Functional Specifications

For

Customer
&
Order Tracking System

Date: 29th Oct 2004
Version 1.0

Submitted by

Patni Computer Systems Ltd.
A SEI-CMM Level 5 Company

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Revision History

Revision	Effective Date	Author	Comments/Revision Details
0.01D	26-Oct-2004	Patni	Version Draft
1.0	29-Oct-04	Patni	Modified document to create users in Oracle Database instead of Microsoft Access Directory Service.

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1 Introduction

This document details out the functionality that will be designed and developed for Customer & Order Tracking System.

1.1 References

Following documents were referred for making this document:

- 01_20_05 Offshore.Requirements.doc
- 01_20_05 Offshore Invite Letter.doc
- Patni-Network Computing Response_V1.1.pdf

1.2 Acronyms used

Following table provides the acronyms used in this document:

Acronym	Remarks
HTML	Hypertext Markup Language
JSP	Java Server Page
NCL	Network Computing Lab
XML	Extensible Markup Language
MVC	Model View Controller Architecture
API	Application Programming Interface

2 Scope of the Document

This document details out the screen layout for each action, and the functionality involved. The document will be used as an essential input to activities in implementation and testing that needs to be developed by the Patni team.

This document is structured into the following sections:

- System Architecture
- Technology Overview
- Development & Deployment Platform
- Data Model
- End User Environment
- System Functionality
- Application Design Consideration

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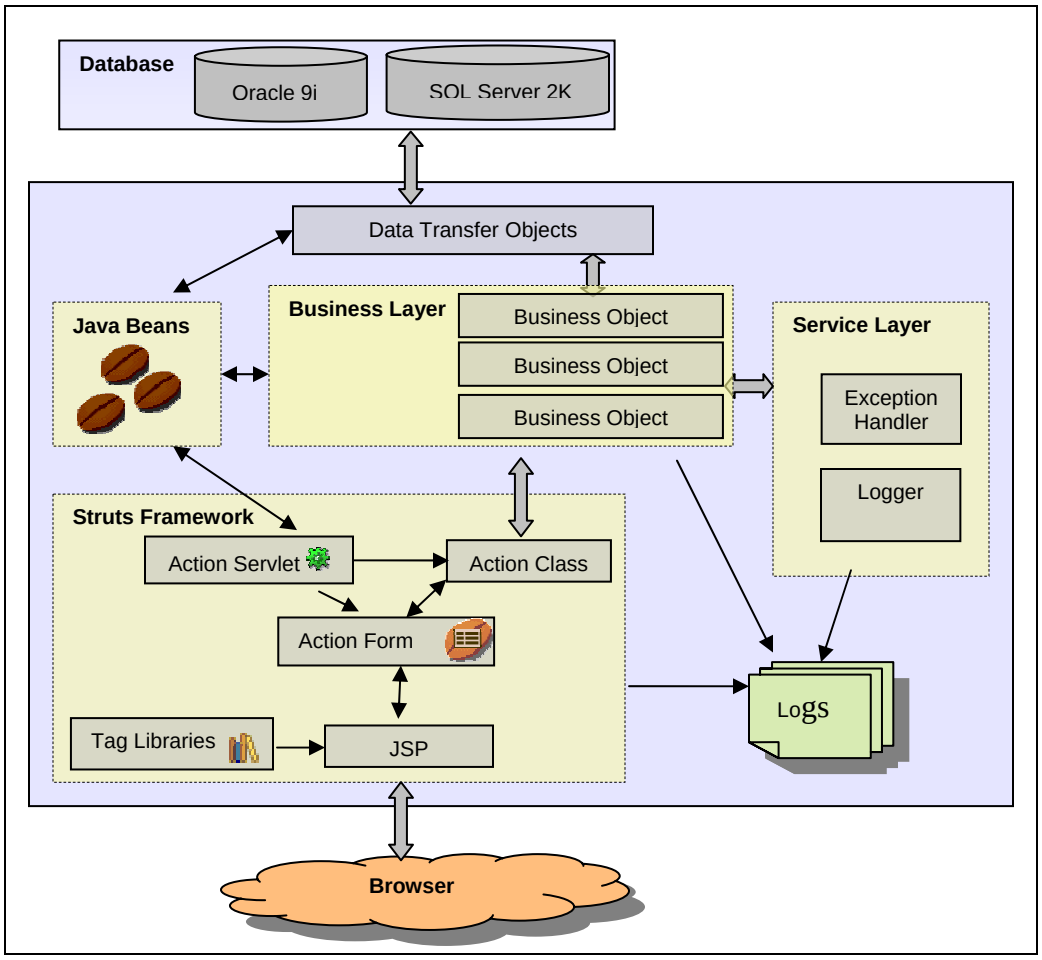
3 System Details

3.1 System Architecture



The application would be based on typical MVC Model 2 architecture implementing Jakarta Struts 1.1 framework as displayed in the diagram above.

