Oracle® Mobile Field Service

Implementation Guide

Release 11*i*

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Oracle Mobile Field Service Implementation Guide, Release 11*i*

Part No. B12005-05

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Oracle Mobile Field Service Implementation Guide, Release 11*i*

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Preface

Intended Audience

Welcome to Release 11*i* of the *Oracle Mobile Field Service Implementation Guide*.

This guide is intended for implementation engineers, system administrators, and any other administrator-level users who are required to implement and/or administer Oracle Mobile Field Service.

How To Use This Guide

This guide contains the information you need to understand and use Oracle Mobile Field Service.

- Chapter 1, "Introduction" provides overviews of Oracle Mobile Field Service and Oracle Mobile Application Foundation and the technology behind them.

- Chapter 2, "Requirements and Dependencies" describes the minimum software and hardware requirements of the Oracle Mobile Field Service applications, along with Oracle Mobile Application Foundation and Oracle Mobile Field Service dependencies.

- Chapter 3, "Implementing Oracle Mobile Application Foundation" describes the procedures you need to perform after you have successfully installed and configured Oracle9*i* Lite.

- Chapter 4, "Implementing Oracle Mobile Field Service" describes how to implement Oracle Mobile Field Service.

- Chapter 5, "Diagnostic Testing" describes how to run diagnostics for the Oracle Mobile Application Foundation and the Oracle Mobile Field Service applications.

- Chapter 6, "Administrative Tasks" describes how to perform the administrative tasks for the Oracle Mobile Application Foundation.

- Appendix A, "Installing Oracle Mobile Field Service" describes how to install Oracle Mobile Field Service/Laptop on a laptop computer and how install Oracle Mobile Field Service/Pocket PC on a Pocket PC. In both cases, this appendix also describes how to launch the application.

- Appendix B, "Item Handling" describes the profiles used to filter system items by category.

- Appendix C, "Signature Capture" describes signature capture of a customer after performing the debrief on the Pocket PC.

- Appendix D, "National Language Support" describes how to use National Language Support (NLS) to change the default language of Oracle Mobile Field Service, English, to the desired language of the user.

- Appendix E, "Troubleshooting" describes how to troubleshoot problems you may have with Oracle Mobile Application Foundation or Oracle Mobile Field Service.

- Appendix F, "Mobile Synchronization Scalability and Performance" provides benchmark results that demonstrate the scalability of the MAF architecture to large numbers of mobile users on inexpensive server hardware running Linux.

- Appendix G, "Customization Support" describes the customization support for the Oracle Mobile Field Service applications. This appendix is intended for system integrators and implementation consultants who want to create custom code for these applications.

See Related Documents on page xi for more Oracle Applications product information.

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Documentation Accessibility

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Accessibility of Code Examples in Documentation

Screen readers may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, some screen readers may not always read a line of text that consists solely of a bracket or brace.

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Structure

1 Introduction
2 Requirements and Dependencies
3 Implementing Oracle Mobile Application Foundation
4 Implementing Oracle Mobile Field Service
5 Diagnostic Testing
6 Administrative Tasks

Related Documents

You can choose from many sources of information, including online documentation, training, and support services, to increase your knowledge and understanding of Oracle Mobile Field Service.

If this guide refers you to other Oracle Applications documentation, use only the Release 11*i* versions of those guides.

- **Online Documentation**

  All Oracle Applications documentation is available online (HTML or PDF). Online help patches are available on Oracle*MetaLink*.

- **Related Documentation**

  Oracle Mobile Field Service shares business and setup information with other Oracle Applications products. Therefore, you may want to refer to other product documentation when you set up and use Oracle Mobile Field Service.

  You can read the documents online by choosing Library from the expandable menu on your HTML help window, by reading from the Oracle Applications Document Library CD included in your media pack, or by using a Web browser with a URL that your system administrator provides.

  If you require printed guides, you can purchase them from the Oracle Store at http://oraclestore.oracle.com.

- **Installation and System Administration**

  Oracle Applications CRM System Administrator's Guide

  This guide describes how to implement the CRM Technology Foundation (JTT) and use its Web-based interface, the System Administrator Console.

  Installing Oracle Applications

  This guide provides instructions for managing the installation of Oracle Applications products. In Release 11*i*, much of the installation process is handled using Oracle Rapid Install, which minimizes the time to install Oracle Applications, the Oracle8 technology stack, and the Oracle8*i* Server technology stack by automating many of the required steps. This guide contains instructions for using Oracle Rapid Install and lists the tasks you need to perform to finish your installation. You should use this guide in conjunction with individual product user's guides and implementation guides.

  Oracle9i Lite Installation and Configuration Guide

  This document provides information regarding the system requirements for Oracle9*i* Lite 5.0 as well as detailed instructions on how to install, upgrade to, and configure Oracle9*i* Lite 5.0.

Oracle Applications System Administrator's Guide

This guide provides planning and reference information for the Oracle Applications System Administrator. It contains information on how to define security, customize menus and online help, and manage concurrent processing.

- **Other Implementation Documentation**

  Oracle Field Service Implementation Guide

  This guide describes how to implement Oracle Field Service.

  Oracle TeleService Implementation Guide

  This guide describes how to implement Oracle Teleservice and Oracle Knowledge Management.

  Oracle Applications Flexfields Guide

  This guide provides flexfields planning, setup and reference information for the Oracle Mobile Field Service implementation team, as well as for users responsible for the ongoing maintenance of Oracle Applications product data. This manual also provides information on creating custom reports on flexfields data.

- **Training and Support**

  Training

  Oracle offers training to help you master Oracle Mobile Field Service. This training is presented through the Oracle Learning Network (OLN), Oracle University's online education utility.

  Support

  From on-site support to central support, our team of experienced professionals provides the help and information you need to keep Oracle Mobile Field Service working for you. This team includes your technical representative, account manager, and Oracle's large staff of consultants and support specialists with expertise in your business area, managing your hardware and software environment.

  OracleMetaLink

  OracleMetaLink is your self-service support connection with web, telephone menu, and e-mail alternatives. Oracle supplies these technologies for your convenience, available 24 hours a day, 7 days a week. With OracleMetaLink, you can obtain information and advice from technical libraries and forums, download patches, download the latest documentation, look at bug details, and create or update TARs. To use OracleMetaLink, register at (http://metalink.oracle.com).

  Alerts: You should check OracleMetaLink alerts before you begin to install or upgrade any of your Oracle Applications. Navigate to the Alerts page as follows: Technical Libraries/ERP Applications/Applications Installation and Upgrade/Alerts.

  Self-Service Toolkit: You may also find information by navigating to the Self-Service Toolkit page as follows: Technical Libraries/ERP Applications/Applications Installation and Upgrade.

Do Not Use Database Tools to Modify Oracle Applications Data

Oracle STRONGLY RECOMMENDS that you never use SQL*Plus, Oracle Data Browser, database triggers, or any other tool to modify Oracle Applications data unless otherwise instructed.

Oracle provides powerful tools you can use to create, store, change, retrieve, and maintain information in an Oracle database. But if you use Oracle tools such as SQL*Plus to modify Oracle Applications data, you risk destroying the integrity of your data and you lose the ability to audit changes to your data.

Because Oracle Applications tables are interrelated, any change you make using an Oracle Applications form can update many tables at once. But when you modify Oracle Applications data using anything other than Oracle Applications, you may change a row in one table without making corresponding changes in related tables. If your tables get out of synchronization with each other, you risk retrieving erroneous information and you risk unpredictable results throughout Oracle Applications.

When you use Oracle Applications to modify your data, Oracle Applications automatically checks that your changes are valid. Oracle Applications also keeps track of who changes information. If you enter information into database tables using database tools, you may store invalid information. You also lose the ability to track who has changed your information because SQL*Plus and other database tools do not keep a record of changes.

1

Introduction

This chapter covers the following topics:

- Overviews
- Technologies
- Field Service Process Flow

Overviews

This section provides overviews for the following:

- Oracle Mobile Application Foundation
- Oracle Field Service
- Oracle Mobile Field Service

Oracle Mobile Application Foundation provides the infrastructure for Oracle Mobile Field Service.

Overview of Oracle Mobile Application Foundation

The Oracle Mobile Application Foundation replaces the Oracle CRM Gateway for Mobile Devices, which supported the Oracle Mobile Field Service applications up to and including release 11.5.7. In release 11.5.8 and later, the Oracle Mobile Application Foundation provides the infrastructure for Oracle Mobile Field Service/Laptop and Oracle Mobile Field Service/Pocket PC.

In the new architecture, the Mobile Gateway Database in the middle tier has been replaced by the Oracle9*i* Lite mobile server. Data replication is restricted to the enterprise and client tiers.

The advantages of the new mobile architecture include the following:

- Simple to install and maintain.
- Integrates with the CRM applications suite.
- Supports multiple platforms.
- More scalable.
- Simplifies user management.
- Supports real-time job assignment. (As soon as a job is assigned, it is available for downloading.)

Overview of Oracle Field Service

The Oracle Field Service suite supports an automated process used by service organizations to manage their field service operations. It assists in the entire service process from taking the customer call to fixing and reporting on the problem at a customer site. For a complete description of Oracle Field Service capabilities, see the *Oracle Field Service Implementation Guide* and "Field Service Process Flow", page 1-12.

The following table lists all the applications in the suite.

Suite Application	Description
Oracle Field Service	This application assists in assigning tasks to service representatives, creating and dispatching daily schedules, monitoring progress, and reporting on material, expense, and labor transactions.
Scheduler	This application enables optimization of scheduling capabilities of tasks to qualified resources. It takes into account driving time, distance, and part availability, and it creates part reservations.
Spares Management	This application is used to provide additional logistics and planning features to manage a service parts inventory in a multi-location environment.
Oracle Mobile Field Service/Laptop	This application is a disconnected application typically installed on a field service representative's laptop to receive his daily schedule and report on progress, material, expense, and labor.
Oracle Mobile Field Service/Pocket PC	This application is a disconnected application for a Pocket PC so a field service representative can receive his daily schedule and report on progress, material, expense, and labor.

The Oracle Mobile Field Service applications integrate with the following application modules:

- Oracle Install Base

  Tracks the products installed at customer site.

- Oracle Application Foundation components

  Oracle Application Foundation components such as Task Manager and Resource Manager manage various operations of Oracle Field Service.

Overview of Oracle Mobile Field Service

Oracle Mobile Field Service converts a portable computer device into a workbench for field service representatives. Oracle Mobile Field Service is the ideal solution for many service markets, such as HVAC, utilities, copier machine maintenance, telecommunications, and office supply industries. This application enables FSRs to print service reports, view or update install base records, and much more. For a

complete description on how field service representatives may use Oracle Mobile Field Service in their work day, see "Field Service Process Flow", page 1-12.

For all Oracle Mobile Field Service applications, the first screen or page describes the schedule for the day for the field service representative. This page or screen can also describe past and future responsibilities. The following graphics depict a typical Engineers Task List screen of Oracle Mobile Field Service/Pocket PC.
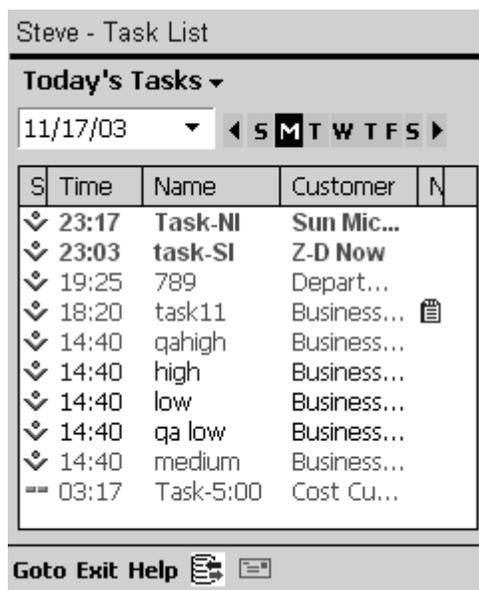
The following graphic depicts a typical Oracle Mobile Field Service/Laptop Calendar page.

Oracle Mobile Field Service Applications Compared

The following table compares the Oracle Mobile Field Service applications by feature.

Feature	Laptop	Pocket PC
View task summary	X	X
Search task/service request	X	X
Create task	X	X
Auto assign tasks	X	X
Task detail/change task status	X	X
Update task (ETA, equip ID)	X	X
Create service request	X	X
Service request details	X	X
Service request resolution	X	X
View contractual details	X	X
View contract notes	X	X

Feature	Laptop	Pocket PC
Create/view notes	X	X
Customer information	X	X
Counter reading	X	X
Labor debrief	X	X
Expense debrief	X	X
Material debrief	X	X
Search parts	X	X
Transfer parts	X	
Create part order	X	X
View part order status	X	X
Service history	X	X
Signature capture		X
Credit card validation	X	X
Flexfield support	X	X
Customization support	X	X
Printing	X	
Messaging and notifications	X	X
View install base at location	X	X
View install base configuration	X	X
Parts requirement tied to a task	X	X

Oracle Mobile Field Service Key Features Described

The following are key features of Oracle Mobile Field Service:

- Service Requests and Tasks, page 1- 5
- Debrief Reporting, page 1- 7
- Spares Management, page 1- 7
- Mobile Customization Support, page 1- 8

Service Requests and Tasks:

The following are functions that you can perform with Oracle Mobile Field Service:

- View and update a service request and task

  Upon initial download, a task has a status of "Assigned". However, as the task progresses, the field service representative can change this status and task type.

- Work on a task

  For a complete description on how field service representatives may complete a task, see "Field Service Process Flow", page 1-12.

- Create a service request and task

  The dispatch center issues the service request and task to the field service representative. On some occasions, a problem may be detected at the customer site that was not recognized by the dispatch center. In this case, the field service representative can create a service request and task.

  Tasks that you create on the mobile computer device are automatically assigned to you, provided that the task type is associated with the "dispatch rule" and the task has a status of "Assigned." You can immediately work on the new task assignment, including entering debriefs.

  If the install base item for a service request is not correct, you are able to change this install base item. Furthermore, you can create a service request for an install base item at the customer location.

- View service history

  Oracle Mobile Field Service applications display service histories for closed or completed service requests, detailing any installed base item and customer information.

  Only closed service requests are downloaded with a service history. Service history information is read-only. If the service request is based on the install base product, then the service history for the install base product is available to view. Otherwise, for that customer or customer location, a history will be displayed.

  The following information is replicated for a service history record:

  - Closed or completed service request

  - Primary contact of this closed service request

  - Product or item of the service request, excluding parent and child records

  - Closed tasks of this service request

  - Closed task assignments of these tasks (role = assignee)

  - Resources of these task assignments

  - Debrief lines belonging these task assignments

    See Appendix B, "Item Handling", page B- 1 for additional details about information replication.

- View customer and product information

  Oracle Mobile Field Service provides you with ample information on the customer, such as address and notes. The application likewise offers a detailed description of the customer product.

