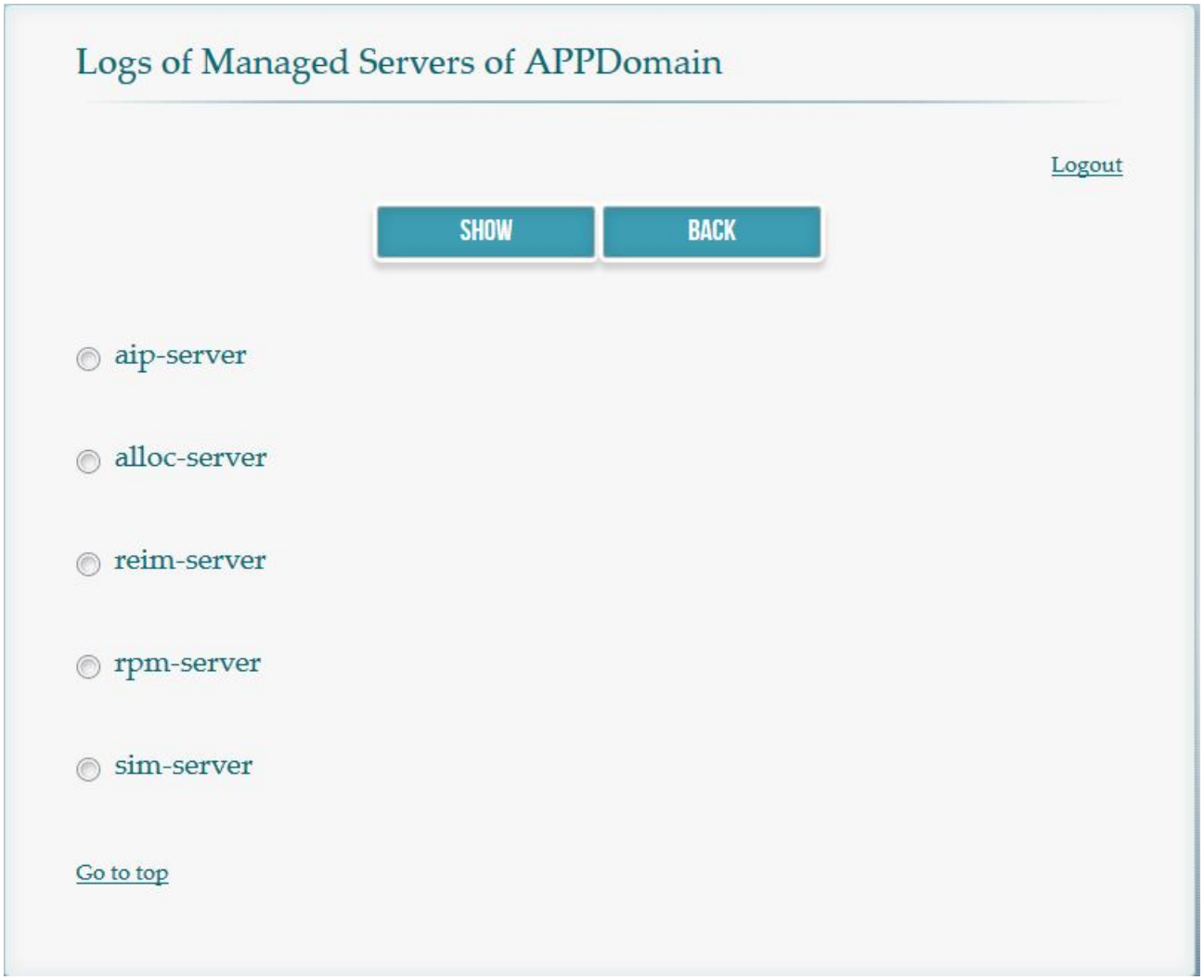


Figure 4.8: Managed Server Logs

4.4.8 Managed Server Logs files

After navigating from Show to the next page, it provides two log file option server-name.out and servername.log for selected managed Server.