The components of the architecture shown above are detailed below: -

- **Struts Framework** – The Apache Struts 1.1 framework would provide the framework for building the application. The various elements in the Struts framework that make up the MVC architecture, are as follows:

  - JSPs - The presentation view would comprise of the JSPs that are essentially using the Struts tags from the Struts tag library.
  - Tag Libraries – The Struts tag libraries would interact with the JSPs for manipulating views and providing the Struts tag support to the view/presentation layer.

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- Action Form - The Action Form would be a one-to-one mapping of the controls on the JSPs. Also, the validations and default settings of controls can be done here.
- Action Class - The actions on the JSP would correspond to the Action Classes. These will handle the request and process the same and with the help from Action Mappings in the struts configuration, the next action would be ascertained.
- Action Servlet - The Controller would be the typical Struts Action Servlet along with the Request Processor. The Controller servlet would be in charge of request processing and creation of any beans used by JSP, as well as deciding, depending on the user's actions, which JSP to forward the request to. The Action Servlet makes use of the struts configuration xml file for ascertaining the mappings of the forms and the mappings and the forwards to which the control is to go.

➢ **Java Beans** – Java Beans provide a minimal footprint, aggregated view of all data elements for a given entity within the enterprise. Individual data elements are retrieved or modified through standard getter and setter methods, respectively to encapsulate users to changes to the underlying implementation of the specific data element. The lightweight beans are the single mechanism by which data flows throughout the tiers of a system. To pass data back and forth between layers of the application we would use these.

➢ **Business Layer** - The Business layer contains business objects that relate to the business rules in the system.
- Business Objects - The Business Objects have all the business rules and business validations in them.
- The business objects shall pass the data back and forth by using the value objects. These value objects will hold the information being passed to and from the database
- The Business Objects shall give a call to the Data Layer and pass the value objects for saving into the database.

➢ **Service Layer** - The Service Layer would handle the servicing requirements of the architecture like Logger, Exception Handling, making database connections etc.
- Exception handler – These objects would handle exceptions occurring in the system and propagate them
- Logger – Logger objects would log errors into a log file. This would be typically a wrapper around log4j, an open-source, free logging framework from the Jakarta Group.

➢ **Data Transfer Layer**– The DT layer would essentially contain the Data Transfer Objects (also called DTO's) objects that would perform the task of sending data to and from the database. It would also ensure that the data is in the right format. The DTO's shall fetch data from the database and make

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updation. Also, the bundling of fetched data into beans and passing them back to the Business Objects is a prerogative of the DTO's.

- **Database** – This would be the Oracle 9i & SQL Server 2000 database on which the data for the application would reside.

3.2 Technology Overview

The following table provides details of technology.

Item	Description
HTML 4.0	For client side display, formatting and presentation
JavaScript 1.2	For pop-up windows, popup error messages and client-side validations
Apache Struts 1.0/1.1	As a framework
JSP 1.2	Abstracts application presentation layer
Java Beans	Abstracts application state and functionality
Java Servlets	Abstracts application behaviour
JDBC	Database Connectivity
ORACLE 9i Rel 2	Back-End Database
SQL Server 2000	Back-End Database
Oracle 9iAS Release 2	Application server
JDK 1.4	Java Version

3.3 Development Environment

The following table provides details of the environment for development

Software Specification
• Windows 2000 Server • ORACLE 9i Application Server • Oracle 9i Rel 2 • SQL Server 2000 • Database Driver () • Jar files: Struts, log4J • IE 6.0 • Netscape 7

3.4 Deployment Environment

The following table provides details of the environment for deployment

Software Specification

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- Windows
- ORACLE 9i Application Server
- Oracle 9i Rel 2
- SQL Server 2000
- Database Driver ()
- Jar files: Struts, log4J
- IE 6
- Netscape 7

3.5 Data Model

The data model details are as provided by NCL. The attachments below detail the data model. “Shipping Schema.txt” refers to the data model of SQL server 2000. “Oracle-schema1.doc” refers to the Oracle data model

"Shipping Schema.txt"

"Oracle Schema.doc"

3.6 End User Environment

The following table provides details of the environment for end-user

Software Specification
• Windows 98 / XP/2000 • IE 6.0 • Netscape 7.0

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4 System Functionality

4.1 Proposed System Functions

In the proposed Customer and Order Tracking System the features available are as shown in the table below:

Function No.	Function Name
4.1.1	Login
4.1.2	Customer Search
4.1.3	View Customer Search Result
4.1.4	Customer Order Summary
4.1.5	Customer Order Details
4.1.6	User Search
4.1.7	User Management
4.1.8	Add New User

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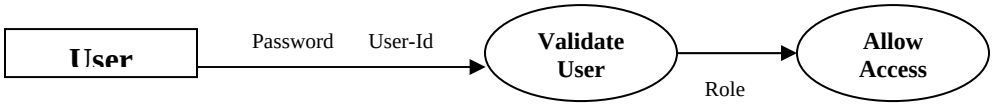
4.1.1 Login

No.	Operation	Description
4.1.1	**Login**	▪ The user enters his/her user-id and password and clicks the login button ▪ The system validates the user-id/password. ▪ If the authentication is unsuccessful, a login failure message is displayed. ▪ On successful login, the user is given access to the application based on his/her role. The user session expires after a default inactivity interval of 20 minutes.