- Record counter readings

For customer product, Oracle Mobile Field Service enables you set and reset counter readings for this product if this is desirable. Counter readings are helpful in scheduling maintenance.

- Time zone support

  Oracle Mobile Field Service allows operations across multiple time zones. All the times displayed on the client are local times. All times are stored in the database in server time. Appropriate conversions are made whenever required for storage or display. The SERVER_TIMEZONE_ID and CLIENT_TIMEZONE_ID profiles enable the server and client time zones to be set. If the appropriate profile options for either of these profiles are not defined, then no time zone conversion will occur and all times will be shown in the server time.

Debrief Reporting:

In Oracle Mobile Field Service, a field service representative can report the labor time, materials, and expenses incurred during the completion of a task. For any labor, material, or expense report item that you create and have not synchronized, Oracle Mobile Field Service allows you to delete this report item.

- Material report item

  For a material report, field service representatives specify the activity code and then the desired report item. Next, they specify how many of the desired items they require. To add the desired report item to the material report, the field service representative saves this item description.

  > **Note:** For serial-controlled items, the field service representative can assign the serial number at debrief time for items not having a serial number.

  The following system items are replicated to mobile computer devices:

  - Items used in a service request assigned to or created by the mobile user

  - Item instance items used in a service request assigned to or created by the mobile user

  - Items used in debrief lines

  - Items used in item orders

  - Items present in a good subinventory assigned to the mobile user

  - Items present in the inventory organization specified by the Service: Inventory Validation Organization profile.

- Credit card

  Allows capture of credit card information for payment. Giving the customer the ability to pay by credit card is a convenience for both the customer and the service organization.

- Signature capture

  Oracle Mobile Field Service enables you to obtain a customer's electronic signature for task sign off. The customer's electronic signature indicates that the task is complete and that the customer has accepted your work.

Spares Management:

Oracle Mobile Field Service enables you to manage the parts inventory that you can use in the repair or replacement of parts for a service request. This is done through the following functions:

- Order parts

  Field service representatives can order parts if a job requires them. A part requirement can be tied to a task, and multiple parts can be ordered for each requirement.

- View order status

  Once a part is ordered, a field service representative can access the status of the ordered part.

- Transfer parts

  If a part is needed but not available from an easily accessible inventory, the desired part can be transferred to a more convenient inventory. This process may prove to be more efficient than ordering the part.

- Category set limiting

  A field service organization can have a large number of system items related to an inventory organization. However, field service representatives only use a portion of these items. To improve synchronization performance and to reduce the size of the downloaded data set, you can filter the system by category before downloading the data set to the field service representative.

Mobile Customization Support:

Mobile customization enables you to tailor Oracle Mobile Field Service functionality to fit your business needs and practices. Customization is done through flexfields and the Software Development Kit (SDK). See the *Customization Support for Oracle Mobile Field Service* document or Oracle*MetaLink* Note: 248063.1 to learn more about the SDK. See Appendix G, "Customization Support", page G- 1 for additional information about customization support.

- Flexfields

  Descriptive flexfields provide customization capabilities in an Oracle Mobile Field Service application. This satisfies various user needs without having to reprogram the application.

  Users can also use context-sensitive flexfields when the information stored by the application depends on other values users enter in other parts of the form.

  The following table describes the types of flexfields you can find in Oracle Mobile Field Service:

Flexfield	Laptop	Pocket PC
Service request	read/write	read/write
Task	read/write	read/write
Debrief header	read/write	read/write
Debrief line	read/write	read/write
Parts requirement	NA	read/write
Item	read	read
Product	read	read
Customer	read	read

See "Flexfield Support", page G- 1 to learn how to set up descriptive flexfields in an Oracle Mobile Field Service application.

- SDK

  Through the use of the SDK, you can build custom screens for Oracle Mobile Field Service.

Technologies

Oracle Mobile Field Service/Laptop and Oracle Mobile Field Service/Pocket PC are built upon the Oracle Mobile Application Foundation and Oracle Mobile Field Service technologies.

Oracle Mobile Application Foundation Technology

The following components form the Oracle Mobile Application Foundation:

- The mobile server repository in the Applications database.
- The Oracle9*i* Lite mobile server.
- For a laptop computer, a local Oracle9*i* Lite database and a local Web-to-Go server.
- For a Pocket PC, a local Oracle9*i* Lite database and mSync clients.

The following illustration summarizes the relationships between these components. In the illustration, the Oracle Applications 11*i* database (including application logic, business events, mobile administration schema, base tables, and conflict resolution) resides on the enterprise tier. The enterprise tier is connected to the mobile server on the middle tier. Synchronizations are used to connect the mobile server on the middle tier to the components on the client tier. On the client tier, laptop clients have a local Oracle9*i* Lite database and a local Web-to-Go server, while Pocket PC clients have a local Oracle9*i* Lite database and mSync clients on each Pocket PC.
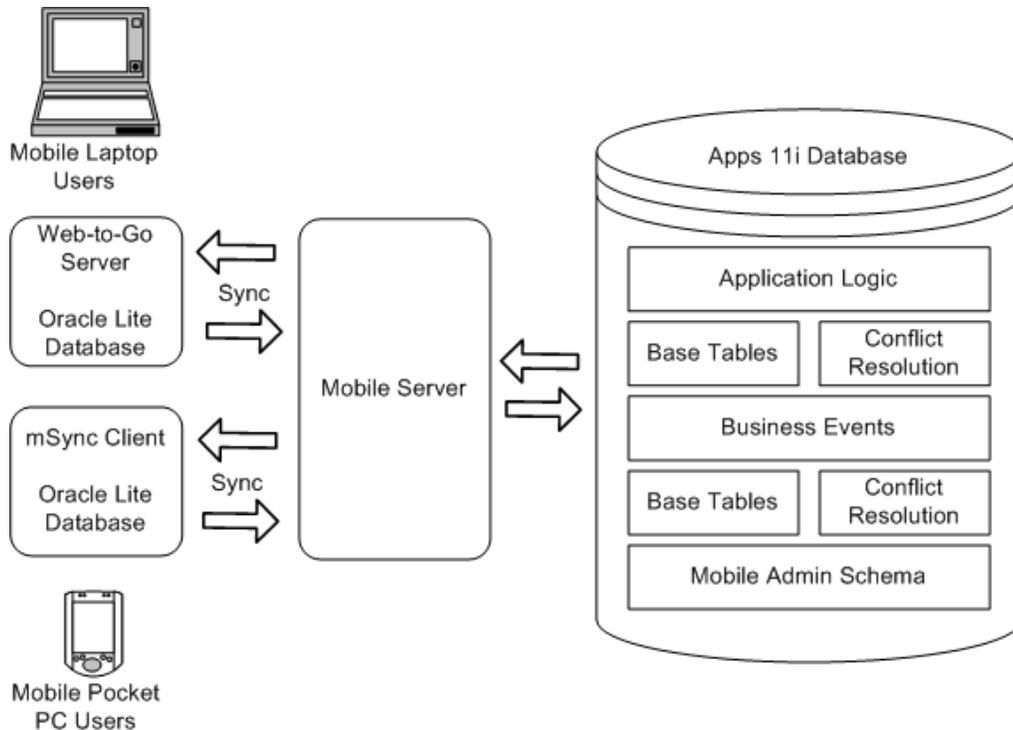
Oracle Mobile Application Foundation Deployment

In the sample deployment illustrated below, there are three middle-tier application Web servers. Server1-host is dedicated to offline (mobile) users, while Server2-host and Server3-host are dedicated to online users.

The process flow begins on the client tier, where each user (whether mobile or online) opens an HTTP connection to the middle-tier servers through a load balancer/proxy. However, the offline user connects using the following URL:

```
http://<ip-address>:<port number>/webtogo
```

URLs which specify "webtogo" are processed by the mobile server operating in standalone mode on Server1-host. URLs from the online PC applications (which do not contain webtogo) are processed by an Apache/Jserv module on either Server2-host or Server3-host.

Finally, the three Web servers on the middle tier connect to an Applications 11*i* database on the enterprise tier.

See Appendix F, "Mobile Synchronization Scalability and Performance", page F- 1 for additional information.
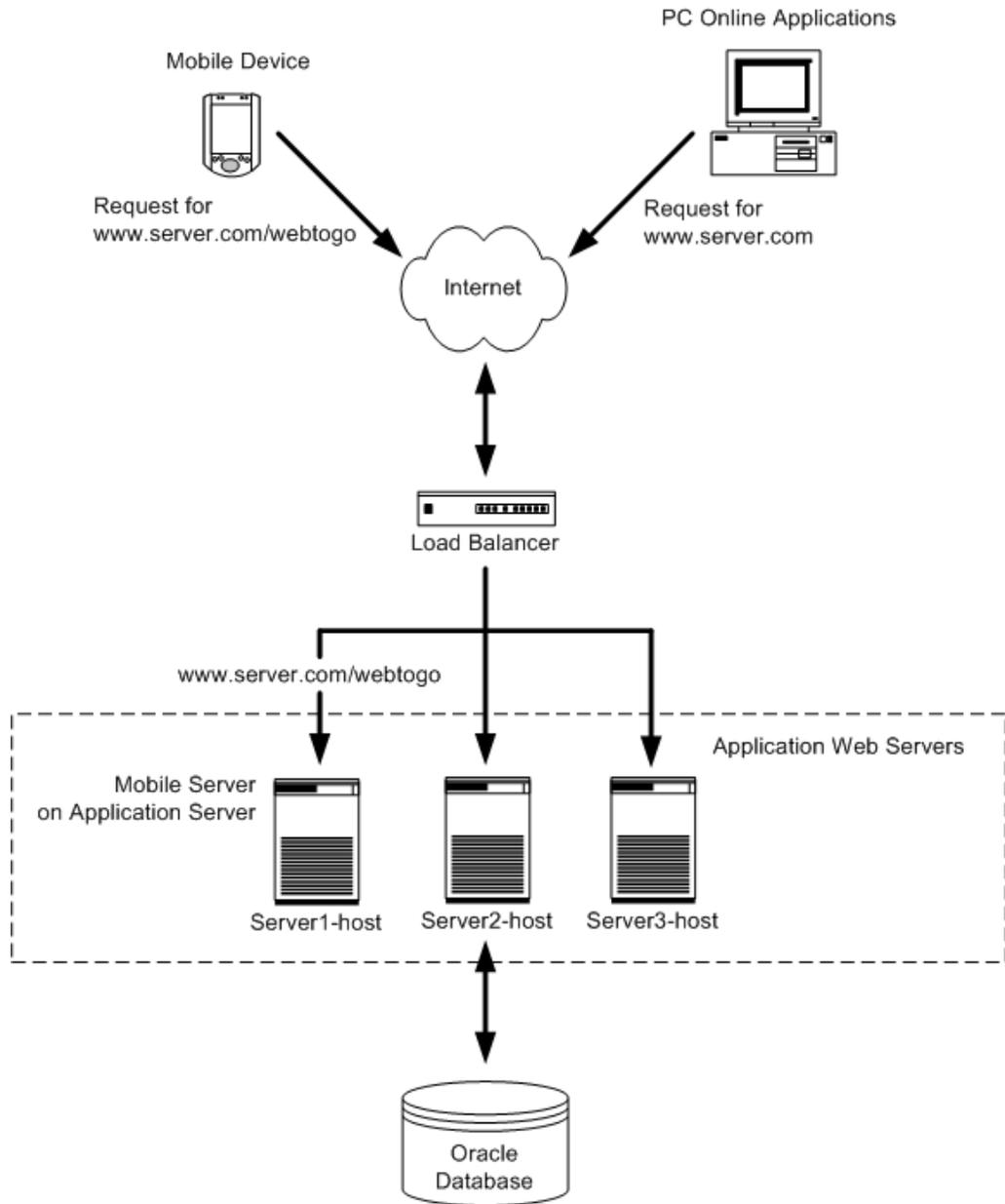
> **Note:** The Oracle9*i* Lite mobile server is configured to run in standalone mode, independent of the Oracle9*i* Application Server or Apache installation. In this mode, Oracle9*i* Lite uses its own HTTP listener.

Oracle Mobile Field Service Technology

Oracle Mobile Field Service comes in two types—laptop and Pocket PC. Oracle Mobile Field Service/Laptop and Oracle Mobile Field Service/Pocket PC are complete job-management applications that help field service representatives (FSRs) complete their daily responsibilities. These applications are part of the Oracle Field Service set of applications. Oracle Field Service in turn is part of the Oracle E-Business Suite, an integrated set of applications designed to work together.

Oracle Mobile Field Service applications synchronize with the enterprise system in order to receive new data, such as tasks and service requests. Synchronization is also important to send changes made in the application, such as newly created report items and updated task statuses.

The enterprise system is based on the Oracle11*i* database. Information is exchanged between the mobile computer device and the enterprise system via the mobile server. The laptop computer uses the Web-to-Go server and the Oracle9*i* Lite database to send and receive information from the mobile server. The Pocket PC uses the mSync Client and the Oracle9*i* Lite database to send and receive information from the mobile server. Oracle Mobile Field Service technology is graphically represented in the figure found in "Oracle Mobile Application Foundation Technology", page 1- 9 .

Field Service Process Flow

This section describes the typical field office work flow (Oracle Field Service) and the typical field service representative work flow (Oracle Mobile Field Service).

The Oracle Field Service Process

The field service process has six basic steps. This process starts with the creation of a service request. The service request has at least one task, which is completed by a field service representative in the field. After completing a task, the field service representative electronically submits the task details to the home office, which is now able to create an invoice. The field service process is driven by the service request status and task status changes, electronically exchanged between the field service representative and home office. The basic steps of the field service process are described in the following table:

Steps	Description
1. Service request intake and validation	There are several ways to report a request for service. The customer can create the request by using the Web, Computer Telephone Integration (CTI), e-mail, or by dialing into a call center where an agent takes the call. A service request can also be created by a field service representative through a project or by a sales order (installation of a product). When the request is received, the customer, product and contract are checked in the validation step.
2. Service request screening and qualification	After a service request is created, it is screened to avoid a field visit. The service request is analyzed by a support agent who searches the knowledge base for a solution. As an outcome of this process, the request may be closed, a part may be shipped to the customer, or the customer might ship the part for in-house repair. When a field visit is required, a task is created based on the problem description and action needed to resolve the problem. A definition for the parts necessary to resolve the task is also given. The creation of a task for installation or maintenance of customer product can be created automatically from a service contract or sales order.