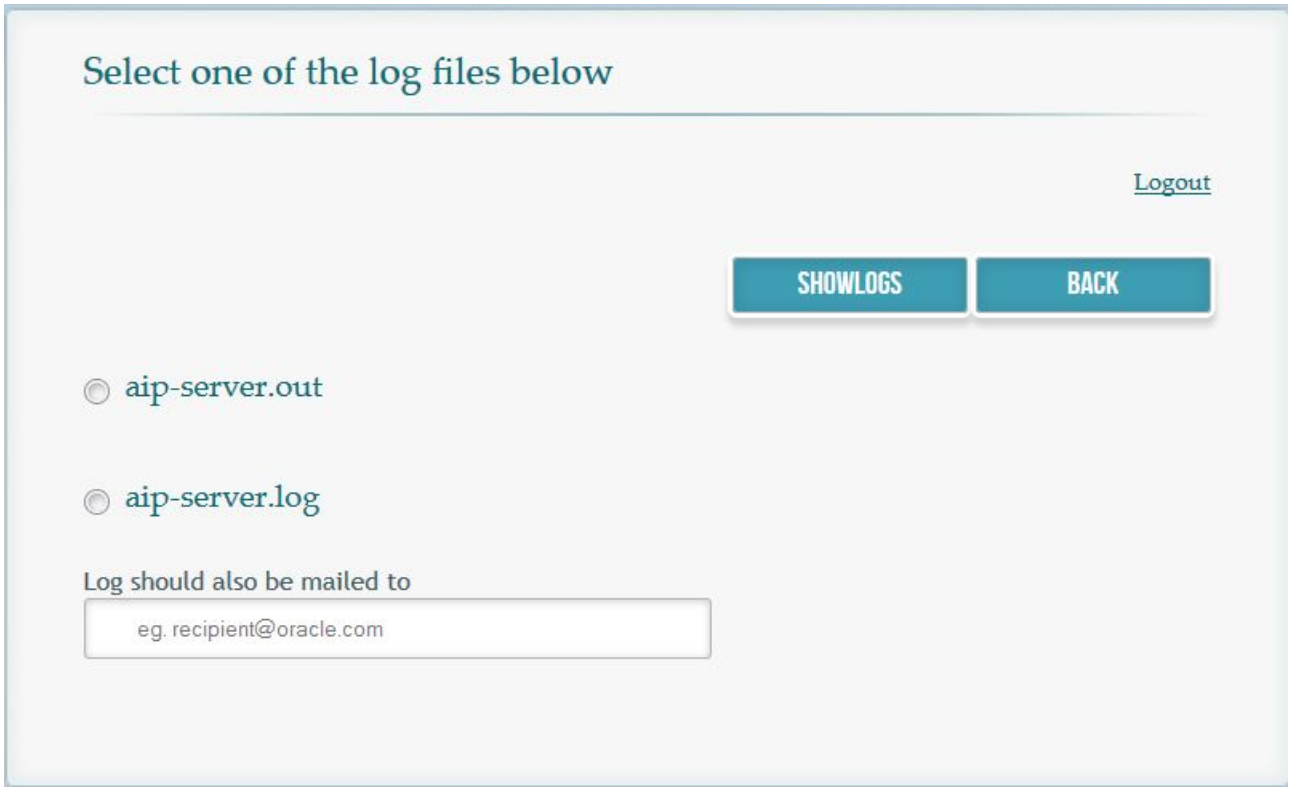


Figure 4.9: logs files for Managed Server

4.4.9 Log Contents

Using Showlog button on page user can get log contents of the selected server. Log consists of the status of the server at regular interval of the time after the creation of server, operations performed on the server, nodemanager status, deployments on managed server, security and users and groups are available etc.