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Screen Details

Control	Type	Description	Validation
User Id	Text Box	Specify the user id	Mandatory
Password	Password	Specify the password	Mandatory
Login	Button	Log into the application	-

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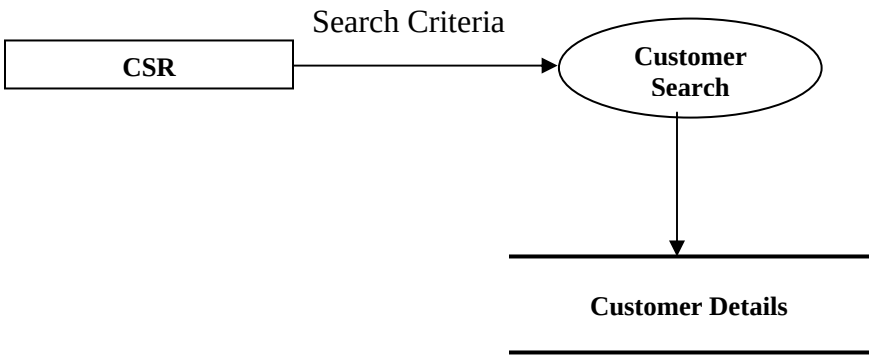
4.1.2 Customer Search

No.	Operation	Description
4.1.2	**Customer Search**	▪ The user enters any of the three search criteria values: ➢ Customer Name ➢ Customer ID ➢ Order ID ▪ The system will perform a wildcard search for the above-mentioned criteria. ▪ If any matching records are found, the results will be displayed else an informative message stating – "No matching records found" will be displayed. ▪ At least one of the above criteria is mandatory for performing the search.



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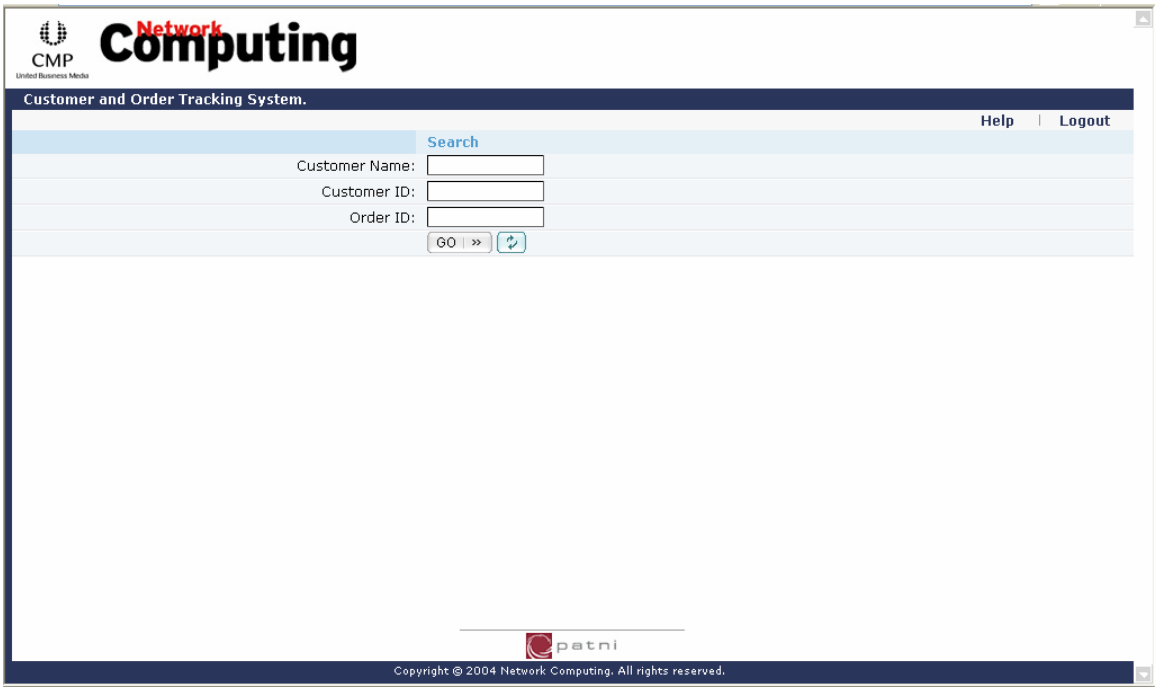
Screen Details



Control	Type	Description	Validation
Customer Name	Textbox	Specify Customer name	Any one of the 3 search criteria should be provided for search
Customer ID	Textbox	Specify Customer ID	
Order ID	Textbox	Specify Order ID	
Go	Button	Perform Search	-
Reset	Button	To reset the search criteria	-