Steps	Description
3. Service request planning and dispatch	The tasks must be scheduled, assigned, and dispatched to the field service representative. The scheduling of the tasks is done based on various constraints such as skills, location, availability, and required parts. When the tasks assignment is done, the task or schedule is dispatched to the service representative. The service representative receives notification and progress on the task is monitored.
4. Service request delivery and reporting	Once field service representatives receive an assigned task or schedule, they can begin service at the customer site. They report on progress, materials used and recovered, expenses, and labor time. Additionally, they can record counter readings and describe how the problem was resolved. It might be necessary to create new tasks or service requests if the field service representative cannot help the customer immediately. They can recover the product or product part for repair. All the reported information is used for billing the customer. Reporting on materials-used also results in automatic replenishment of the inventory in the service vehicle.
5. Service request monitoring	Unforeseeable events can occur that impact the progress of a task. In this case, escalations can be raised to indicate this situation.
6. Service request completion and billing	When field service representatives complete a task, they sets the task status as COMPLETE and then move on to the next task. The task information is checked by an agent at the home office for any service contract coverage and then an invoice is created. The inventories, sub-inventories, and install base are all updated.

Note: Depending on your service organization, the above steps can be separated or combined.

The component in the step, Service request delivery and reporting, page 1-13, can be applied using Oracle Mobile Field Service. In this application, the schedule is received by the field service representative on his mobile computer device. He then records counter readings and reports on material used, labor time, and expenses incurred.

Various Orders of Task Completion

Field service representatives can complete their scheduled tasks under different scenarios.

Scenario 1: Complete Scheduled Tasks in Pre-determined Order

In this scenario, the field service representative works on one job at a time and conforms to the dispatched schedule. For instance, the following tasks may be assigned to a field service representative:

- task 1: 8:00 Installation at Customer A

- task 2: 9:00 Repair on-site at Customer B

- task 3: 10:00 Installation at Customer C

The field service representative first needs to finish task 1 before going on to task 2. He needs to follow the pre-defined order of the dispatcher. The field service representative cannot reschedule tasks, but he can reject a task.

This setup gives the dispatcher control over the daily schedule of the field service representative. The dispatcher sets up the tasks, including what time and where the field service representative is to be at all times.

Scenario 2: Complete One Scheduled Task at a Time in Any Order

In this scenario, the field service representative works on a single job at a time and need not conform to the dispatched schedule.

Scenario 3: Complete Multiple Scheduled Tasks in Any Order

In this scenario, the field service representative works on multiple jobs at a time and does not conform to the dispatched schedule.

Scenario 2 and Scenario 3 gives field service representatives control over their day. The dispatcher sends the tasks and locations to the field service representative, and the service representative then decides when to perform each task. This scenario works well in an environment where each task requires only one field service representative. For example, if a field service representative has a dental appointment, he can arrange the time he wants to be at the customer site near his dentist. The field service representative is expected to complete all the tasks on the day they were assigned. If he is unable to complete a scheduled task, he can reject it and then the dispatcher will re-schedule the task for the next day.

Avoiding Multiple Task Assignments

If you send more than one field service representative to perform a task, ensure that you schedule only one task assignment at a time, because multiple task assignments can lead to conflicts. For example, suppose you have a task that requires three field service representatives. You set up the task and then you send it to all three representatives. It now appears on their schedules. However, if one of your field service representatives changes the time for his task, that would affect the schedules of the other two representatives. To avoid this, you must create three tasks, one for each representative.

2

Requirements and Dependencies

This chapter covers the following topics:

- Overview
- Minimum Software Requirements
- Minimum Hardware Requirements
- Oracle Mobile Application Foundation Dependencies
- Oracle Mobile Field Service Installation Dependencies

Overview

This chapter describes the minimum software and hardware requirements of the Oracle Mobile Field Service applications along with Oracle Mobile Application Foundation and Oracle Mobile Field Service dependencies.

Minimum Software Requirements

This section describes the minimum software requirements necessary to run Oracle Mobile Field Service on various platforms.

Enterprise Server

Refer to Installing Oracle Applications for the overall software requirements of the Oracle E-Business Suite.

Laptop Client

- Operating system: Windows NT 4.0 (Service Pack 5), Windows 2000, Windows XP, or Windows ME
- Browser: Microsoft Internet Explorer, version 6.0 or later. This is the recommended browser for all HTML-based applications.

Pocket PC Client

This section describes the minimum software requirements for the Pocket PC and the PC used during the install.

Desktop PC (Pocket PC Desktop)

- Operating system: Windows NT 4.0 (Service Pack 5), Windows 2000, Windows XP, or Windows ME
- ActiveSync 3.6 and above

    Pocket PC

- Operating system: Pocket PC 2002, Pocket PC 2003

Minimum Hardware Requirements

Enterprise Server

Refer to Installing Oracle Applications for overall hardware requirements for the E-Business Suite.

Refer to Appendix G, "Customization Support", page G- 1 for a description of the mobile server.

Laptop Client

- Computer: IBM-compatible with Pentium III processor
- Disk space: 1 GB
- Monitor: 256 color display
- RAM: 128 MB
- Other requirements: serial port, Internet connection, mouse or pointer device

Pocket PC Client

This section describes the minimum hardware requirements for the Pocket PC and the PC used during the install.

Desktop PC

- Computer: IBM-compatible with Pentium I processor
- Disk space: 50 MB free space
- Monitor: 256 color display
- RAM: 32 MB
- Other requirements: serial port, Internet connection, mouse or pointer device

    Pocket PC

- Pocket PC 2002, Pocket PC 2003 OS-supporting devices
- Processor supported:
    - ARM
    - XScale
- 16 MB RAM

Oracle Mobile Application Foundation Dependencies

Before setting up the Oracle Mobile Application Foundation, there are several other Oracle applications or components which you must first install and implement. For details about these dependencies, please refer to Oracle*MetaLink* Note 241425.1.

Oracle Mobile Field Service Installation Dependencies

Before setting up Oracle Mobile Field Service, there are several other Oracle applications or components which you must first install and implement. Refer to the Mobile Applications: Patch Information document (Note 241425.1 on Oracle*MetaLink*) for details on the correct patches, dependencies, and the like.

3

Implementing Oracle Mobile Application Foundation

This chapter covers the following topics:

- Overview
- Installing and Configuring Oracle9i Lite
- Setting Profile Options for Mobile Application Foundation
- Installing Mobile Patches
- Scheduling Concurrent Programs for MAF

Overview

This chapter describes the following procedures, which are required to successfully implement the Oracle Mobile Application Foundation:

- Installing and Configuring Oracle9*i* Lite
- Setting Profile Options for Mobile Application Foundation
- Installing Mobile Patches
- Scheduling Concurrent Programs for MAF

Installing and Configuring Oracle9i Lite

Using Oracle Applications 11.5.10

You must install and configure Oracle9*i* Lite release 5.0.2 before implementing Oracle Mobile Application Foundation. Oracle9*i* Lite is not included in the 11.5.10 Oracle Applications Rapid Install, so you must install Oracle9*i* Lite before proceeding to the Oracle Mobile Application Foundation implementation steps. For installation details, please see the appropriate platform-specific version of the *Oracle9i Lite Installation and Configuration Guide Release 5.0.2*.

If you are upgrading from a previous version of Oracle Applications, then you must apply the correct patch(es) for the Oracle Mobile Application Foundation before installing and configuring Oracle9*i* Lite.

The correct sequence is as follows:

1. If you are not using the 11.5.10 Oracle Applications Rapid Install or 11.5.10 maintenance pack, then apply the 11.5.10 Mobile Application Foundation mini-pack.

2. Install and configure Oracle9*i* Lite release 5.0.2, then install Oracle9*i* Lite patches 5.0.2.9, 5.0.2.9a, 5.0.2.9b, and 5.0.2.9c.

3. Implement the Oracle Mobile Application Foundation.

Using Oracle Applications 11.5.9

You must install and configure Oracle9*i* Lite release 5.0.2 before implementing Oracle Mobile Application Foundation. Oracle9*i* Lite is not included in the 11.5.9 Oracle Applications Rapid Install, so you must install Oracle9*i* Lite before proceeding to the Oracle Mobile Application Foundation implementation steps. For installation details, please see the appropriate platform-specific version of the *Oracle9i Lite Installation and Configuration Guide Release 5.0.2*.

If you are upgrading from a previous version of Oracle Applications, then you must apply the correct patch(es) for the Oracle Mobile Application Foundation before installing and configuring Oracle9*i* Lite.

The correct sequence is as follows:

1. Apply the latest Oracle Mobile Field Service patch available on Oracle*MetaLink*.

    Refer to Oracle*MetaLink* Note 241425.1.

2. Install and configure Oracle9*i* Lite release 5.0.2, then install Oracle9*i* Lite patches 5.0.2.9, 5.0.2.9a, 5.0.2.9b, and 5.0.2.9c.

3. Implement the Oracle Mobile Application Foundation.

Installing and Configuring the Mobile Server

This section provides steps to install and configure Oracle9*i* Lite in standalone mode. This procedure installs and configures the mobile server on the application server that processes connections from mobile users.

Steps to Run the Environment Variable

Complete the following steps to set all relevant environment variables to implement the Oracle Mobile Application Foundation.

1. Log in to the operating system as "applmgr" (the owner of the Applications file system) and set the environment. Execute the script APPSORA.env (UNIX) or envshell.cmd (Windows) to source the applications environment. For additional information, see "Setting the Environment" in the AD Utilities Reference Guide.

2. Copy, edit, and execute the appropriate file.

    For UNIX:

    1. Copy the file $ASG_TOP/admin/template/asgovars_ux.env to $OAH_TOP/admin/scripts/asgovars.env.

    2. Edit $ASG_TOP/admin/scripts/asgovars_ux.env to set the values for the following variables:

        ```
        ORACLE_HOME = [location of the Oracle9i Lite installation]
        ```

```
JAVA13_HOME = [location of the JDK 1.3.1 installation]


TNS_ADMIN = [location of TNSnames.ora file]
```

3. Execute the following command:

    ```
    . $OAH_TOP/admin/scripts/asgovars.env
    ```

    For Windows:

4. Copy $ASG_TOP\admin\template\asgoavars_nt.env to
    $OAH_TOP\admin\scripts\asgovars.cmd.

5. Edit $OAH_TOP\admin\scripts\asgovars.cmd to set the values for the
    following variables:

    ```
    set ORACLE_HOME=[location of the Oracle9i Lite installation]


    set JAVA13_HOME=[location of the JDK 1.3.1 installation]


    set TNS_ADMIN=[location of the TNSnames.ora file]
    ```

6. Execute the following command:

    ```
    $OAH_TOP\admin\scripts\asgovars.cmd
    ```

> **Note:** The script asgoavars.env (UNIX) or asgoavars.cmd
> (Windows) sets all environment variables for a mobile
> implementation.

Steps to Install Oracle9i Lite Mobile Server

> **Note:** If you have already installed the Oracle database or iAS on this
> server, make sure to install Oracle9*i* Lite in a different directory. This will
> make the Oracle9*i* Lite mobile server run in standalone mode, without
> interfering with any other Oracle software installed on that server.

1. Use the Oracle9*i* Lite universal installer to install Oracle9*i* Lite.

    Follow the appropriate platform-specific steps in the "Installing the Mobile Server"
    section of the *Oracle9i Lite Installation and Configuration Guide Release 5.0.2*.

2. Select **Mobile Server** in the Installation Types dialog box.

    This will configure the mobile server to use the Net9 libraries to connect to the
    database. Select **Yes** when asked to install the repository.

3. In the Mobile Server Repository Database Information dialog box, enter the
    information for the Oracle Applications 11*i* database.

This is where the mobile server repository will be located. Enter the service name and not the SID.

4. When prompted for the name of the schema for the mobile server repository, enter `MOBILEADMIN`.

   You do not need to install the Mobile Development Kit or the SDK Demos.

   This completes the installation of the mobile server.

5. Edit the webtogo.ora file in ORACLE_HOME/mobile/server/bin for the port number.

   Port numbers less than or equal to 1023 will be able to run only as root. For UNIX systems, you should use port numbers greater than 1023 if you will be starting the mobile server by users other than root.

6. To enable mobile user authentication from the Oracle Applications instance, edit the webtogo.ora file to contain the following lines:

   1. In the [webtogo] section, add:

      ```
      JAVA_OPTION= -Djava.Compiler=NONE
      ```

   2. In the [EXTERNAL_AUTHENTICATION] section, add:

      ```
      CLASS=oracle.apps.asg.setup.AsgAuthenticator
      ```

   3. If using Windows, then add:

      ```
      USE_SYSTEM_CLASSPATH = YES
      ```

      - The option `-Djava.compiler=NONE` turns the Just In Time compiler (JIT) off. This is the recommended setting.
      - `[EXTERNAL_AUTHENTICATION]` is a literal string, not a variable.

   The webtogo.ora file should contain only one line specifying JAVA_OPTION. Additional parameters should be added to the same line and separated by a space.

7. Start the Web-to-Go listener by running the script webtogo from $ORACLE_HOME/mobile/server/bin.

8. Using a Web browser, connect to the mobile server by navigating to the following URL:

   ```
   http://<mobile_server_machine_name:port_number>/webtogo/
   startup
   ```

   Log in using the user ID mobileadmin and the associated password. (This is the password that you entered while installing Oracle9*i* Lite using the universal installer.)

   If the login is successful, then the Menu Option screen opens.

9. Click **Save** to save the encrypted versions of both the mobile server repository user name and password in the webtogo.ora file.

    This also activates the Mobile Server Auto Start feature.

Starting and Stopping the Mobile Server

Steps

Complete the following steps to start the mobile server:

1. Source asgovars.env script.

2. Execute the following:

    ```
    ${JAVA13_HOME}/bin/java -Xms256M -Xmx256M -XX:
    +DisableExplicitGC -XX:NewSize=128m -XX:MaxNewSize=128m
    -XX:SurvivorRatio=2 oracle.lite.web.JupServer mode=server
    config-file=/slot01/appmgr/m1159csmora/9iolite/mobile/server/
    bin/webtogo.ora &
    ```

    - where -

    `config-file = <>` specifies the location of webtogo.ora including the full path.

    `-Xms256M` and `-Xmx256M` specifies that the initial and max heap size be set to 256MB. You can increase the memory size to a higher value, such as 1GB, based on your system load. The rest of the parameters tune garbage collection.

Use the following to stop the mobile server:

```
kill -9 pid
```

where `pid` is the process ID of Java process(es).

> **Note:** If you are using a Windows NT server, you can terminate the webtogo process from the Task Manager.

Installing the Oracle9i Lite Mobile Server on Additional Servers

You can set up the mobile server on additional servers to support a greater number of mobile users and distribute the load. In this case, the first server that you set up is your primary mobile server. Any additional servers are secondary servers. For more details on the definition of primary and secondary servers, please refer to "Manually Publishing Mobile Applications", page E- 3 .

For each additional server you want to set up, follow the steps in "Installing and Configuring the Mobile Server", page 3- 2 . When prompted to install the repository, specify **NO**. The mobile server repository has already been installed as part of the primary server setup.

> **Note:** In the webtogo.ora file, the parameter `TRACE_FILE_POOL_SIZE` is set to 5 by default. Under this default setting, only five users will synchronize when trace is enabled. Therefore, when trace is enabled, please set the parameter to a large number like 1000.