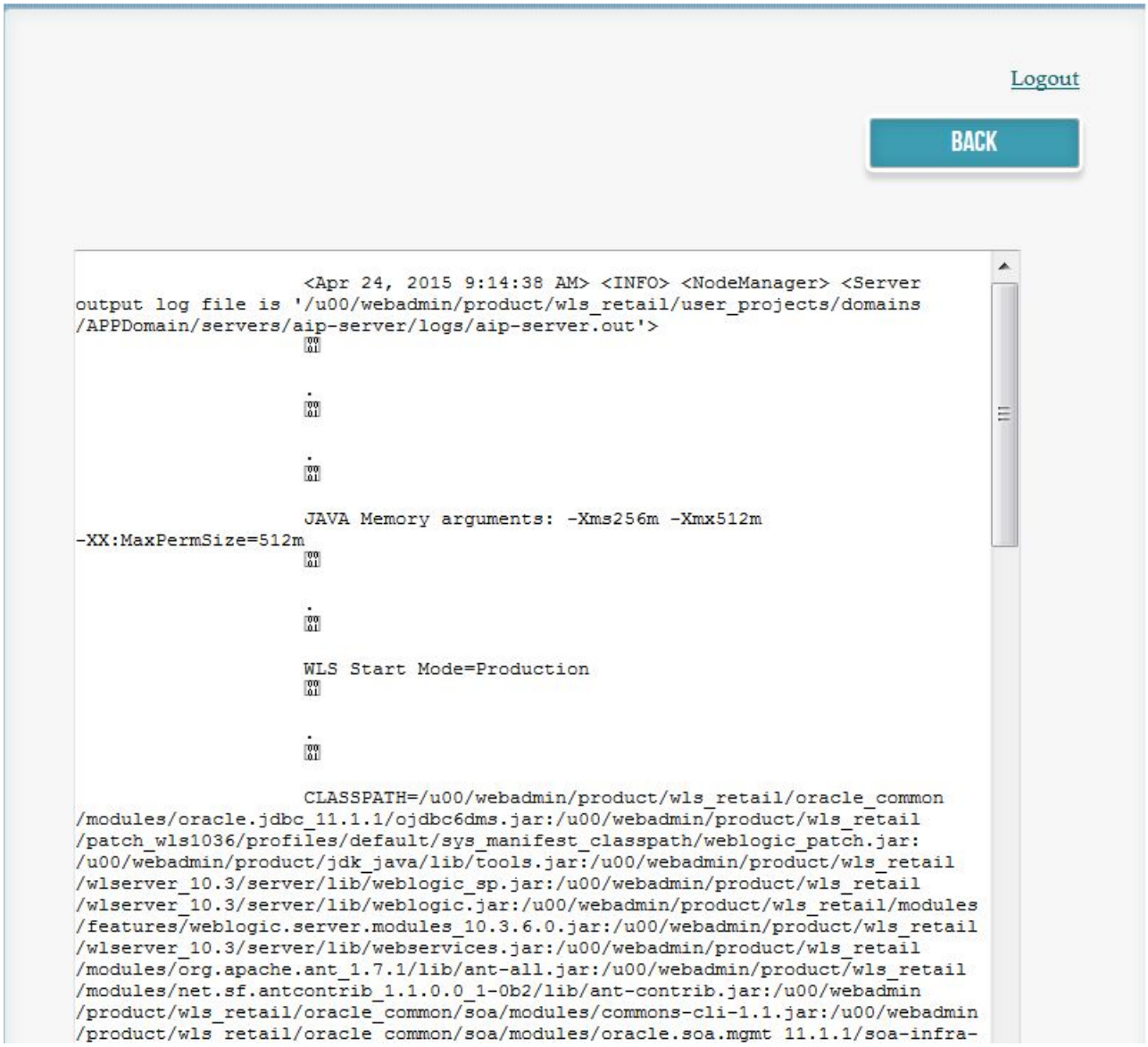


Figure 4.10: Log content of Managed Server

4.4.10 Operation with multiple domains

This tool provides facility to stop/start the domains selected or all of them depending upon the users selection.