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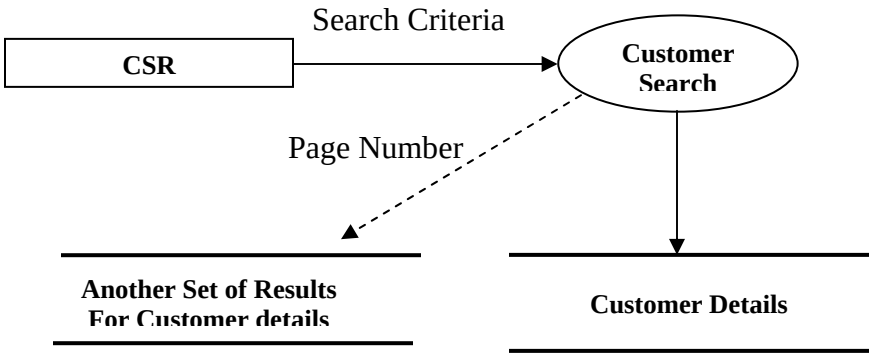
4.1.3 View Customer Search Result

No.	Operation	Description
4.1.3	**View Customer Search Result**	▪ This screen will be shown after the user performs the search activity from section 4.1.2 ▪ The user can view the search results on this screen with the following details: ➢ Customer ID ➢ Customer Name ➢ Address ➢ Contact No ➢ Email ▪ The screen will show the search criteria used for fetching this search result on the top. The user can change these values and perform the retrieval again, for the new condition. ▪ The search results will show only 25 records max at a time. The user can use the **Go To Page** option to navigate to further pages directly, or can use the **Previous**/**Next** links to navigate. ▪ On clicking the Customer ID link, the user will be navigated to the Order Summary screen for the selected customer.



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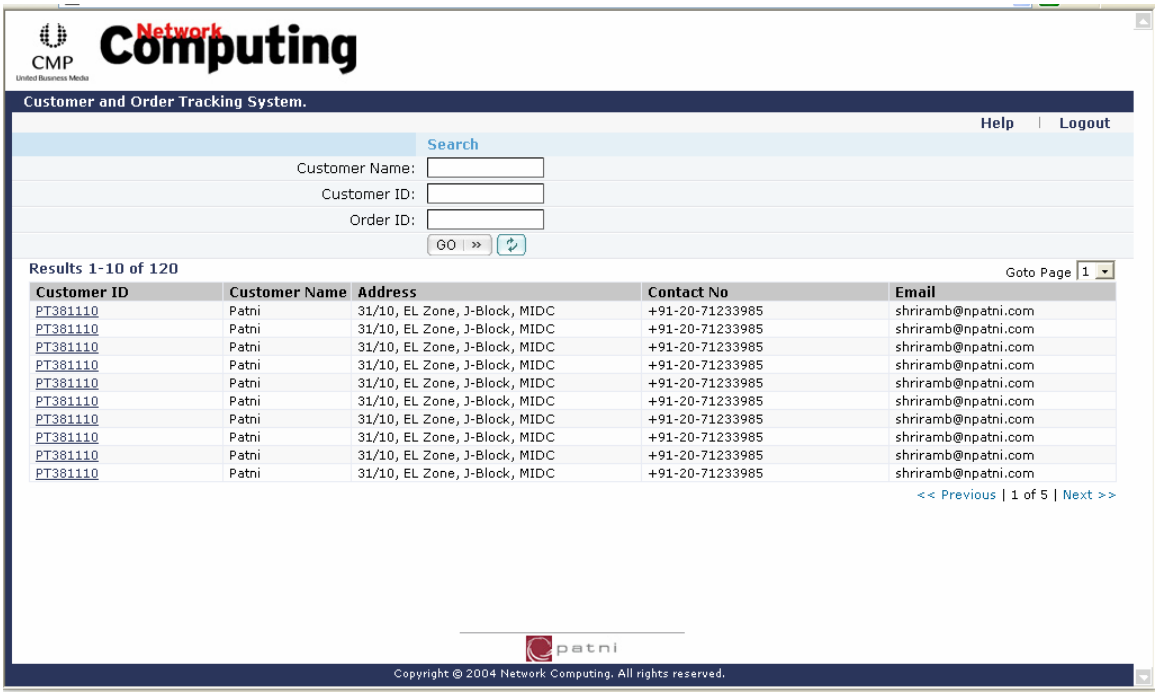
Screen Details



Control	Type	Description	Validation
Customer Name	Textbox	Specify Customer name	Any one of the 3 search criteria should be provided for search
Customer ID	Textbox	Specify Customer ID	
Order ID	Textbox	Specify Order ID	
Go	Button	Perform Search	-
Reset	Button	To reset the search criteria	-
Customer ID	Hyperlink	Link to customer orders	-
Customer Name	Label	Customer name	-
Address	Label	Customer address	-
Contact No	Label	Customer contact no.	-
Email	Label	Customer email	-
Goto Page	Dropdown	Specify Page numbers	-
Previous	Hyperlink	Move to previous set of results	-
Next	Hyperlink	Move to next set of results	-