Setting Profile Options for Mobile Application Foundation

Set the following profile options for ASG and JTM. The table indicates the profile name, a brief description, the level at which to be set, and the recommended value (the default value).

Profile	Description	Level to be Set	Recommended (Default) Value
ASG: Mobile Admin Schema Password	The password for the mobile server repository schema.	Site	Refer to "Installing and Configuring Oracle9i Lite", page 3-1 . This profile option is to be changed whenever the mobile server repository password is changed.
JTM: Mobile Applications Enabled	This setting dictates if the mobile applications will be used.	Application (Oracle Mobile Application Foundation)	**Y** if you want to enable mobile applications. **N** will disable updates to mobile devices.
ASG: Dormancy Period	The number of days earlier than the last synchronization for which all data will be purged in the dirty queue.	Site, Application, or User	Default is 999999.
ASG: Purge User Count	The number of users that will be processed in each run of the purge program.	Site	Default is 100.

Installing Mobile Patches

No manual steps are required to run the installationMgr. Applying this patch will publish the applications automatically. Previously published applications in the Oracle9*i* Lite repository are cleaned up

> **Note:** Compile the system items key flexfield before you apply the mobile patches.

Cleaning Up the Oracle9*i* Lite Repository

The cleanup of the Oracle9*i* Lite repository is critical before applying the patch, otherwise mobile applications may become corrupt. Perform the following step to execute the cleanup:

java oracle.apps.asg.setup.AsgCleanup asgcleanup.dat <ORACLE_HOME> where ORACLE_HOME is the ORACLE_HOME for Oracle9*i* Lite mobile server. This command is necessary to back up the applications published in the mobile server repository.

If the ORACLE_HOME variable is not set to the OLITE home in the session, then input the second parameter with the full path. For example:

```
java oracle.apps.asg.setup.AsgCleanup

asgcleanup.dat /u01/code/mobmdg01/9iolite
```

Applying the Required Oracle Mobile Field Service Patch

Refer to Oracle*MetaLink* Note 241425.1 for the recommended patch list.

If you are implementing Oracle Mobile Field Service/Laptop, then apply the required Oracle Mobile Field Service Laptop patch using the AD Patch utility.

If you are implementing Oracle Mobile Field Service/Pocket PC, then apply the required Oracle Mobile Field Service Handhelds patch using the AD Patch utility.

Refer to the patch readme's for instructions on how to install the mobile patches.

The following post-install steps apply only if the Oracle Mobile Field Service application and database tiers are configured on different servers, and mobile server is running in the application tier.

1. Make sure you have applied the C and D drivers in the database tier.

2. Make sure you have applied the C driver in the application tier.

3. Run the D-driver of the mobile patch once again in the application tier, or run the InstallationMgr Java command in the application tier. The syntax is provided in "Manually Publishing Mobile Applications", page E- 3 . Please note that you do not have to source the asgovars_ux.env script before running InstallationMgr command.

Scheduling Concurrent Programs for MAF

Schedule the concurrent programs listed in the following table for the Oracle Mobile Application Foundation. For instructions on how to set up concurrent programs, refer to the Oracle Applications System Administrator's Guide.

Name	Description	Default (Recommended) Schedule
PROCESSES UPLOADED MOBILE DATA	Processes uploaded mobile data and applies it to the enterprise system.	Every 30 seconds.
MANAGES MOBILE USERS	Creates or removes mobile users automatically based on assigned mobile responsibilities.	Every 1 hour.
JTM MASTER CONCURRENT PROGRAM	The JTM master concurrent program, which runs all concurrent jobs registered by mobile applications.	TRANSACTION: every 5 mins. LOOKUP: every 30 mins. INVENTORY: once a day. PURGE: as often as required. Default is set to once per month. See "Setting Profile Options for Mobile Application Foundation", page 3- 6 .

4

Implementing Oracle Mobile Field Service

This chapter covers the following topics:

- Overview
- Installing the Mobile Application Patches
- Confirming Required Enterprise Setups
- Setting Profile Options for Oracle Mobile Field Service
- Scheduling Concurrent Programs for Oracle Mobile Field Service
- Creating and Managing Mobile Users
- Testing the Mobile Field Service Application Implementation

Overview

This chapter describes how to implement Oracle Mobile Field Service. The following are the basic steps needed to do this:

1. Verify dependencies.

   See "Oracle Mobile Field Service Installation Dependencies".

2. Implement the Mobile Application Foundation.

   See Chapter 3, "Implementing Oracle Mobile Application Foundation", page 3- 1 .

3. Publish the mobile application.

   See "Installing the Mobile Application Patches", page 4- 2 .

4. Confirm the required enterprise setups.

   See "Confirming Required Enterprise Setups", page 4- 2 .

5. Set profile options for Oracle Mobile Field Service.

   See "Setting Profile Options for Oracle Mobile Field Service", page 4- 4 .

6. Schedule concurrent programs.

   See "Scheduling Concurrent Programs for Oracle Mobile Field Service", page 4-14 .

7. Create and manage mobile users.

   See "Creating and Managing Mobile Users", page 4-15 .

8. Test the mobile application implementation.

See "Testing the Mobile Field Service Application Implementation", page 4-15 .

Installing the Mobile Application Patches

Refer to the *Mobile Applications: Patch Information* document (Note 241425.1 on Oracle*MetaLink*) for details on the correct patches, dependencies, and the like.

Depending on the Oracle Mobile Field Service application you are implementing, install the required patches using the AD utility.

Complete the following steps to install the required patches for the desired Oracle Mobile Field Service application:

1. Shutdown the Oracle9*i* Lite mobile server.

2. Install the required patches using the AD utility.

3. Start the Oracle9*i* Lite mobile server.

4. After applying the patch, ensure that the JTM concurrent programs are running.

    See "Scheduling Concurrent Programs for Oracle Mobile Field Service", page 4-14 .

Confirming Required Enterprise Setups

This section describes how to set up the enterprise-side system so certain mobile features work properly on the mobile computer device.

Setting Up Service Requests:

The following table lists the service request setups that can be used to create, view, and update tasks in an Oracle Mobile Field Service application.

Component	Required or Optional
Service Request Statuses	Required
Service Request Severities	Required
Service Request Types	Required
Service Request Urgencies	Optional
Problem Codes	Optional
Resolution Codes	Optional
Service Request Templates	Optional

For details, refer to the *Oracle TeleService Implementation Guide*.

Linking Service Request Statuses to Service Request Types

Service request statuses have to be linked to service request types. Use the following procedure:

1. Switch to the Field Service Manager responsibility.

2. Navigate to `Field Service Setup > Service Requests > Request Types`.

3. Click to select a service request type from the table.

4. Click **Related Statuses**.

5. In the form, link Service Request Statuses to the Service Request Type.

6. Click **Save**.

7. To finish, close the form.

For more information, refer to the *Oracle TeleService Implementation Guide*.

Setting Up Tasks:

The following table lists the task setups that can be used to create, view, and update tasks in an Oracle Mobile Field Service application.

Component	Required or Optional
Task Statuses	Required
Task Status Transitions	Required
Task Types	Required
Task Priorities	Required
Task Templates	Optional

Set up the required components listed above. For details, refer to the *Oracle Field Service Implementation Guide* for these Field Service-specific setups.

- The task status that is selected during service-task-creation is the one from the Field Service profiles: CSF: Default In Planning Status. You cannot change this.

- When a service task is created, there will be no task assignment automatically created.

Setting Up Oracle Field Service Report:

Oracle Field Service Report is part of the Oracle Field Service application and is used to report all material, expense, and labor transactions. From the Oracle Field Service Report screen, you can update inventory, install base, and charges.

When material, expense, and labor transactions are recorded in one of the Oracle Mobile Field Service applications, all transactions are shown and updated to inventory, install base, and charges from the Oracle Field Service Report.

Ensure that Oracle Field Service Report is fully implemented and set up as described in the Oracle Field Service Implementation Guide.

Setting Up Install Base:

This procedure is only required if you are using Install Base. If so, Install Base should be set up to support Install Base updates when doing material transactions in an Oracle

Mobile Field Service application. This should be set up after performing the setup steps necessary for debrief reporting.

An Oracle Mobile Field Service application supports two scenarios that affect Install Base:

- Removing a part

- Installing a new part

The following procedures are required to set up Install Base:

- Setting up system items for Install Base transactions

- Setting up Install Base profile options

- Removing and installing parts in Oracle Mobile Field Service/Laptop

See Appendix B, "Item Handling", page B- 1 for complete details.

> **Note:** Changing the install base replication profiles during operation becomes effective when the value is changed. Information will not be changed with retroactive effect based on the profiles.

Setting Up Counters:

The set up of counters is only required if you are using Install Base. The following are the setups for counters that must be performed in order to report counter readings in an Oracle Mobile Field Service application:

- Counters

- Counter groups

- Counter properties

- Miscellaneous reading types

Refer to the *Oracle TeleService Implementation Guide*.

> **Note:** Only counters of type REGULAR are supported by the Oracle Mobile Field Service applications. Both counter values and counter property values can be entered in an Oracle Mobile Field Service application.

Setting Up Messaging:

Confirm that Messaging has been successfully installed and implemented.

Setting Profile Options for Oracle Mobile Field Service

In the Forms application is where you set profiles.

The following sections describe Oracle Mobile Field Service features that are controlled through profile settings.

Setting Up Profile Options for Oracle Mobile Field Service/Laptop:

For Oracle Mobile Field Service/Laptop, set the profile options listed in the following table. The table indicates the profile option name, a brief description, and available options.

Profile	Description	Options
JTM: Mobile Applications Enabled	Set the profile at the Oracle Field Service/Laptop responsibility level to **Y**. Only after setting the profile value can hooks/business events be enabled.	**Y** for "Yes" or **N** for "No."
JTM: Application Conflict Rule	Enables Oracle Mobile Field Service/Laptop to handle updates to the database from the laptop computer.	**Client wins**: changes made by the mobile user are always applied to the enterprise database. No timestamp checking is done. **Timestamp**: changes made by the mobile user are applied to the enterprise database if the record has not been modified since the mobile user last synchronized. If the record has been modified in the meanwhile, then the mobile user's change is not applied and becomes a deferred transaction.
JTM: Number of Previously Closed Service Requests	Defines the number of previously closed service requests to be replicated. It is recommended that you send down three to five service requests. Do not set very high values because of laptop computer limitations on data set size.	Use **0** to disable the history functionality. The default is **0**.
JTM: Synchronous Service History Collection	Sets how previously closed service requests are collected (performance is a factor).	**Yes** for synchronous history collection. **No** for asynchronous history collection. The default is **No**.
JTM: Enable Credit Card Functionality	Hides credit card information by means of a profile.	**Yes** or **No**.
CSL: Item Category Filter	Use to filter item categories.	
CSL: Item Category Set Filter	Use to filter item category sets.	
CSL: Number of IB Items at Location	The number of install base items to be downloaded for a given customer location.	Can be **0** to any number. The default is **0**.

Profile	Description	Options
CSL: Replicate Install Base Product Children	For a service request that has an install base item, this profile allows the children of the install base item to be viewed in Oracle Mobile Field Service/Laptop. The user can view the install base item and any children of the install base item, or one hierarchal level below the install base item.	**Yes** or **No**.
CSL: Replicate Install Base Product Parents	For a service request that has an install base item, this profile allows the parents of the install base item to be viewed in Oracle Mobile Field Service/Laptop. The user can view the install base item and the parents of the install base item, or one hierarchal level above the install base item.	**Yes** or **No**.
CSF: Business Process	Enables you to specify the order of task completion for the field service representative.	Option **1** indicates that the field service representative is to work on one task at a time in a fixed order (ordered by scheduled start date).
		Option **2** indicates that the field service representative can only work on one task, but in any order. Only the task with status set to 'Working' can be updated. If no task is set to 'Working', the status of all open task can be updated. This way the field service representative can select a task by setting its status to 'Working'.
		Option **3** indicates that the field service representative can work on any number of tasks in any order. The working flag will be ignored in this scenario.
CSF: Update Planned/Scheduled Times Allowed	Specifies whether field service representatives are allowed to change the planned or scheduled times of the tasks they have received on the laptop computer.	**Yes** or **No**.

Profile	Description	Options
CSF: Prevent Overlapping Debrief Lines	Setting the profile to **No** does not allow overlapping labor lines within a task. Therefore, a field service representative cannot have two labor lines for the same time period. The second labor line starts only after the first one has finished.	**Yes** or **No**, with **No** as the default. When the profile option is set to **Yes**, the technician is allowed to enter overlapping actual start and end times for various assignments for a given day. When the profile option is set to **No**, the technician does not have the ability to enter the overlapping times.
CSL: Time Reasonability Check Apply	Reasonability checks to ensure that valid inputs are entered during debrief and task creation on the mobile computer device. The following reasonability checks need to be added to Oracle Mobile Field Service/Laptop to insure quality of data entered by the technician: - Values entered for Planned Start date/time must be greater than Incident date/time on SR header for create/update of task - Values entered for Planned End date/time must be greater than Incident date/time on SR header for create/update of task - Values entered for Service Date and Labor Start date/time on Debrief may not be less than Incident date/time on SR header. - Values entered for Service Date on Debrief may not be less than Incident date/time on SR header.	**Yes** or **No**, with **Yes** being the default.

Profile	Description	Options
	- Values entered for Labor Start date/time and Service Date on Debrief may not be future-based on current date/time on the device.	
	- Values entered for Labor End date/time and Service Date on Debrief line item may not be future-based on current date/time on the device.	
	- Values entered for Labor End date/time and Service Date on Debrief may not be less than Incident date/time on SR header.	
CSL: Labor Line Total Check	Reasonability check to ensure total time at site does not exceed total labor time plus delta. For debrief reporting in Oracle Mobile Field Service/Laptop, the difference between max (last labor end date/time) and min (earliest labor start date/time) must not be more than one hour greater than the sum of labor line durations. Max - min <= sum of labor lines + T Where T is the time in hours. The profile setting will give the value for this.	Default is **0**. If set to **0**, then the check is not valid. If set to **1**, then T=1 If set to **2**, then T=2
CSL: Allow Long Notes	Determines if field service representatives are allowed to enter notes longer than 2000 characters.	**Yes** to allow long notes; note that the maximum character count is 2000. With this profile switched on, a field service representative can type in longer notes which after being saved are split into multiple notes. These multiple notes are replicated to the backend.

Profile	Description	Options
CSL: Notifications Scope	Defines to whom messages can be sent.	Resource group or all users, with resource group being the default.
CSL: Number of Days Before Data is Removed on the Client	Defines he number of days before purging data from Oracle Mobile Field Service/ Laptop. This is done only for closed tasks. For example, if this profile is set to 5, a closed task after five days will be purged from the pocket PC. The associated service request will also get purged if there are no other open tasks for that service request.	A value representing the number of days before data is removed from Oracle Mobile Field Service/Laptop. If you specify no days, then the data is never removed.