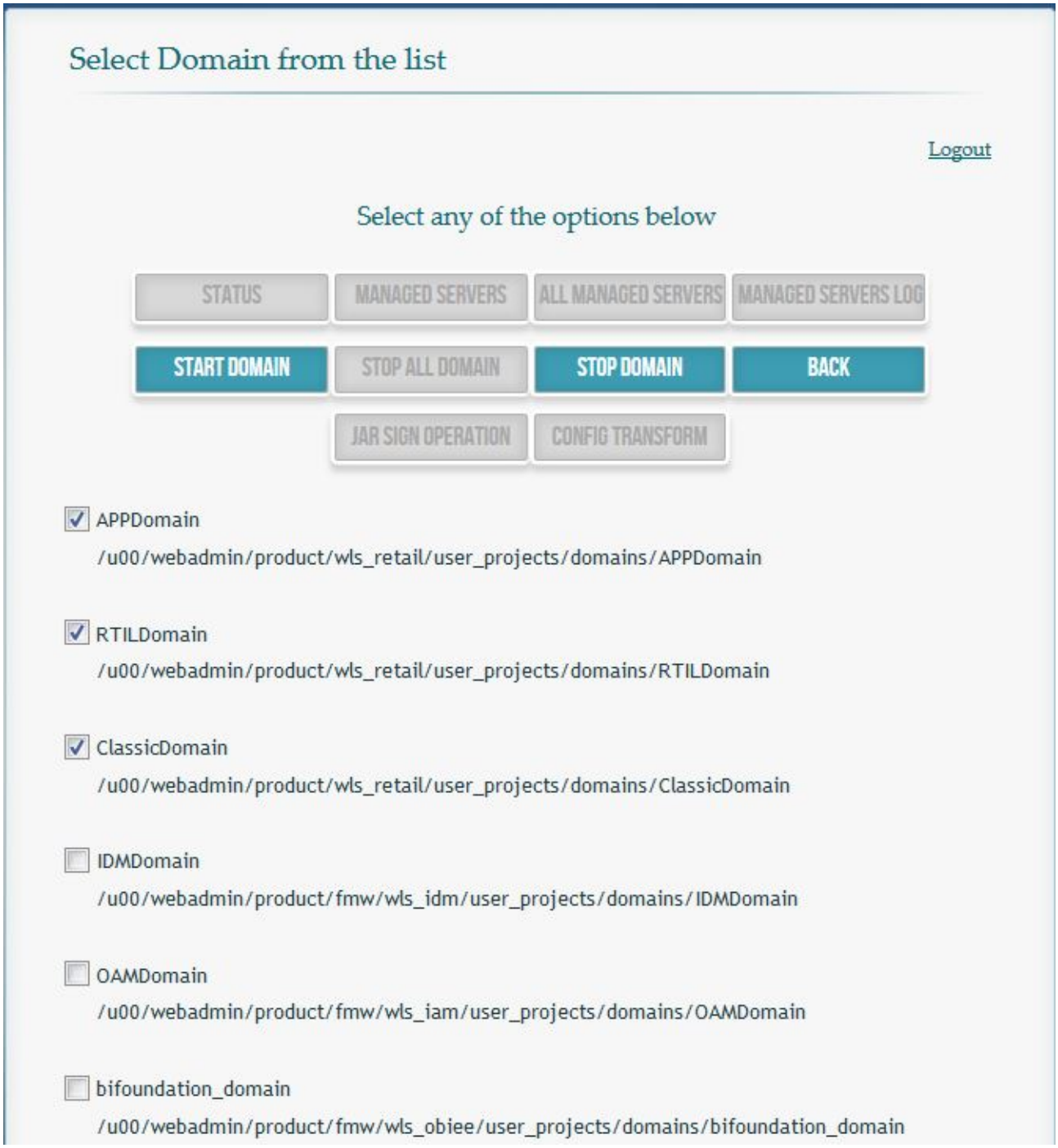


Figure 4.11: Operation with multiple domain

4.4.11 Whatsthere Properties File

This tool provides facility to loads all the properties of application host from the Whatsthere properties file. We can modify every property value by providing new values against to that property. Clicking save button will backup old file and generate new Whatsthere.properties file.