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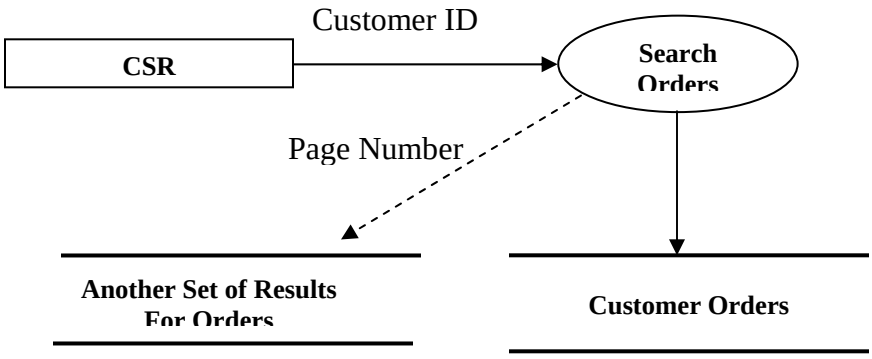
4.1.4 Customer Order Summary

No.	Operation	Description
4.1.4	**Customer Order Summary**	▪ The user can view all the Orders placed by a specific customer, with the following details: ➢ Order Number ➢ Amount ➢ Placed ➢ Shipping Details ▪ The screen will also show the Customer Name and ID on top. ▪ The search results will show only 25 records max at a time. The user can use the **Go To Page** option to navigate to further pages directly, or can use the **Previous/Next** links to navigate. ▪ On clicking the Order Number link, the user will be navigated to the Order Detail screen for the selected order.



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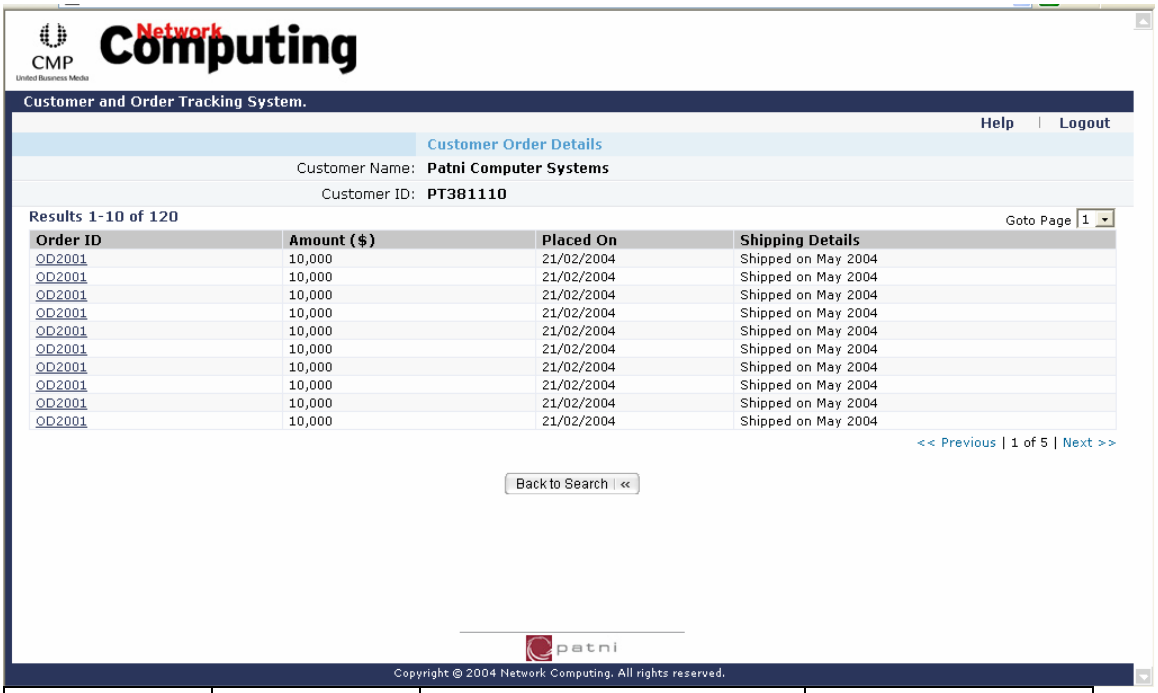
Screen Details



Control	Type	Description	Validation
Customer Name	Label	Customer name	-
Customer ID	Label	Customer ID	-
Order ID	Hyperlink	Specify Order ID	-
Amount	Label	Total amount of order	-
Placed	Label	Status of Order	-
Shipping Details	Label	Shipping details of order	-
Goto Page	Dropdown	Specify Page numbers	-
Previous	Hyperlink	Move to previous set of results	-
Next	Hyperlink	Move to next set of results	-
Back to Search	Button	Takes user back to search screen	-

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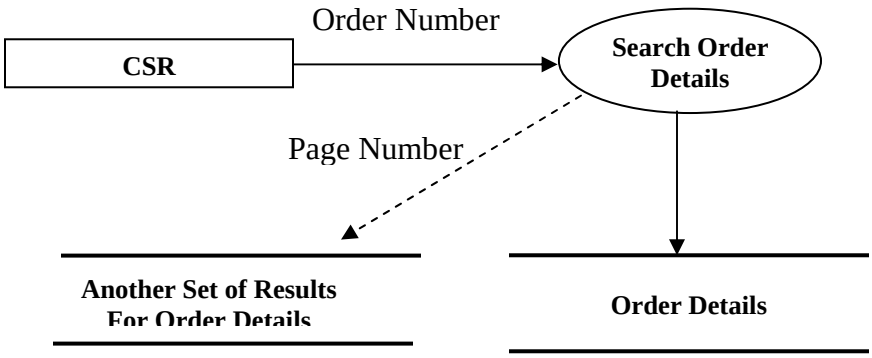
4.1.5 Customer Order Details