Setting Up Profile Options for Oracle Mobile Field Service/Pocket PC:

Set the profile options listed in the following table. The table lists the profile option name, a brief description, and available options.

Profile	Description	Options
JTM: Mobile Applications Enabled	Set at the Oracle Field Service/ Palm responsibility level to **Y.** Only after setting the profile value, can hooks or business events be enabled. **Note:** The Oracle Field Service/Palm responsibility is used for the Oracle Mobile Field Service/Pocket PC application.	**Y** for Yes or **N** for No.
JTM: Application Conflict Rule	Enables Oracle Mobile Field Service/Pocket PC to resolve conflicts between multiple updates to the same object.	**Client wins:** Changes made by the mobile user are always applied to the enterprise database. No timestamp checking is done. **Server wins:** Changes made by the mobile user are applied to the enterprise database if the record has not been modified since the mobile user last synchronized. If the record has been updated in the back end, then the mobile user's change is not applied.

Profile	Description	Options
CSM: Number of Previously Closed Service Requests	Defines the number of previously closed service requests to be replicated. It is recommended that you send down three to five service requests. Do not set very high values because of Pocket PC limitations on data set size.	Use **0** to disable the history functionality. The default is **0**.
CSM: Synchronous Service History Collection	Sets how previously closed service requests are collected (performance is a factor).	**Yes** for synchronous history collection. **No** for asynchronous history collection. The default is **No**.
CSM: Notifications Scope	Defines to whom messages can be sent.	Resource group or all users, with resource group being the default.
CSF: History_M	Defines the number of days before purging data from Oracle Mobile Field Service/Pocket PC. This is done only for closed tasks. For example, if this profile is set to 5, a closed task after five days will be purged from the pocket PC. The associated service request will also get purged if there are no other open tasks for that service request. The number of counter readings downloaded to the client is also controlled by this profile setting. For example, if the profile is set to 10, then only ten counter readings are downloaded to the client.	A value representing the number of days before data is removed from Oracle Mobile Field Service/Pocket PC. If you specify no days, then the data is never removed.
CSF: Update Planned/ Scheduled Times Allowed	Specifies whether field service representatives are allowed to change the planned or scheduled times of the tasks they have received on the laptop computer.	**Yes** or **No**.
CSF: Prevent Overlapping Debrief Lines	Setting the profile to **No** does not allow overlapping labor lines within a task. Therefore, a field service representative cannot have two labor lines for the same time period. The second labor line starts only after the first one has finished.	**Yes** or **No**, with **No** as the default. When the profile option is set to **Yes**, the technician is allowed to enter overlapping actual start and end times for various assignments for a given day. When the profile option is set to **No**, the technician does not have the ability to enter the overlapping times.

Profile	Description	Options
JTM: Enable Credit Card Functionality	Enables the credit card capture functionality.	**Yes** or **No**.
CSF: Business Process	Enables you to specify the order of task completion for the field service representative.	Option **1** indicates that the field service representative is to work on one task at a time in a fixed order (ordered by scheduled start date).
		Option **2** indicates that the field service representative can only work on one task, but in any order. Only the task with status set to 'Working' can be updated. If no task is set to 'Working', the status of all open task can be updated. This way the field service representative can select a task by setting its status to 'Working'.
		Option **3** indicates that the field service representative can work on any number of tasks in any order. The working flag will be ignored in this scenario.
CSM: Item Category Filter	Use to filter item categories.	
CSM: Item Category Set Filter	Use to filter item category sets.	
CSM: Number of IB Items at Location	The number of install base items to be downloaded for a given customer location.	Can be **0** to any number. The default is **0**.
CSM: Restrict Number of Items to Search for in LOV	Limits the number of search results shown in the search screens if there are too many items. The user can limit the search by using a filter to reduce the number of items retrieved in the search.	Can be **1** to any number. The default is **100**.
CSM: Enable Create Task	Enables or disables the create task functionality.	**Yes** or **No**, with **Yes** as the default.
CSM: Enable Create SR	Enables or disables the create service request functionality.	**Yes** or **No**, with **Yes** as the default.
CSM: Enable Update Task Assignment Status	Enables or disables the functionality to update the task assignment status.	**Yes** or **No**, with **Yes** as the default.

Profile	Description	Options
CSM: Enable View Customer Product	Enables or disables the functionality to view a customer product.	**Yes** or **No**, with **Yes** as the default.
Service: Inventory Validation Organization	Used to validate inventory item IDs that are associated with debrief lines.	The code of the SIVO.

Setting Up Non-Oracle Mobile Field Service Profile Options for Oracle Mobile Field Service Applications

Set the profile options listed in the following table. The table lists the profile option name, a brief description, and available options.

Profile	Description	Options
Client Timezone	Timezone in which the device is present (field service representative's local time).	
CSF: Default In Planning Status		
CSP: Order Type	Gives type of order (internal or external).	
Currency: Negative Format		
Currency: Positive Format		
Currency: Thousands Separator	Type of separator for indicating 1000 (comma or dot).	
ICX: Date format mask	Date display format (DD/MM/YYYY, YY/MM/DD, MM/DD, or DD/MM).	
JTM: Debug Mode		
JTM: TimePicker Format (HH24/HH12)	Time displayed in 12 or 24 hours.	
Server Timezone	Timezone in which the server is present.	
Service: Default Contact Type	Used in a client-created service request and is automatically populated during upload synchronization.	Defaults to the contact type.
Service: Default Service Request Severity	Used in a client-created service request and is automatically populated during upload synchronization.	Defaults to the service request severity.
Service: Default Service Request Status	Used in a client-created service request and is automatically populated during upload synchronization.	Defaults to the service request status.
Service: Default Service Request Urgency	Used in a client-created service request and is automatically populated during upload synchronization.	Defaults to the urgency.

Scheduling Concurrent Programs for Oracle Mobile Field Service

Concurrent program scheduling is categorized for the lookup, transaction, and inventory categories.

Formerly, all concurrent programs were registered with one JTM concurrent program, MOBILE_CON_PROGRAM. JTM has a new concurrent program, JTM Master Concurrent Program, which accepts the lookup, transaction, and inventory categories as parameters. Now, concurrent programs are categorized for the lookup, transaction, and inventory categories.

For an Oracle Mobile Field Service application, schedule the concurrent programs listed in the table below. For instructions on how to set up concurrent programs, refer to the *Oracle Applications System Administrator's Guide*.

Name	Application	Description	Default (Recommended) Schedule
Processes Uploaded Mobile Data	Laptop Pocket PC	Processes uploaded mobile data and applies it to the enterprise system	Every 1 minute
Manage Mobile Users	Laptop Pocket PC	Creates or removes mobile users automatically based on assigned mobile responsibilities	Every 1 hour
JTM: Master Concurrent Program	Laptop Pocket PC	The JTM master concurrent program, which runs all concurrent jobs registered by mobile applications	TRANSACTION: every 5 minutes LOOKUP: every 30 minutes INVENTORY: once a day PURGE: as often as required (Default is set to once per month)
Workflow Background Process	Pocket PC	Item Type: CSM Type3 Process Deferred: Yes Process Timeout: Yes Process Stuck: Yes	Start: Right at the moment Run the job: Periodically Re-run: Every 0.5 minute Apply the Interval: From the completion of the prior run

> **Note:** If there is a major delay for the Workflow Background Process to handle the item type CSM TYPE3 processes, then you should schedule more than one Workflow Background Process concurrent programs for item type CSM TYPE3. The number of Workflow Background Process concurrent programs to be scheduled depends on the workload of how many CSM TYPE3 processes are to be processed. This is important to

boost the performance and ensure that mobile users can get online
updates promptly.

Creating and Managing Mobile Users

Users who have the Oracle Field Service/Palm responsibility assigned to them have
access to the Oracle Mobile Field Service/Pocket PC application. Likewise, users who
have the Oracle Field Service/Laptop responsibility assigned to them have access to
the Oracle Mobile Field Service/Laptop application. To create users for an Oracle
Mobile Field Service application, create the users as described in the *Oracle Field Service
Implementation Guide*. Ensure that the following procedures have been completed:

- Setting Up Employees
- Setting Up Resources
- Setting Up Field Service

After completing these procedures, assign either the Oracle Field Service/Palm or Oracle
Field Service/Laptop responsibility to the users, depending on the Oracle Mobile Field
application they are using. Access to the Oracle Mobile Field Service application is based
on the same usernames and passwords as the enterprise system.

There is a concurrent program in the Mobile Application Foundation that periodically
allocates resources for users that have a mobile responsibility, so there will be a delay
between when the responsibility is assigned and when the change will take effect. Refer
to "Scheduling Concurrent Programs for MAF", page 3- 7 for information on how to
manually run the concurrent program to expedite the creation of a new user.

Mobile users can change their passwords in the Forms application or by requesting that
the system administrator make this change for them. Both of these topics are described
in the *Oracle Applications System Administrator's Guide*.

If you remove the Oracle Field Service/Laptop responsibility or Oracle Field
Service/Palm responsibility from a user, that user will no longer be able to use the
Oracle Mobile Field Service application and synchronize. However, the application will
remain on his mobile computer device.

For further details about creating and managing mobile users, refer to Note 219019.1 on
Oracle*MetaLink*.

Testing the Mobile Field Service Application Implementation

Once you have implemented Oracle Mobile Field Service, you should then test that the
implementation is successful.

Running the Test:
Steps

Complete the following steps to verify that the implementation of the Oracle Mobile
Field Service application was successful:

1. Create a test user and then assign the user either the Oracle Field Service/Laptop or
   Oracle Field Service/Palm responsibility, depending on the type of Oracle Mobile
   Field Service application.

> **Note:** The Oracle Field Service/Palm responsibility is used for the Oracle Mobile Field Service/Pocket PC application.

2. Install the Oracle Mobile Field Service application on the desired test mobile computer device.

   For details on how to install Oracle Mobile Field Service/Laptop or Oracle Mobile Field Service/Pocket PC, refer to Appendix A, "Installing Oracle Mobile Field Service", page A- 1 .

3. From the Field Service Dispatch Center, create a task and then assign it to the test user.

4. Synchronize the mobile computer device.

   The Oracle Mobile Field Service application receives the task.

5. Change the task assignment status on the mobile computer device and then synchronize.

6. Confirm that the task status update is reflected in the dispatch center.

   Final Checks

   If you have problems running the Oracle Mobile Field Service application, ensure that you have met the following requirements:

   - Material items must be created and associated with the field service representative's inventory.

   - The task state transitions must be set up in Field Service.

   - Field service representatives must have a location associated with them.

   - A request or task must have a location before it can be scheduled.

   - The Oracle Field Service/Laptop responsibility or Oracle Field Service/Palm responsibility must be granted to you, depending on the Oracle Mobile Field Service application that you are using.

     > **Note:** The Oracle Field Service/Palm responsibility is used for the Oracle Mobile Field Service/Pocket PC application.

   - Labor and expense items need to be set up.

   - If you are still experiencing problems, then use the diagnostics described in "Diagnostic Testing Oracle Mobile Field Service", page 5- 2 .

5

Diagnostic Testing

This chapter covers the following topics:

- Overview
- Diagnostic Testing Oracle Mobile Application Foundation
- Diagnostic Testing Oracle Mobile Field Service
- Configuring Debug Logging
- Common Issues

Overview

Diagnostic testing can be done for the Oracle Mobile Application Foundation and the Oracle Mobile Field Service applications. This chapter describes how to run these diagnostics. After your initial implementation, you should run the entire set of pre-seeded diagnostic tests to verify that the implementation has been successful. Subsequently, the tests can be run whenever a problem arises.

Diagnostic Testing Oracle Mobile Application Foundation

Please refer to the Oracle Applications CRM System Administrator's Guide or the online help for the CRM System Administrator Console for instructions on how to use the Oracle Diagnostics for Applications user interface.

Running Pre-seeded Tests:

Use the following procedure to run the pre-seeded Oracle Mobile Application Foundation diagnostic tests:

Steps

1. Log in as a system administrator to the CRM System Administrator Console.

2. Click the Diagnostics tab.

3. Choose **CRM Gateway for Mobile Services** from the Application drop-down list.

4. Click **Advanced**.

5. You can run any of the following pre-seeded tests.

   The following table lists diagnostic tests, their descriptions, and associated symptoms and resolutions.

Test	Description	Symptom	Resolution
Oracle Lite Setup	Checks if the Oracle9*i* Lite version installed is correct. Checks if the database access permissions for the Oracle9*i* Lite schema are set properly	An error occurs while applying mobile application patches.	Review the diagnostic report and schedule or install/apply the correct Oracle9*i* Lite patches.
Mobile Concurrent Program Setup	Checks if all the mobile concurrent programs are working.	Changes from the mobile client are not applied to the enterprise system. Users are not able to synchronize. They might get invalid username/password errors. Many mobile application concurrent programs are not working.	Review the diagnostic report and schedule or run the concurrent program to apply changes.
Mobile User Hook Registration	Checks if mobile applications register vertical user hooks properly and the execute flag is set to run.	Changes on JTF Notes, CS Counter, or CSI Item Instance on the enterprise do not synchronize to the mobile device.	Reapply the JTM patch to register and set up the execute flag to run.
Mobile Framework Setup	This test verifies the Configuration Setup for the mobile framework.	Application publishes incorrectly or synchronization fails.	Change the scripts and republish the application.
Mobile Application Upgrade History	This report shows the status of mobile application upgrades.	Upgrades fail.	Republish the application.
User Summary	This test shows the User Status Summary.	Users are not created properly.	Look at the test results and rerun the MANAGES MOBILE USER concurrent program.
User Detail	This test provides detailed information about a specified mobile user.	Need to investigate user history.	View user history and take appropriate action.

Diagnostic Testing Oracle Mobile Field Service

Run diagnostic tests to ensure that the install and operation of the Oracle Mobile Field Service application are correct.

Steps:

Complete the following steps to access the diagnostic screens of the Forms application:

1. Log in to the CRM System Administrator Console as a system administrator.

2. Click the Diagnostics tab.

3. Depending on your mobile computer device, choose either **Oracle Field Service/Palm** or **Oracle Field Service/Laptop** from the Application drop-down list.

> **Note:** The Oracle Field Service/Palm responsibility is used for the Oracle Mobile Field Service/Pocket PC application.

The Diagnostics application displays the Test Summary table and a table showing any failures in the past week.

4. Click the Advanced tab.

In the Advanced tab, enter the parameters for the test that you want to run. From the Basic tab, you can run all non-parameter tests for the application.

Refer to the Oracle Applications CRM System Administrator's Guide or the online help system to learn how to use the Diagnostics Framework user interface.

The client-side tests run automatically on the mobile computer device when you open an Oracle Mobile Field Service application. You can also run these tests any time to verify the correct setup of the Oracle Mobile Field Service application.