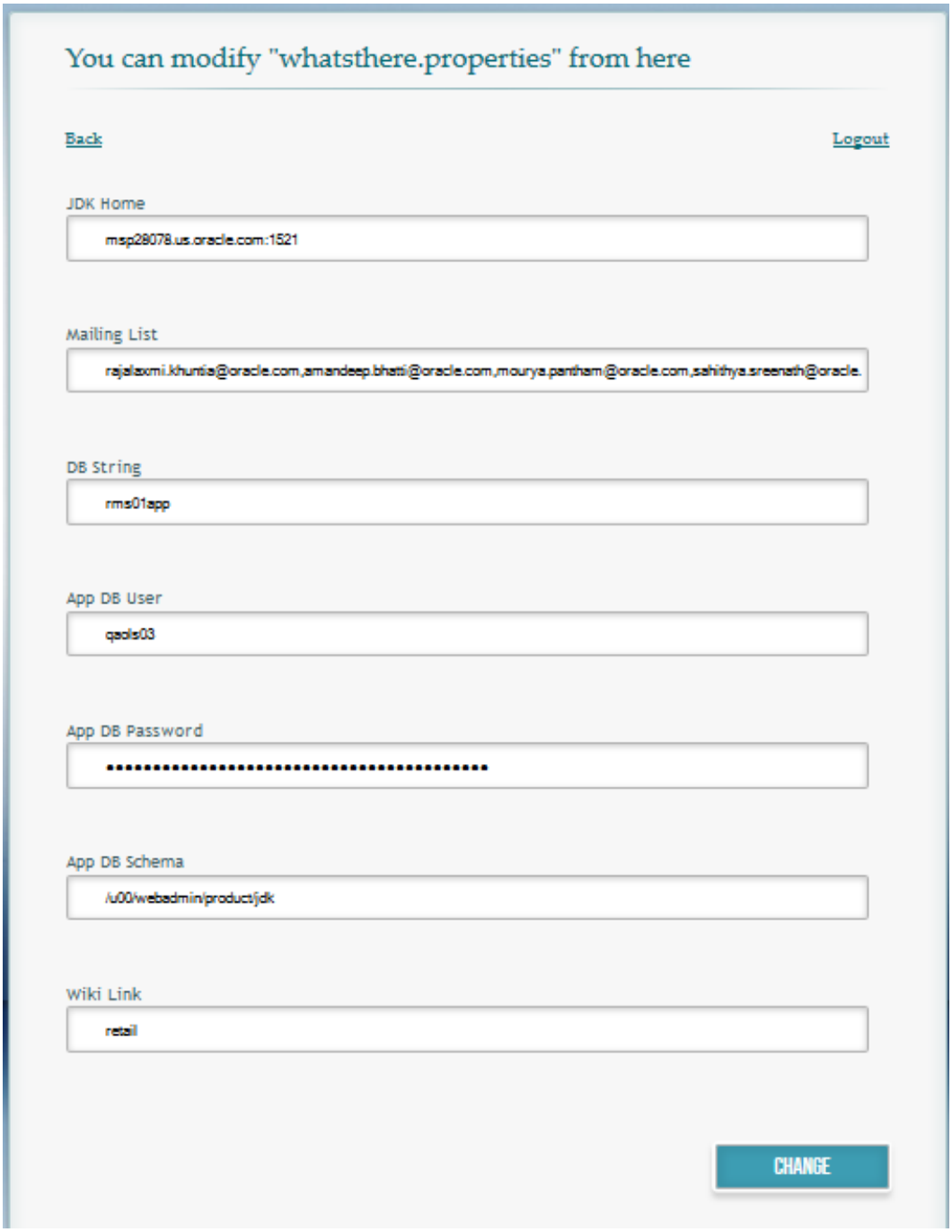


Figure 4.12: Whatsthere properties file

4.4.12 Host issues report

This tool provide facility to generate report containing host which had problem of transformation, Symbolic link issues.

Host Issues

Back Logout

Sr. No	Hostname	Transformation Issue	Symbolic Link Issue	Wlsctrl Issue
1	msp32519.us.oracle.com	yes	No	No
2	msp28117.us.oracle.com	yes	yes	No
3	msp52068.us.oracle.com	yes	yes	yes
4	msp52481.us.oracle.com	yes	No	yes
5	msp32346.us.oracle.com	yes	yes	No
6	msp52069.us.oracle.com	yes	yes	No
7	msp52369.us.oracle.com	yes	yes	No
8	redevlv0075.us.oracle.com	yes	yes	No
9	redevlv0126.us.oracle.com	yes	yes	No
10	msp32348.us.oracle.com	yes	yes	No
11	mspdv184.us.oracle.com	yes	yes	No
12	msp12091.us.oracle.com	yes	yes	yes
13	msp28069.us.oracle.com	yes	yes	yes
14	msp52556.us.oracle.com	yes	yes	yes
15	msp52573.us.oracle.com	Exception	Exception	Exception
16	msp52703.us.oracle.com	yes	yes	yes
17	msp52700.us.oracle.com	yes	yes	yes
18	msp52007.us.oracle.com	yes	yes	yes
19	mspdv130.us.oracle.com	yes	yes	No
20	msp52571.us.oracle.com	yes	yes	No
21	msp52592.us.oracle.com	yes	yes	yes
22	msp52654.us.oracle.com	yes	No	No
23	msp52337.us.oracle.com	yes	yes	No
24	redevlv0168.us.oracle.com	yes	yes	No
25	msp32496.us.oracle.com	yes	yes	No
26	msp52408.us.oracle.com	yes	yes	No
27	msp52467.us.oracle.com	yes	No	No
28	msp52684.us.oracle.com	Exception	Exception	Exception
29	msp52348.us.oracle.com	yes	yes	No
30	msp52215.us.oracle.com	Exception	Exception	Exception
31	msp52379.us.oracle.com	yes	yes	No
32	msp52060.us.oracle.com	yes	yes	yes
33	msp52228.us.oracle.com	yes	yes	No
34	msp52066.us.oracle.com	yes	yes	yes
35	redevlv0124.us.oracle.com	yes	yes	No
36	msp32502.us.oracle.com	yes	yes	No
37	redevlv0072.us.oracle.com	yes	yes	No

Figure 4.13: Host issue report

4.5 Optimizing Weblogic Server Performance

Weblogic Server provide the different set of parameter to optimize the performance.

TCP listen queue size is very important parameter in large product system. To Specify this parameter in Weblogic it used Accept Backlog parameter[7]. The size of this parameter show the queue size for the request from operating system. As per the application load we can set this limit.

To prevent denial of service attacks, Weblogic Server uses the Login Timeout variable[7]. This parameter value suggest the maximum time for establishment of connection.