No.	Operation	Description
4.1.5	**Customer Order Details**	▪ The user can view all the details of the selected Order, with the following details: ➢ Part Number ➢ Price ▪ The screen will also show the Customer Name, ID & Order number on top. ▪ The search results will show only 25 records max at a time. The user can use the **Go To Page** option to navigate to further pages directly, or can use the **Previous/Next** links to navigate.



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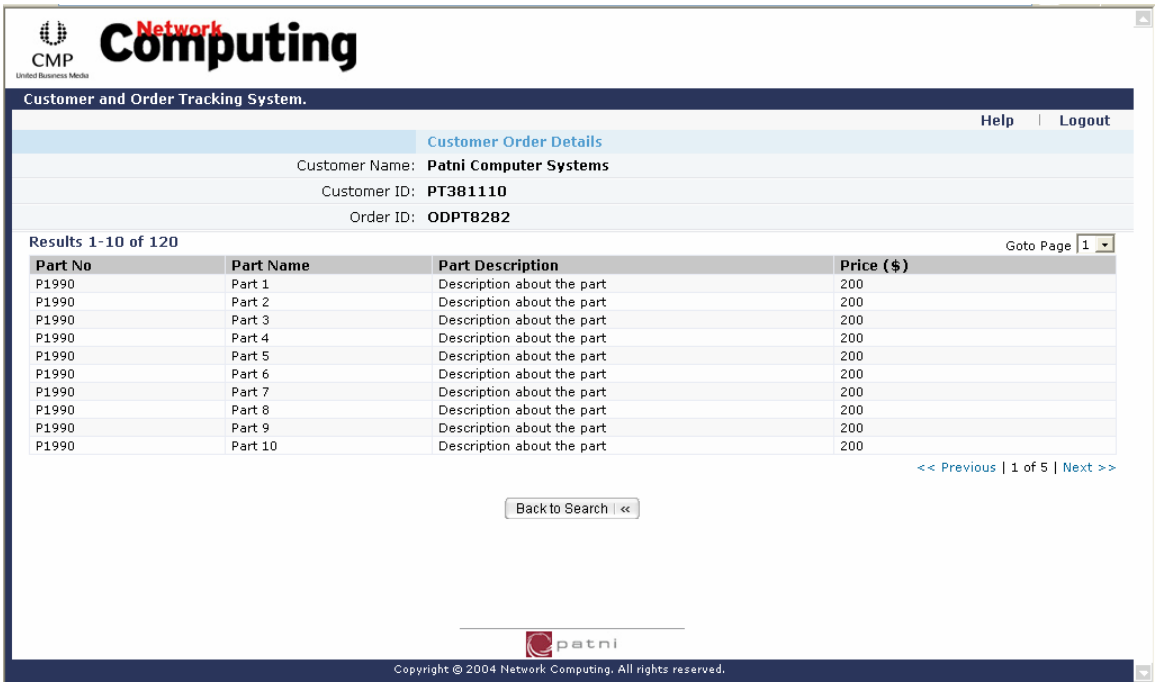
Screen Details



Control	Type	Description	Validation
Customer Name	Label	Customer name	-
Customer ID	Label	Customer ID	-
Order ID	Label	Order ID	-
Part No	Label	Part number	-
Part Name	Label	Part Name	-
Part Description	Label	Part Description	-
Price	Label	Price	-
Goto Page	Dropdown	Specify Page numbers	-
Previous	Hyperlink	Move to previous set of results	-
Next	Hyperlink	Move to next set of results	-
Back to Search	Button	Takes user back to search screen	-

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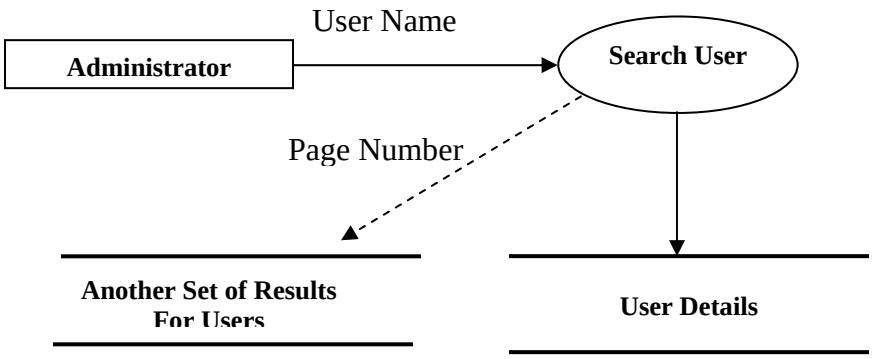
4.1.6 User Search

No.	Operation	Description
4.1.6	**User Search**	▪ The administrator can perform the user search by providing the user name: ▪ The system will perform a wildcard search for the above-mentioned criteria's. ▪ If any matching records are found, the results will be displayed else an informative message stating – "No matching records found" will be displayed.