The following table lists diagnostic tests, test descriptions, observed symptoms, and proposed resolutions for Oracle Mobile Field Service/Laptop:

Test for Oracle Mobile Field Service/ Laptop	Location	Problem	Resolution
JTM Master Concurrent Program	Backend	Are the concurrent programs running?	Provides detailed diagnostic information about the JTM Master Concurrent Program. If necessary, it tells system administrators which settings should be modified.
Environment Setup	Backend	Is the environment correct?	Provides support for debugging the configuration of Oracle9*i* Lite. It allows the administrator to check if the recommended settings are followed correctly. It also helps in identifying common issues with external authentication, installation manager, profile option values, etc.

The following table lists diagnostic tests, test descriptions, observed symptoms, and proposed resolutions for Oracle Mobile Field Service/Pocket PC:

Test for Oracle Mobile Field Service/ Pocket PC	Location	Problem	Resolution
Responsibility	Backend	User may not have proper responsibility.	Assign proper responsibilities.
Profile values	Backend	Profile values for Field Service Palm are not set.	Set profile values.
User Hooks Registration	Backend	Hooks registration is not done.	Contact your Oracle technical support representative.
Check Concurrent Program	Backend	All required concurrent programs might not be running.	Make sure that the concurrent programs are running.
JTM Concurrent Program registration	Backend	For JTM Concurrent Program APIs are not registered.	Contact your Oracle technical support representative.
JTM Master Concurrent Program	Backend	Are the concurrent programs running?	Provides detailed diagnostic information about the JTM Master Concurrent Program. If necessary, it tells system administrators which settings should be modified.
Environment Setup	Backend	Is the environment correct?	Provides support for debugging the configuration of Oracle9*i* Lite. It allows the administrator to check if the recommended settings are followed correctly. It also helps in identifying common issues with external authentication, installation manager, profile option values, etc.
Task diagnostic	Backend	Task is assigned incorrectly.	Assign task correctly.
Check required list of values	Backend	List of values are empty.	Create all list of values.

Configuring Debug Logging

This section describes how to configure debug logging for troubleshooting problems with mobile operations.

Oracle Mobile Field Service applications use the CRM Technical Foundation logging framework to log messages to a central repository that is shared by both the database and the middle tier servers. Each log message belongs to one of the following severities:

- Statement
- Procedure
- Event
- Exception
- Error
- Unexpected

UI screens give system administrators convenient and simple controls for configuring and viewing the logs. Refer to the *Oracle Applications CRM System Administrator's Guide* or the online help for the CRM System Administrator Console to learn how to use the logging screens.

Steps:

Complete the following steps to configure logging for all modules:

1. Log in to the CRM System Administrator Console as a system administrator.

2. Navigate to `Setting > System > Debug Logging > Configuration`.

3. Set the following values:

    - `Enabled = ON`
    - `Level = Statement`
    - `Repository = Database`
    - `Module filter = include string csm%, asg%, jtm%`

4. Click **Update** to save the values.

5. Bounce Apache (the middle-tier server).

    > **Note:** Turn the logger off after you finish troubleshooting. This changes the values of the above fields back to their original values. Logging at this level of detail consumes resources and could impact the performance of your system.

In addition to these logs, you can use the Oracle9*i* Lite mobile server logging facility to troubleshoot problems with user synchronizations. Refer to the *Oracle9i Lite Mobile Server Administration Guide, Release 5.0.2* for more details.

Common Issues

This section describes the most common issues encountered in the implementation of Oracle Mobile Field Service.

Viewing Items Stocked in a Subinventory:

Problem

Trackable items that have been stocked in a subinventory are now displayed in the inventory list of the application.

Resolution

This may be a replication issue. Please check that the installed base instances have been created for the stocked items in the back of the database. If the instances do exist but the items still do not display on the laptop, please contact Oracle Support.

6

Administrative Tasks

This chapter covers the following topics:

- Overview
- Setting the Conflict Resolution Rule
- Configuring the Interapplication Bar
- Manually Creating Mobile Users
- Managing Concurrent Programs
- Viewing User Synchronization Statistics
- Working With Upload Errors
- Managing Deferred Upload Errors
- Managing Discarded Upload Errors
- Managing Passed Upload Errors
- Using the Oracle9i Lite Administration Screens

Overview

This chapter describes how to perform the following administrative tasks for the Oracle Mobile Application Foundation:

- Setting the Conflict Resolution Rule
- Configuring the Interapplication Bar
- Manually Creating Mobile Users
- Viewing User Synchronization Statistics
  - Viewing Synchronization Summary Tables on the Home Page
  - Viewing Synchronization Details on the Synch Detail Page
  - Viewing Synchronization Summary Reports
  - Viewing Engineer Synchronization Details
  - Viewing Load Distribution
- Working With Upload Errors
  - Understanding Upload Errors

- Purging Upload Errors

- Viewing the Upload Errors Summary

- Managing Deferred Upload Errors

  - Working With the Deferred Upload Errors of a Particular User Synchronization Session

  - Editing the Details of Deferred Upload Errors

- Managing Discarded Upload Errors

- Managing Passed Upload Errors

- Using the Oracle9*i* Lite Administration Screens

  > **Note: Note:** There is a mobile administrator responsibility that is similar to the system administrator responsibility. Any user who has been granted the mobile administrator responsibility can perform administrative activities for the Oracle Mobile Application Foundation. You must log in as a user with this responsibility to access the Mobile Foundation Administration Console, which is where the relevant administration screens are located.

Setting the Conflict Resolution Rule

The profile option, JTM: Application Conflict Rule, specifies the conflict resolution rule that is used in case of updates to the same entity by both the enterprise system and the Oracle Mobile Field Service application.

This profile option determines how the Oracle Mobile Field Service application makes updates to the database. The following are the possible types of updates:

- *Client wins*. Changes made by the mobile user are always applied to the enterprise database. No timestamp checking is done.

- *Server wins*. Changes made by the mobile user are applied to the enterprise database if the record has not been modified since the mobile user last synchronized. If the record has been modified in the meanwhile, then the mobile user's change is not applied.

Configuring the Interapplication Bar

You can set up the Interapplication Bar to conveniently navigate between the CRM System Administrator Console and the Mobile Application Foundation Administration Console. This is an optional procedure. Performing this setup will allow administrators to easily navigate from the Mobile Application Foundation Administration Console to the CRM System Administrator Console in order to run diagnostic tests and check error logs.

To navigate between the CRM System Administrator Console and the Mobile Application Foundation Administration Console, you will need to create a user who has both mobile administrator ("MobileAdmin") and system administrator ("CRM HTML administration") responsibilities. Log in as that user to the CRM System Administrator Console and set up the Interapplication Bar with the two applications being "CRM Gateway for Mobile Services" and "CRM HTML administration".

Refer to the *Oracle Applications CRM System Administrator's Guide* or the online help for the CRM System Administrator Console for instructions on how to successfully set up the Interapplication Bar.

Manually Creating Mobile Users

The Oracle Mobile Application Foundation allocates resources for mobile users when they are assigned a responsibility that is associated with a mobile application (such as the responsibility "Field Service/Laptop"). The concurrent program MANAGES MOBILE USERS runs periodically and creates or removes these mobile user resources based on the assigned responsibilities. A user who recently has been assigned a mobile responsibility will not be able to synchronize until after this concurrent program runs. The user cannot change his or her password on the mobile client, and will need to do so online.

During system testing, it may be helpful to create users more rapidly. In this case, you can manually run the MANAGES MOBILE USERS concurrent program using the Concurrent Manager.

The home page of the Mobile Application Foundation Console displays the number of users who do not have the correct mobile subscriptions. In order to view the error messages associated with the mobile user subscription failures, run the diagnostic tests described in "Diagnostic Testing Oracle Mobile Application Foundation", page 5-1 .

Managing Concurrent Programs

The JTM master concurrent program runs all concurrent jobs registered by Oracle Mobile Field Service applications. The JTM master concurrent program uses the following category types:

- TRANSACTION
- LOOKUP
- INVENTORY
- PURGE

For a complete description of these category types, see "Scheduling Concurrent Programs for MAF", page 3-7 .

The Mobile Concurrent Program Summary page displays the JTM concurrent program details for all the concurrent programs related to Oracle Mobile Field Service. The mobile concurrent program shows how many times the program has currently ran, and the maximum and the minimum times taken to finish the program.

The concurrent program screens allow you to view the status of mobile logic (PL/SQL) modules, which process the various business events for the Oracle Mobile Field Service applications. The mobile logic modules are grouped in various categories and the frequency of their execution is based on the category. You can change the mobile logic modules from one category to another or add a new category and hence change the frequency of execution, based on the business requirements. These screens can also be used to understand the resources used by mobile logic modules, identify and resolve any performance bottlenecks.

Steps:

Complete the following to view the log history:

- Click **View** to see the log history.

  The log view displays the log details of the program from the first run of the program. The log view describes the status of the concurrent program in each run.

Mobile Concurrent Query Summary:

The following graphic contains the details for a specific query. This information appears in table format, providing such details as the query statement, description and last start and end dates.

The following graphic shows the definition of each category. The categories are defined in a table by such information as category type, description, and start and end active date.

You can move queries from one category to another or create your own category and then seed queries in them.

Mobile Concurrent Program Details:

The Mobile Concurrent Program Details page shows the details for each of the concurrent programs. Using this page, you can re-assign a concurrent program to another category. For example, you can re-assign a concurrent program from LOOKUP to TRANSACTION by making a selection from a drop-down list. You can also enable and disable concurrent programs by specifying YES or NO from a drop-down list. These changes can be done even in runtime and will be effective from the next run of the concurrent program.
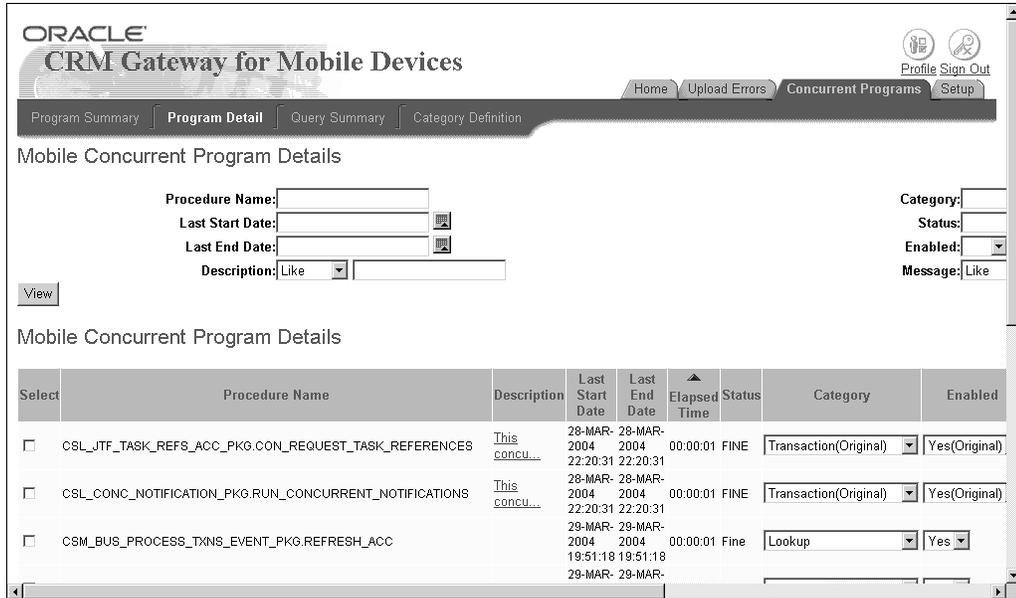
Viewing User Synchronization Statistics

This section covers the following tasks:

- Viewing Synchronization Summary Tables on the Home Page, page 6- 6

- Viewing Synchronization Details on the Synch Detail Page, page 6- 7

- Viewing Synchronization Summary Reports, page 6- 8

- Viewing Engineer Synchronization Details, page 6- 9

- Viewing Load Distribution, page 6-10

Viewing Synchronization Summary Tables on the Home Page

The home page of the Mobile Application Foundation Administration Console provides the following features:

- The **Critical Errors** table:

  This table displays a summary of critical synchronization and upload errors. You can click the links provided to display detailed error reports.

- The **Synch Metrics** table:

  This table displays a summary of synchronization metrics: You can view the number of synchronizations that occurred on the current date, the average time per synchronization, and the maximum synchronization time.

To navigate to the home page of the Mobile Application Foundation Administration Console, log in at the JTF login page as a user associated with the mobile administrator ("mobileadmin") responsibility. The home page will automatically display the two tables as described above.

Screenshot

An image of the Mobile Application Foundation Administration Console home page is provided below:

Viewing Synchronization Details on the Synch Detail Page

Use this procedure to view details about the synchronizations of particular user sessions.

Steps

1. In the Mobile Application Foundation Administration Console, from the Home tab, click the Synch Details subtab.

   On the Synch Detail Page, the synchronization details for each user session is displayed.

2. Review the data provided, which includes user name, the time of the synchronization, the data set size of the last synchronization, if any exceptions occurred during the synchronization, and how many upload errors have occurred for that particular user.

   You can click the hyper link in the **Deferred Transactions Count** column to view the details of the upload errors.

3. If desired, you can filter what data appears on this page. At the top of the page you can search by user name, synchronization time, and whether there was an exception in the synchronization.

   You can search by one or more of these parameters. To do so, enter values as desired into the fields, then click **View** to perform the search.

Screenshot

An image of the Synch Detail page is provided below:

Sync Detail Page

User Name:			Sync Start Date:	12-NOV-2003
Sync Exception:			Sync End Date:	

View

Sync Summary

▲User Name	Sync Start Date	Sync End Date	Sync Duration	Data Set Size	Sync Exception	Upload Errors	Error Detail
CSL_UPGRADE_002	12-NOV-2003 02:57:06	12-NOV-2003 02:57:09	00:00:03	3159	N	0	
CSL_UPGRADE_002	12-NOV-2003 02:54:41	12-NOV-2003 02:54:42	00:00:01	2759	N	0	
CSL_UPGRADE_002	12-NOV-2003 02:50:43	12-NOV-2003 02:50:46	00:00:03	2854	N	0	
CSL_UPGRADE_002	12-NOV-2003 02:45:46	12-NOV-2003 02:46:28	00:00:42	3377	N	0	
CSL_UPGRADE_002	12-NOV-2003 01:55:32	12-NOV-2003 01:55:53	00:00:21	117654	N	0	
CSM_UPGRADE_002	12-NOV-2003 05:01:36	12-NOV-2003 05:01:43	00:00:07	2940	N	0	
CSM_UPGRADE_002	12-NOV-2003 05:00:43	12-NOV-2003 05:00:57	00:00:14	11428	N	0	
CSM_UPGRADE_002	12-NOV-2003 04:53:50	12-NOV-2003 04:53:53	00:00:03	1242	N	0	
CSM_UPGRADE_002	12-NOV-2003 04:36:34	12-NOV-2003 04:36:38	00:00:04	1242	N	0	
CSM_UPGRADE_002	12-NOV-2003 04:35:19	12-NOV-2003 04:35:24	00:00:05	1242	N	0	

First Previous | 1 - 10 of 210 | Next Last

There is also a daily synchronizations report, which you can access from the Synch Reports subtab. It offers a searchable table that lists how many synchronization attempts and failures have occurred during specified hours on a given date. It also gives metrics on the average and maximum synchronization times, upload data sizes, and download data sizes. You can filter the table by date and device type, as well as specify the range of hours (Start Time and End Time) displayed. A screenshot of this report follows:

Sync Summary Report (Daily)

Sync Summary Report (Daily)

Date	12-NOV-2003		Start Time	18:00
Device Type	All		End Time	22:00

View

Hour	Sync Attempt	Sync Failures		Sync Time		Upload Data		Download Data	
		No	%	Avg	Max	Avg	Max	Avg	Max
18:00 - 19:00	19	2	11	19	182	1057.526	2339	52191.947	318661
19:00 - 20:00	3	1	33	2	3	1490.666	2250	1627.666	2802
20:00 - 21:00	15	2	13	10	73	994.133	2267	51405.866	327877
21:00 - 22:00	11	1	9	10	28	1315.363	2410	17401.272	101537
Total	48	6							
Avg				13	13	1123.874		40813.166	

Viewing Synchronization Summary Reports

For each hour of the day, the following report summarizes the synchronization for the entire system. Use this report to view the overall synchronizing pattern of the day.