Chapter 5

Post Deployment Smoke Testing

5.1 Problem

Application release is deploy on weblogic server once the development and testing finish. All application are automatically restart after outage due to restarting of domains. Every application must be up and running properly as per its functionality after every outage. So big problem is how to check thousand of application deployed on thousand of server at regular interval of time?

5.2 Solution

The best solution for above problem is to perform some basic check to make sure all applications are running and configure correctly. But for thousand of application it is difficult to check every application manually. The best way is to automate these change or test so they can be repetitively used many times. This type of post deployment testing is known as smoke testing[4]. The best tool for smoke testing is QTP(Quick Test Professional).

The main work of smoke test should be able to check applications running on Managed server are up or not[4]. If application is not up then what is reason behind it. Test cases are developed using tool interface provided by QTP tool by development team.

5.3 QTP Automation Process

The important component of QTP framework are scripts, test data, function libraries and config files[8].

Preparing the testing Environment

To test retail application first we create testing environment. Here we defined what type of resources are required and create resources. For oracle retail applications we create shared object repositories containing test objects. Object repository can be integrated with other repositories once it is created[4]. To make re-usability of code we created functions for various test need and store it into function libraries[4]. After each iteration of QTP test, a result report is generated every time which require configuration of QTP setting.

Building tests and adding QTP steps to them

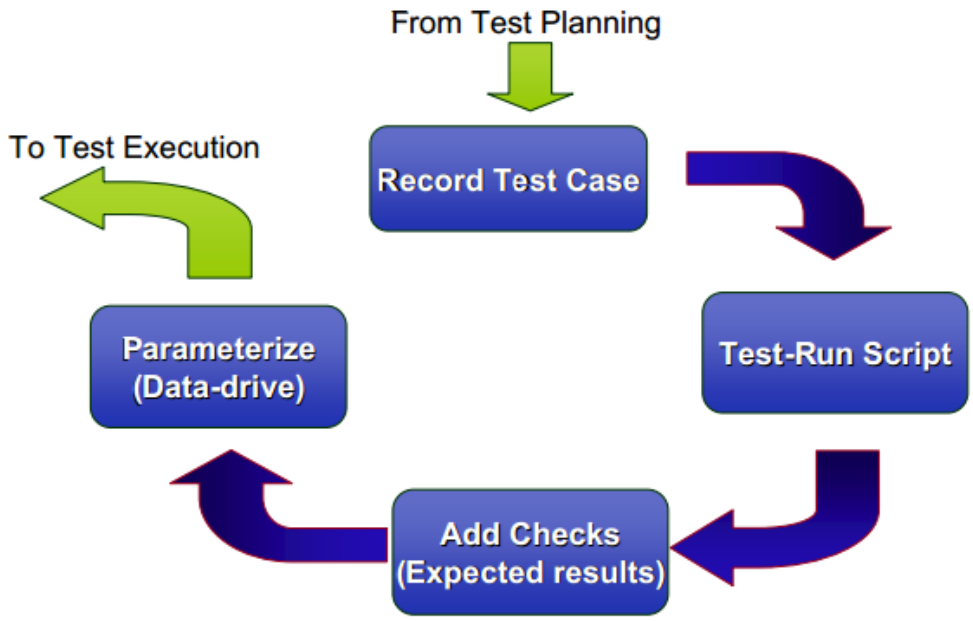


Figure 5.1: Development process of test script with QTP [4]

Once the testing environment is ready, next step is building our tests. First we create testing skeletons and associate our object repositories with the test actions and associate function library with them. For each oracle retail application we create tests to check application is up and working properly or not.The complete process of building test case is shown in below Figure 5.1

Enhancing Test and adding checkpoint

To check each application is functioning correctly or not we insert checkpoint into our

test and search for specific page element and object[4]. Once that element is found we insert multiple set of data and check how application performs the same operations. We add some logical and conditional statement in test case to point out error or match result with recompiled data.

Debugging, running, and analyzing our test

Once testing environment and test case are ready and working correctly we run it to check the behavior of retail application. When test cases are running, QTP open application and apply each step of test to that application with some data. We store result into excel file so later we can now which type of defect we are getting with application.

5.4 Feature of QTP

- QTP supports many add-on with server - client application[9].
- All feature of VB Script and JavaScript are support by QTP to write testing script[9].
- QTP is very easy tool to write, modify and parameterize scripts.
- Database application can also be tested using QTP.
- QTP provide the efficient way to generate reports and results.

5.5 Retail Product Environment Smoke Testing Plan

- Preparation of the input files

  This phase includes the extraction of URL from wiki page (optional), version wise specific excel file containing the important fields of each application.

- Creation of object repository

  Prerequisites: For recording of ADF(Application Development Framework) object we need to change some parameters in application host.