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Screen Details

Control	Type	Description	Validation
User Name	Textbox	Specify user name	-
Go	Button	Perform Search	-
Reset	Button	To reset the search criteria	-

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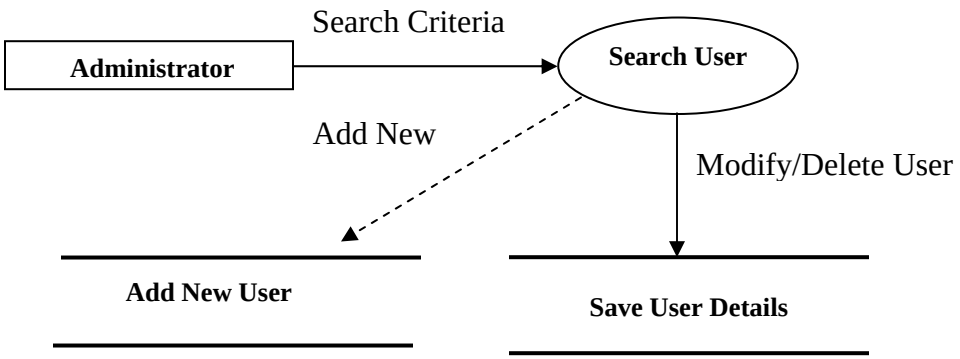
4.1.7 User Management

No.	Operation	Description
4.1.7	**User Details**	▪ The user can view all the users matching the given search criteria, with the following details: ➢ User Name ➢ Password ➢ CSR or Administrator ▪ The screen will also enable the administrator to add/save/delete a user. ▪ On click of Add New button, a new popup window will be opened, to add the new user ▪ On click of the Save button, the user can save the details of selected users. ▪ On click of the Delete button, the user can delete the selected users. ▪ The search results will show only 25 records max at a time. The user can use the **Go To Page** option to navigate to further pages directly, or can use the **Previous/Next** links to navigate.



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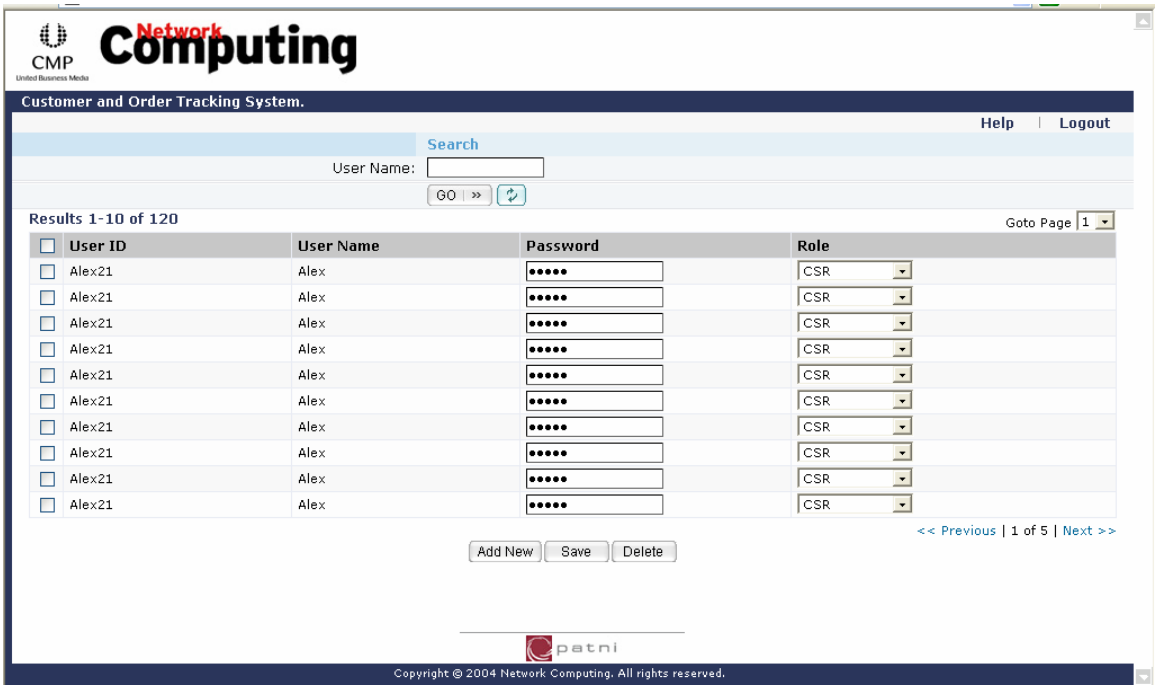
Screen Details