The following report shows the summary of the synchronization for the entire system for each week on daily basis. Use this report to view the overall synchronizing pattern of the week.

Viewing Engineer Synchronization Details

The following report summarizes the synchronizations for all engineer for each week. Use this report to compare the different synchronizing activities for each engineer.

The following report shows the details of all the synchronizations for an engineer for each week. Use this report to view the detailed statistics of all the synchronizations done by the engineer.

Viewing Load Distribution

The following report shows the load distribution for each hour over a span of days. This report helps you in traffic modelling and estimation of the load on the system.

ORACLE

CRM Gateway for Mobile Devices

Home | Upload Errors | Concurrent Progra...

Introduction | Synch Details | **Synch Reports**

Sync Summary Report (Daily)

Sync Summary Report (Weekly)

Engineer Sync Summary Report (Weekly)

Engineer Sync Detail (Weekly)

Load Distribution (Weekly)

Load Distribution

Week   **28-MAR-2004 to 03-APR-2004**   30-MAR-2004

Day	Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	Hour 9	Hour 10	Hour 11	Hour 12	Hour 13	Hour 14	Hour 15
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0

Working With Upload Errors

This section covers the following tasks:

- Understanding Upload Errors, page 6-11

- Purging Upload Errors, page 6-12

- Viewing the Upload Errors Summary, page 6-12

Understanding Upload Errors

During upload, some of the data that is synchronized might not be applied to the enterprise database.

The following situations might cause upload errors:

- **System Issues:** System issues might cause upload errors if the system is on a different mobile patch level than what is required. Administrators should verify the correct patch levels if this situation is suspected.

- **Setup Issues:** Setup issues might cause upload errors if the correct business process type or profile setting is not set on the enterprise system. For example, in an expense line, it is necessary that the expense type is set correctly. If the expense type is set as "lunch" on the enterprise system while on the mobile device the expense line is set as "dinner," then this issue might cause an upload error.

- **Faulty Data or Data Conflicts:** Faulty data or data conflicts can also cause upload errors. For example, multiple people attempting to update the same record can cause data conflicts where the server and the client to go out of sync.

The Mobile Application Foundation maintains a log of all errors that occur during the upload process. In the Upload Error pages, you can view and reapply these errors. In the case of a system or setup issue, you only need to fix the system or setup issue and then reapply the error. In the case of faulty data or data conflicts, you need to modify the data and then apply the error.

You can change data or system elements as needed and then reapply errors to the enterprise database. If they are successful, then you can delete them from the error tables. If they continue to fail, then you can choose to either modify them once more and try again, or to discard the failed errors and delete them from the error tables.

The Mobile Application Foundation logs every user synchronization session that has errors during upload, as well as the actual errors. For example, a user synchronization session could consist of uploading two service requests and three debrief lines. In this session, suppose two of the debrief lines failed to be applied to the enterprise system. This session would have two upload errors. You can choose to discard one or both of these errors. However, when you reapply even one of the errors, all the errors in the user session will be reapplied. Therefore, it is recommended that you make changes to all the errors in a synchronization session before reapplying the session.

Depending on how they are handled by the administrator, upload errors can be classified as follows:

- **Deferred**: These transactions did not go through to the main database tables. Either they have never been reapplied, or they have been reapplied multiple times and always failed.

- **Passed**: These transactions have been successfully reapplied. Only transactions that originally failed and later were successfully reapplied are shown here. Passed upload errors can be purged (permanently deleted) from the system by an administrator.

- **Discarded**: These are transactions that you want to remove from the system because reapplying them has never been successful. Discarded upload errors are analogous to files that are in the "Recycle Bin" or the "Trash." Discarded upload errors can be purged (permanently deleted) from the system by an administrator.

Purging Upload Errors

Administrators should periodically purge all stored upload errors, because the table in the enterprise system which holds them will grow infinitely large unless its contents are occasionally removed.

Viewing the Upload Errors Summary

Use this procedure to view the upload errors summary.

Steps

1. In the Mobile Application Foundation Administration Console, navigate to the Upload Errors tab.

2. The Introduction page provides summary information for deferred, discarded, and passed upload errors. To view further information about the errors, click the appropriate **Detail** button.

   Alternatively, you can click a subtab to navigate to the respective detail page for that error type.

Screenshot

An image of the Upload Errors Introduction page is provided below:

Managing Deferred Upload Errors

Upload errors are generated during the upload process when some of the data fails to be applied to the enterprise database. Upload errors can be caused by the following:

- System issues

  It is possible that the system is on a different mobile patch level than what is required.

- Setup issues

  The correct business process type or the correct profile setting is not set on the enterprise system. For example, it is necessary that the expense type for an expense line is set correctly.

- Faulty data or conflicts

Oracle Mobile Application Foundation maintains a log of all upload errors. You can use the Mobile Application Foundation Administration Console to view and manage these errors.

Deferred upload errors are transactions that did not go through to the main database tables. Either they have never been reapplied, or they have been reapplied multiple times and always failed.

Steps:

Complete the following steps to manage deferred upload errors:

1. In the Mobile Application Foundation Administration Console, choose the Upload Errors tab and then the Deferred subtab to navigate to the main Deferred Upload Errors page.

2. If desired, you can search for errors by one or more of the provided parameters: user name, synchronization date, publication name, publication item name, or the name of the wrapper that failed. The default result set displays all user synchronization sessions that failed. To perform a search, enter values into the appropriate fields, then click **View**. You can use the percent sign (%) as a wildcard character.

3. Review the Deferred Upload Errors Summary table, which shows a summary of user synchronization session errors. The table contains the following columns:

   - **User Name**: The name of the mobile user whose data had errors.

   - **Synch ID**: The ID of the synchronization session.

   - **Last Apply Date**: The date and time at which the user last synchronized the data.

   - **Error Count**: The number of errors that have occurred.

   - **Times Applied:** This displays the number of times the transaction was reapplied unsuccessfully, after it was deferred. For a new upload error, the value is "1."

   - **Select:** In this column you can select a check box to work with a particular error (you can reapply it, discard it, or view its details).

4. To view further details about a particular user synchronization session, click the **Details** button located in that row in the table.

5. To discard errors, select the appropriate check box(es), then click the **Discard** button.

6. To reapply errors, select the appropriate check box(es), then click the **Reapply** button.

Screenshot

An image of the main Deferred Upload Errors page is provided below:

Working with the Deferred Upload Errors of a Particular User Synchronization Session:

Use this procedure to work with the deferred upload errors of a particular user synchronization session.

Steps

1. To reach the Deferred Upload Errors Detail page, follow this navigation path in the Mobile Application Foundation Administration Console:

    1. Go to the Upload Errors tab.

    2. Go to the Deferred subtab.

    3. Click a **Detail** button.

        This page displays information about the user synchronization session and the errors that occurred in that session. The error information displayed includes the following:

4. **Sequence Number**: A synchronization session includes all the records updated by the mobile user. The sequence number indicates the order of this record among the records that were applied to the enterprise database.

5. **Publication Name**: Publication name refers to a group of mobile tables which comprise the data store for the mobile application in the mobile device. For example, SERVICEL refers to Oracle Mobile Field Service/Laptop, while SERVICEP refers to Oracle Mobile Field Service/Pocket PC. A mobile application is composed of Publications (data) and a mobile application (code).

6. **Publication Item Name**: Publication item names are the names of the mobile tables in Oracle Mobile Field Service/Laptop or in Oracle Mobile Field Service/Pocket PC. A publication item is part of a publication.

7. **Wrapper Name**: The wrapper name is the name of the PL/SQL packaged procedure which is responsible for applying the client changes to the enterprise database.

8. **Last Apply Date**: The date when the error was last applied.

9. **Error Description**

2. To discard one or more errors, select the appropriate check box(es) in the table and then click **Discard**.

3. To reapply the errors, click **Reapply All**. All the errors in this particular synchronization session will be reapplied.

4. To access the page where you can view and edit the details of a particular error, click the appropriate **Detail** button.

Screenshot

An image of the Deferred Upload Errors Detail page is provided below:

Editing the Details of Deferred Upload Errors:

Use this procedure to edit the details of a particular deferred upload error.

Steps

1. To reach the page where you can edit the details of deferred upload errors, follow this navigation path in the Mobile Application Foundation Administration Console:

   1. Go to the Upload Errors tab.

   2. Go to the Deferred subtab.

3. Click a **Detail** button in the table, opening the Deferred Upload Errors Detail page.

4. On that page, click a **Detail** button in the table.

2. The Deferred Upload Errors Edit Page page displays details about a particular deferred upload error. On this page, you can do one of the following:

• Discard this error: Click **Discard**.

• Change the values of this error: If faulty values are causing the upload error, you can edit values as desired in the fields provided, and then click **Save** to apply changes.

• Do nothing and return to the Deferred Upload Errors Detail page: Click **Return**.

Screenshot

An image of the Deferred Upload Errors Edit Page is provided below:

Managing Discarded Upload Errors

Discarded upload errors are transactions that you want to remove from the system. Reasons for discarding transactions include the following:

- Reapplying them has never been successful.

- The mobile user entered an incorrect value and wants to undo the transaction.

- The transaction has become old due to multiple failures and the user has created more recent transactions.

Discarded errors are analogous to files in the "Recycle Bin" or the "Trash." Use this procedure to manage discarded upload errors.

Steps:

1. In the Mobile Application Foundation Administration Console, choose the Upload Errors tab and then the Discarded subtab to navigate to the Discarded Upload Errors page.

2. If desired, you can search for errors by one or more of the provided parameters: user name, synchronization date, publication name, publication item name, or the name of the wrapper that failed. The default result set displays all user synchronization sessions that have been discarded. To perform a search, enter values into the appropriate fields and then click **View**. You can use the percent sign (%) as a wildcard character.

3. Review the Discarded Upload Errors Summary table, which lists discarded user synchronization session errors. The table contains the following columns:

   - **User Name**: The name of the mobile user whose data had errors.

   - **Synch ID**: The ID of the synchronization session.

   - **Last Apply Date**: The date and time at which the user last synchronized the data.

   - **Error Count**: The number of errors that have occurred.

   - **Times Applied:** This column displays the number of times the transaction was reapplied unsuccessfully, after it was deferred. For a new upload error, the value is "1."

   - **Select:** In this column, you can select which errors you want to purge.

4. To purge discarded errors, ensure that the errors that you want to purge are selected in the table. Alternatively, you can purge all errors by clicking **Select All** and then **Purge**.

   > **Note:** Purging will permanently delete the discarded errors from the system.

   The following is an image of the Discarded Upload Errors page:

Managing Passed Upload Errors

Passed upload errors are transactions have been successfully reapplied. Please note that only transactions that originally failed and later were successfully reapplied are shown in the Upload Errors tab. Use this procedure to manage passed upload errors.

Steps:

1. In the Mobile Application Foundation Administration Console, choose the Upload Errors tab and then the Passed subtab to navigate to the Passed Upload Errors page.

2. If desired, you can search for errors by one or more of the provided parameters: user name, synchronization date, publication name, publication item name, or the name of the wrapper that failed. The default result set displays all passed errors. To perform a search, enter values into the appropriate fields, then click **View**. You can use the percent sign (%) as a wildcard character.

3. Review the Passed Upload Errors Summary table, which lists passed user synchronization session errors. The table contains the following columns:

   • **User Name**: The name of the mobile user whose data had errors.

- **Synch ID**: The ID of the synchronization session.

- **Last Apply Date**: The date and time at which the user last synchronized the data.

- **Error Count**: The number of errors that have occurred.

- **Times Applied:** This column displays the number of times the transaction was re-applied unsuccessfully, after it was deferred. For a new upload error, the value is "1."

- **Select:** In this column, you can select which errors you want to purge.

4. To purge passed errors, confirm that the errors you want to purge are checked off in the table. Alternatively, you can purge all errors by clicking **Select All** and then **Purge**.

> **Note:** Purging will permanently delete the discarded errors from the system.

Screenshot
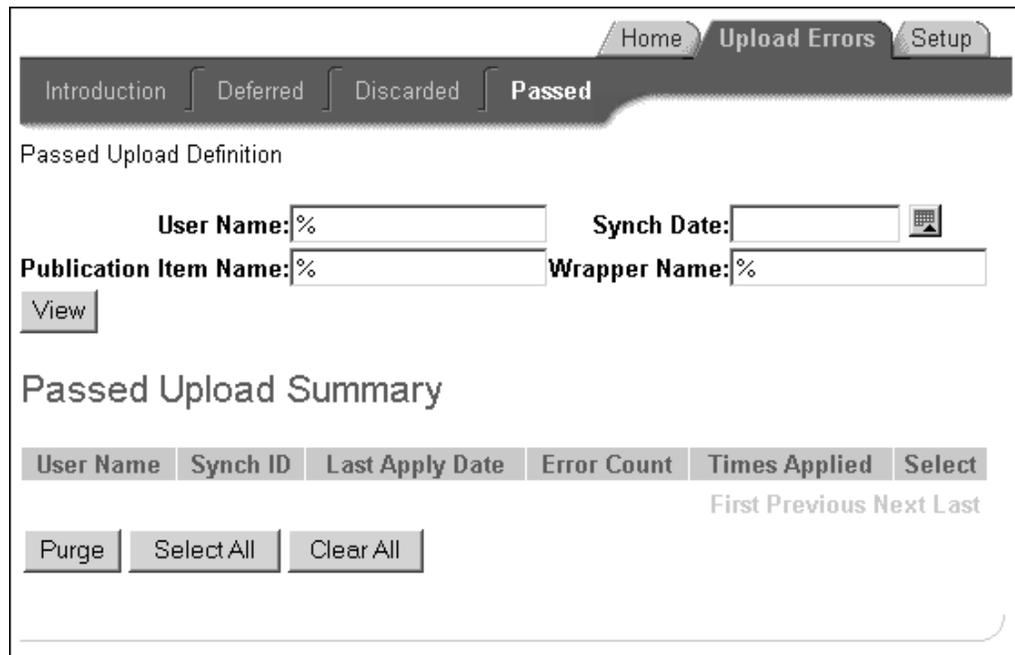
Using the Oracle9i Lite Administration Screens

Oracle9*i* Lite provides an administrative console that can be accessed from the following URL:

```
http://<mobile_server_IP_address>/webtogo
```

The administrator can log into the mobile server console. The console can be used for the following tasks:

- Changing password for the mobile server repository

- Stopping or starting the mobile server, independent of the Apache listener

- Enabling or disabling trace options

Refer to the *Oracle9i Lite Mobile Server Administration Guide* for details.