  This phase includes the recording of object for different application (Web, ADF and Forms), renaming Object, Adding explicit object through xpath.

- Creation of Functional libraries

  This phase includes the implementation of scripts which will load the input data, main script which will test applications and capture the output into file.

- Creation of test scripts

  This phase includes the creation of framework which will connect all the resources like object repositories, data files, functional scripts and execute test case.

- Creation of Recovery scenarios

  This phase includes the implementation of recovery scenarios for different types of error capture during recording of objects.

- Run the Batch files

  Creation of script to handle and run batch files in open script.

The structure of test script and object repository is as shown in Figure 5.2.

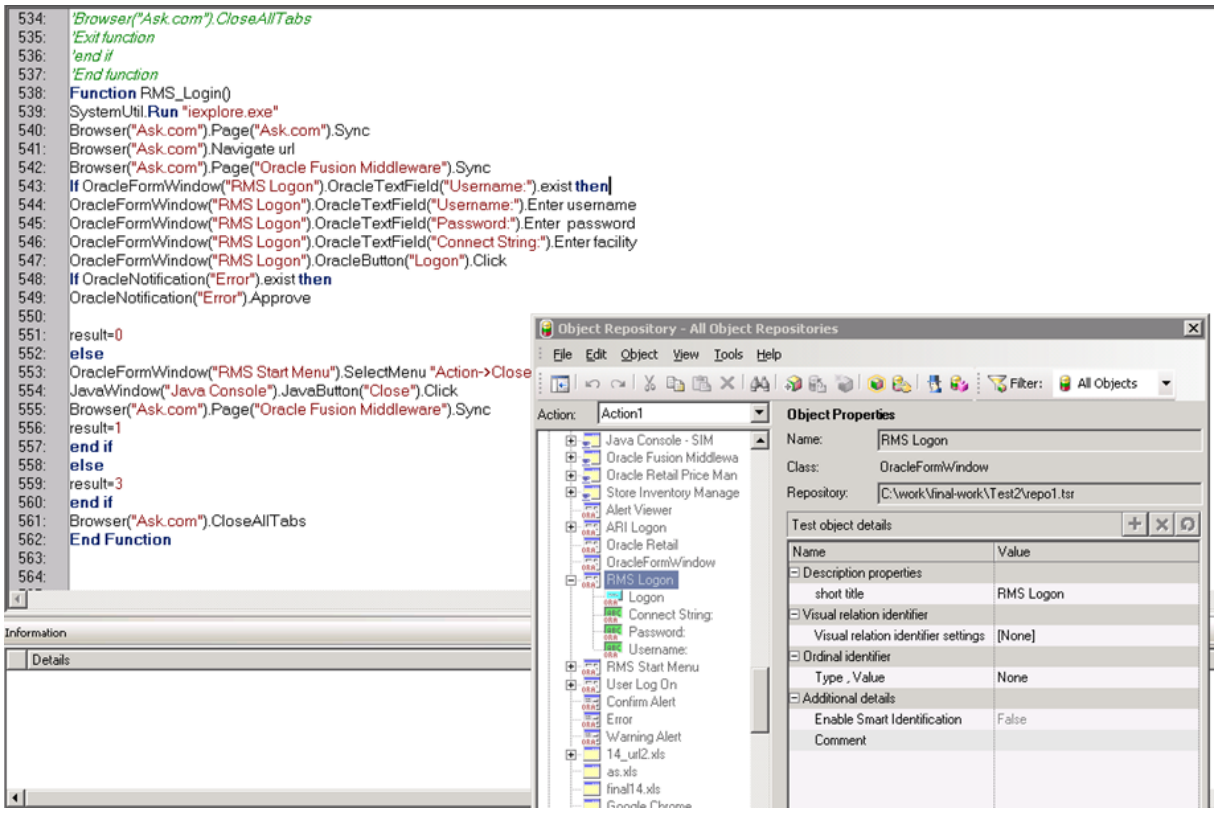
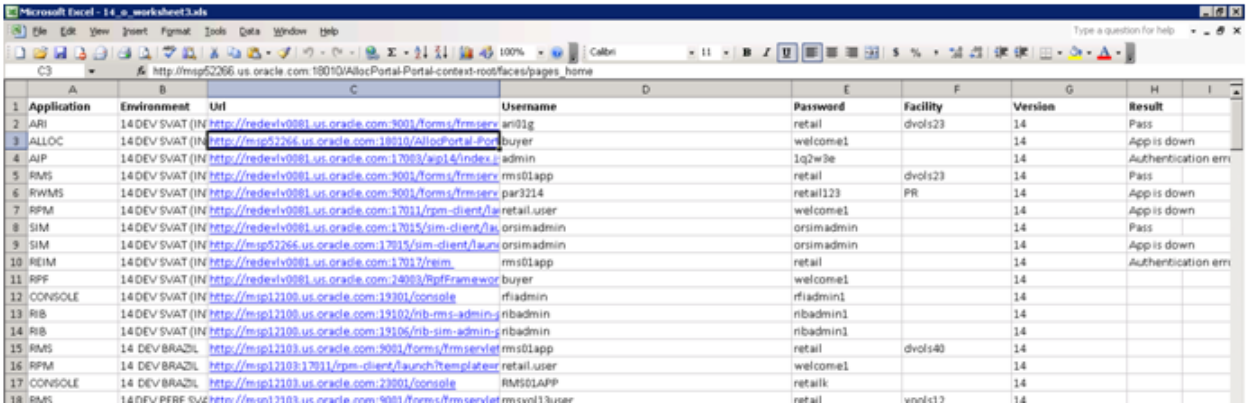