Control	Type	Description	Validation
User Name	Textbox	Specify user name	-
Go	Button	Perform Search	-
Reset	Button	To reset the search criteria	-
Select All	Checkbox	To select all records	-
Select	Checkbox	To select individual record	-
User ID	Label	User ID	-
User Name	Label	User name	-
Password	Password	Specify password	Mandatory
Role	Dropdown	Specify user rights CSR or Administrator	-
Add New	Button	Opens new window for adding a new user	-
Save	Button	Save the changes	Record(s) should be selected
Delete	Button	Delete the selected user(s)	Record(s) should be selected
Goto Page	Dropdown	Specify Page numbers	-
Previous	Hyperlink	Move to previous set of results	-
Next	Hyperlink	Move to next set of results	-

4.1.8 Add New User

No.	Operation	Description

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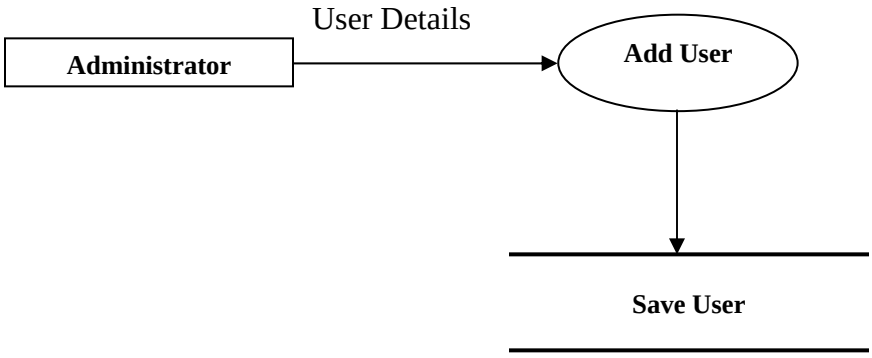
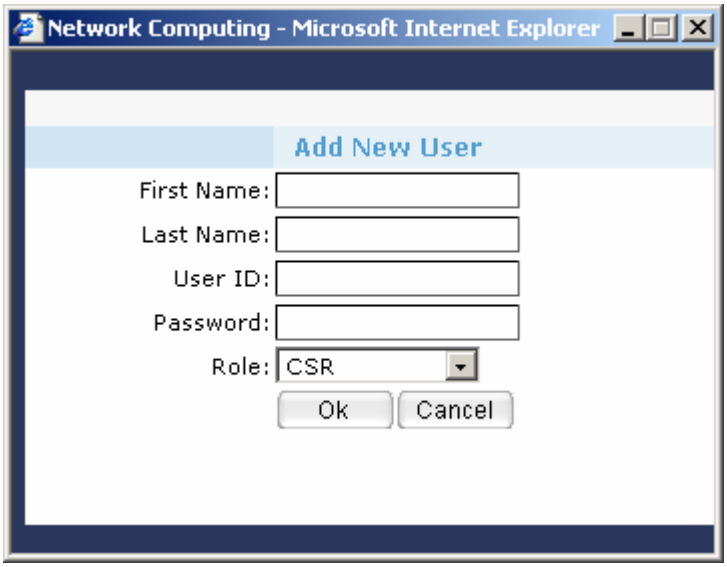
4.1.8	**Add New User**	▪ The administrator can add a new user using this screen.



Screen Details



Control	Type	Description	Validation
First Name	Textbox	Specify User's first name	Mandatory
Last Name	Textbox	Specify User's last name	Mandatory
User ID	Textbox	Specify User ID	Mandatory
Password	Password	Specify Password	Mandatory
Role	Dropdown	Specify user rights CSR or Administrator	Mandatory
OK	Button	Close window after saving user details	-
Cancel	Button	Close screen without saving user details	-

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4.2 Users and Access Rights

Users accessing 'Customer & Order Tracking System' will have roles associated to them.

The system roles identified are as follows: -

Role	Access Rights
CSR	➢ Can search for customers ➢ Can search for customer orders ➢ Can view order details of customers.
Administrator	➢ Can search for users ➢ Can view user access rights ➢ Can modify access rights of users ➢ Can add users to the system ➢ Can delete users from the system

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5 Application Design Considerations

The following are the broad-considerations while designing the application: -

5.1 Help Files

Link will be available for the user to access the help for the application. NCL will provide the necessary documentation file for associating with the link for Help.

5.2 Performance

No performance criteria have been predefined for the application.

5.3 Concurrent number of users

The application will cater to 100 concurrent users at any given time.

5.4 Assumptions

- Users will have access to screens as per the user privileges as described "User and Access Rights" section of this document
- Special characters (like ‘, ”, ~, `) will be allowed to be entered in text boxes and text areas in the system as defined in the text-boxed
- Error messages will be stored centrally and categorized
- Tab sequence will be left-to-right and top-to-bottom
- Validations will be handled both at client side and server side as applicable to the process
- Default focus will be set to the first control on the screen
- The browser should be Java and JavaScript enabled for the application to execute (IE 6.0 & Netscape 7.0)
- The application will cater to browser resolution of 800 * 600
- The status bar will not be used to show any messages
- Back to search button on the result page will take the user to the appropriate blank search screens.
- Patni will follow its own development standards for the application
- Once the user accesses the site, Logout menu will be available for ending the session.
- Shipping detail info will be fetch from the SQL Server.

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