Figure 5.2: QTP Object Repository and Scripts

The Figure 5.3 show the input and output of retail product environment smoke testing



	A	B	C	D	E	F	G	H
1	Application	Environment	Url	Username	Password	Facility	Version	Result
2	ARI	14 DEV SVAT (IN	http://redevlv0081.us.oracle.com:9001/forms/frmserv	ari01g	retail	dvols23	14	Pass
3	ALLOC	14 DEV SVAT (IN	http://msp52266.us.oracle.com:18010/AllocPortal-Port	buyer	welcome1		14	App is down
4	AIP	14 DEV SVAT (IN	http://redevlv0081.us.oracle.com:17003/aip14/index.j	admin	1q2w3e		14	Authentication err
5	RMS	14 DEV SVAT (IN	http://redevlv0081.us.oracle.com:9001/forms/frmserv	rms01app	retail	dvols23	14	Pass
6	RWMS	14 DEV SVAT (IN	http://redevlv0081.us.oracle.com:9001/forms/frmserv	par3214	retail123	PR	14	App is down
7	RPM	14 DEV SVAT (IN	http://redevlv0081.us.oracle.com:17011/rpm-client/la	retail.user	welcome1		14	App is down
8	SIM	14 DEV SVAT (IN	http://redevlv0081.us.oracle.com:17015/sim-client/la	orsimadmin	orsimadmin		14	Pass
9	SIM	14 DEV SVAT (IN	http://msp52266.us.oracle.com:17015/sim-client/laun	orsimadmin	orsimadmin		14	App is down
10	REIM	14 DEV SVAT (IN	http://redevlv0081.us.oracle.com:17017/reim	rms01app	retail		14	Authentication err
11	RPF	14 DEV SVAT (IN	http://redevlv0081.us.oracle.com:24003/RpfFramewor	buyer	welcome1		14	
12	CONSOLE	14 DEV SVAT (IN	http://msp12100.us.oracle.com:19301/console	rfiadmin	rfiadmin1		14	
13	RIB	14 DEV SVAT (IN	http://msp12100.us.oracle.com:19102/rib-rms-admin-s	ribadmin	ribadmin1		14	
14	RIB	14 DEV SVAT (IN	http://msp12100.us.oracle.com:19106/rib-sim-admin-s	ribadmin	ribadmin1		14	
15	RMS	14 DEV BRAZIL	http://msp12103.us.oracle.com:9001/forms/frmservlet	rms01app	retail	dvols40	14	
16	RPM	14 DEV BRAZIL	http://msp12103:17011/rpm-client/launch?templateur	retail.user	welcome1		14	
17	CONSOLE	14 DEV BRAZIL	http://msp12103.us.oracle.com:23001/console	RMS01APP	retailk		14	
18	RMS	14 DEV PERF SVA	http://msp12103.us.oracle.com:9001/forms/frmservlet	rmsvol13user	retail	vpols13	14	

Figure 5.3: Input and output for QTP

Chapter 6

Conclusion

After getting information about each oracle retail product,its work and data flow process i started first phase of my project deployment of Oracle Retail application to weblogic server with maintaining quality of process.The main aim behind this phase was to make complex deployment process easy to increase customer satisfaction. During that time i went through various enhancement for weblogic server handling process. I started working on automation of server task processes to developed transformation application as secondary research of my project.In this phase i developed advanced features in transformation application to handle and monitor weblogic server easily. Final phase include the post deployment smoke testing using QTP to test the retail application environment after new release and outage.

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