> **Note:** Whenever you change the mobile server repository password using this administration screen, you should also make sure to set the profile option `ASG_CONS_PASSWD` with the new password. Failure to do so will cause errors while applying Mobile Application patches.

A

Installing Oracle Mobile Field Service

This appendix covers the following topics:

- Installing Oracle Mobile Field Service/Laptop
- Launching Oracle Mobile Field Service/Laptop
- Installing Oracle Mobile Field Service/Pocket PC
- Launching Oracle Mobile Field Service/Pocket PC
- Creating a Shortcut for Oracle Mobile Field Service/Pocket PC
- Subsequent Synchronizations for Oracle Mobile Field Service/Pocket PC

Installing Oracle Mobile Field Service/Laptop

This appendix describes how to install Oracle Mobile Field Service/Laptop on a laptop computer and how install Oracle Mobile Field Service/Pocket PC on a Pocket PC. In both cases, this appendix also describes how to launch the application.

This section describes how to install the Web-to-Go server and Oracle9*i* Lite database, in addition to the Oracle Mobile Field Service application. This additional software is necessary for Oracle Mobile Field Service to operate.

For the minimum software and hardware requirements for the a laptop computer, see "Minimum Software Requirements", page 2- 1 and "Minimum Hardware Requirements", page 2- 2 .

Steps

Complete the following steps to install Oracle Mobile Field Service/Laptop on your laptop computer:

1. Open a Web browser window.

2. Open the following URL, where `<Mobile Server>` is the domain name or IP address of the mobile server:

   `http://<Mobile Server>/setup`

   For example: `http://130.35.88.214/setup`

3. Click the link to download the Mobile Client for Web-to-Go setup program and save it.

   If you are using Internet Explorer, right click with the mouse, choose the option **Save target as** and then click **OK**. Choose a location to save the setup program and then click **Save**.

4. From Windows Explorer, double-click the `setup.exe` file that you just downloaded.

Once started, the setup program prompts you to specify an install directory.

5. Choose an install directory.

For example, `C:\MOBILECLIENT` and then click **OK**. The setup program downloads all the required components.

Once the installation is complete, your browser launches and opens the Oracle9*i* Lite Workspace Logon page. This page contains fields where you specify your user name and password.

If the browser does not launch automatically, the setup program will display the Web-to-Go URL. For example, `http://my-laptop`. In this case, click the URL.

> **Note:** You can always use the URL `http://localhost` to access the Web-to-Go server without having to know the name of the laptop computer.

6. After the browser launches, logon using the same user name and password that you use for online applications.

If the browser returns a "Page Not Found" error, check your proxy settings. In Microsoft Internet Explorer, ensure that the Bypass Proxy for Local Addresses check box is selected under `Tools > Internet Options > Connections > LAN Settings`. Reload the page and try again.

7. Click **Logon**.

The Oracle9*i* Lite Client Initialization page opens with initialization status for the files and records of Oracle Mobile Field Service/Laptop. This status includes the amount of bytes downloaded onto your laptop computer.

8. Click **Next**.

The Oracle9*i* Lite Client Synchronization page opens with the current synchronization process in bold, italic text. A percentage value is found near each synchronization process to indicate its status. The initial synchronization downloads the application and your initial set of data. The synchronization takes several minutes; therefore, do not exit the browser until the synchronization is complete.
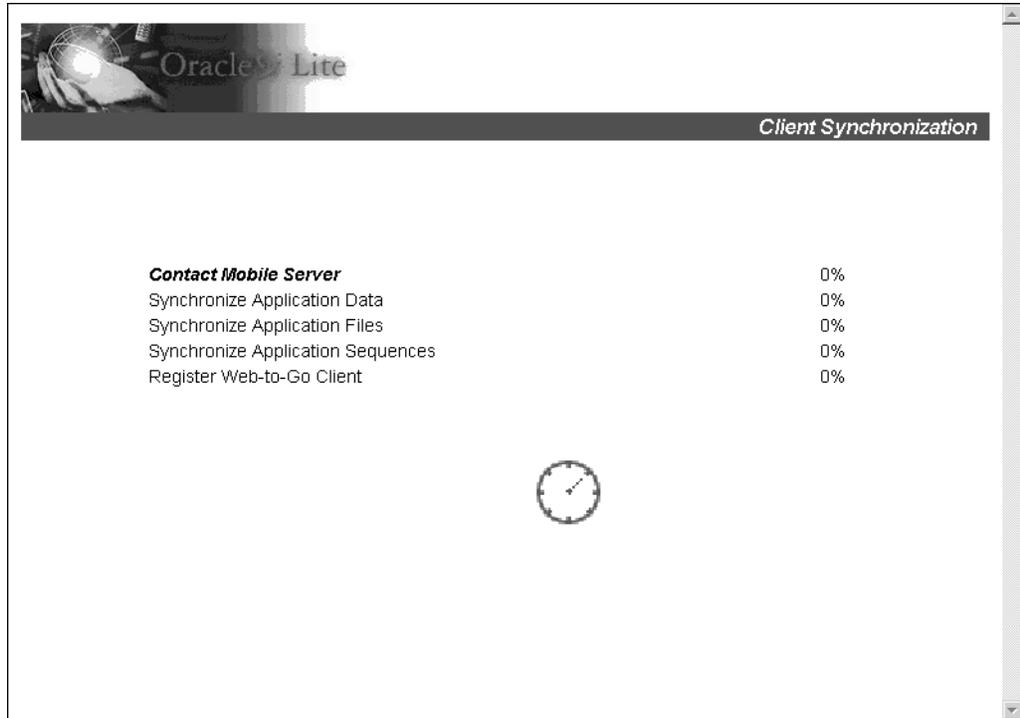
After synchronization completes, the browser displays the Oracle9*i* Lite Workspace page.
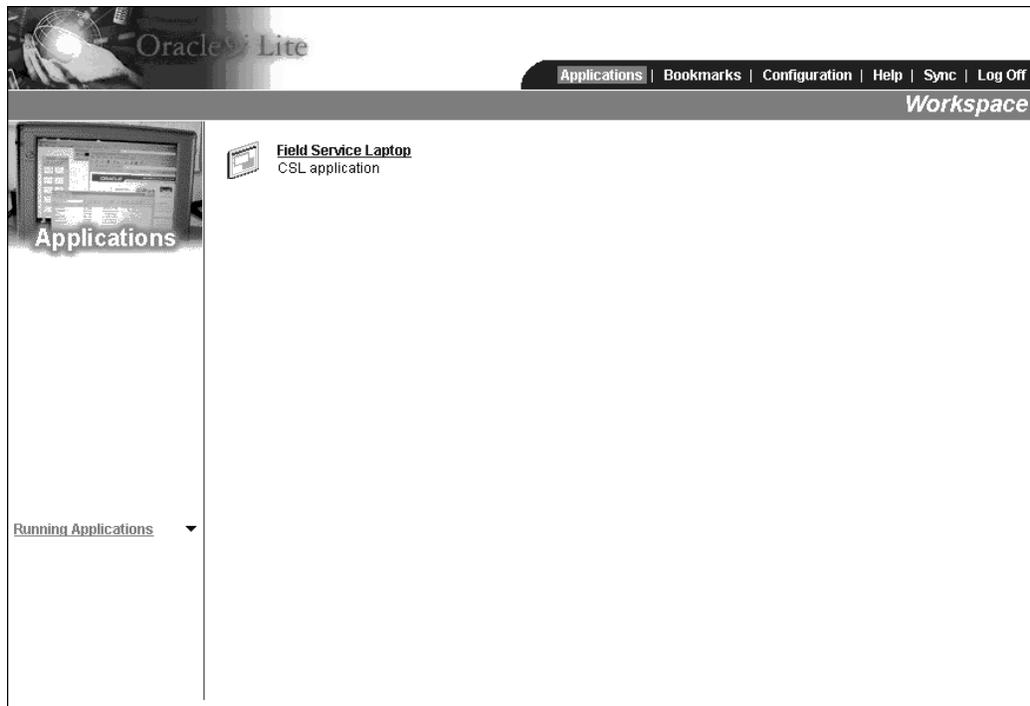
9. Click **Field Service Laptop**.

The Oracle Mobile Field Service/Laptop Calendar page opens.

Launching Oracle Mobile Field Service/Laptop

Steps

Complete the following steps to launch Oracle Mobile Field Service/Laptop:

1. From the Start menu, choose `Programs > Oracle for Windows NT > Web to Go.`

   The internet browser opens in the login page. You can also access the login page by clicking on the Web-to-Go icon on the desktop.

   Your internet browser opens the Oracle E-Business Suite login page.
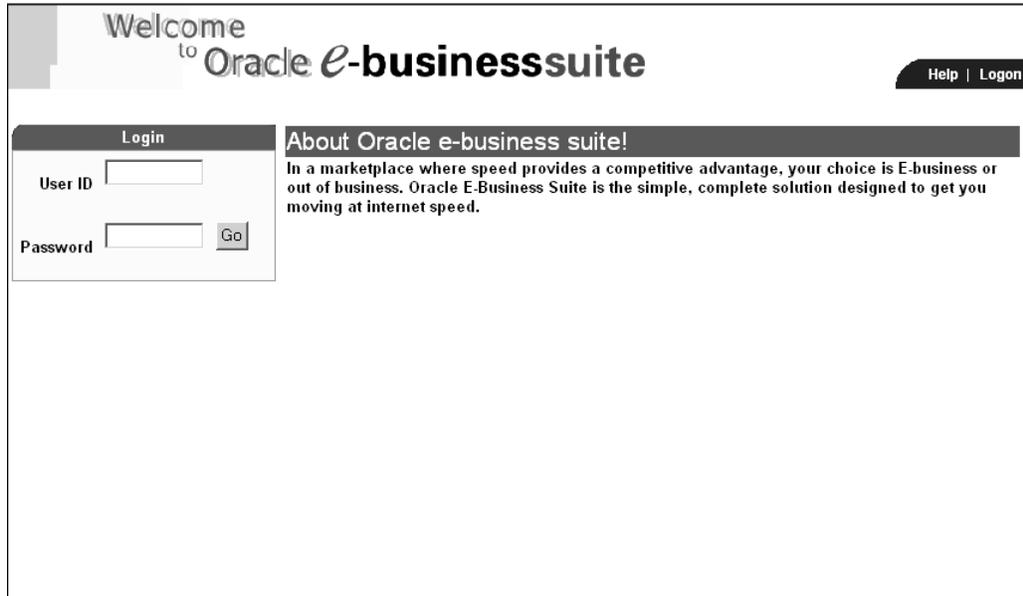
2. Enter your user name and password in the appropriate fields and then click **Go**.

Oracle Mobile Field Service/Laptop opens in the Calendar page (Daily View).

In order to receive new data assigned to you, such as new tasks and service requests, you need to synchronize with the enterprise system. Likewise, to send the changes that you make, such as creating debrief lines and updating task statuses, you need to synchronize with the enterprise system.

3. To do an incremental synchronization, click the **Synchronize** button in the upper right corner of the Calendar page.

The Oracle E-Business Suite Client Synchronization page opens with the current synchronization process in bold, italic text. A percentage value is found near each synchronization process to indicate its status. Click **Cancel** to terminate the current synchronization process.
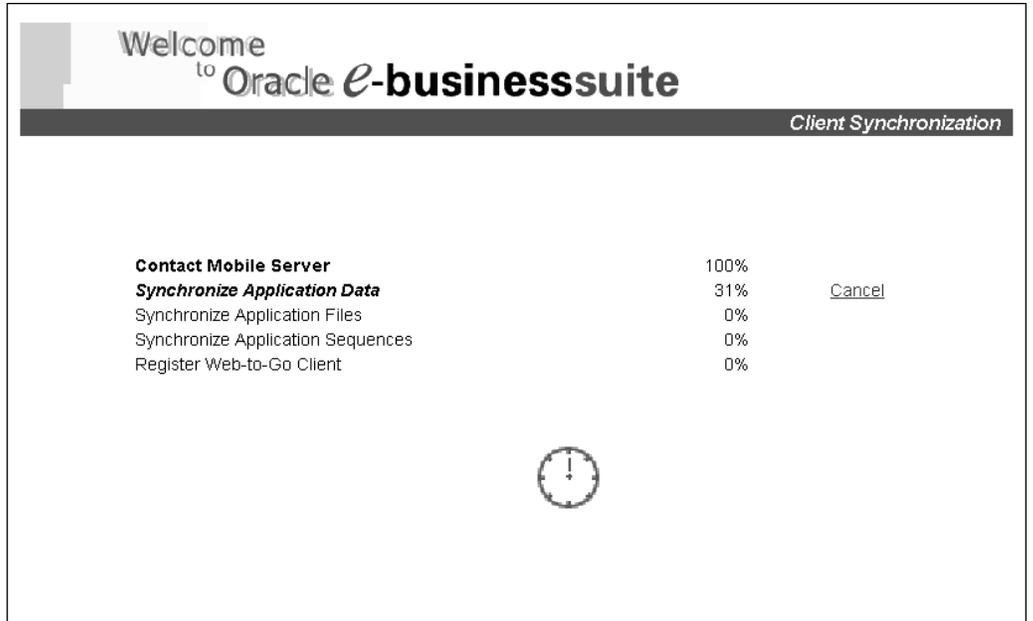
Installing Oracle Mobile Field Service/Pocket PC

For the minimum software and hardware requirements for the a Pocket PC, see "Minimum Software Requirements", page 2- 1 and "Minimum Hardware Requirements", page 2- 2 .

To install Oracle Mobile Field Service on your Pocket PC, complete the procedures in the order listed in the following table:

Procedure	Perform At
1. Downloading and Installing the Oracle9i Lite Setup Program, page A- 7	Client PC (the PC to which the Pocket PC hot syncs)
2. Performing an ActiveSync to put Oracle9i Lite Components, Oracle Mobile Field Service, and the Database on the Pocket PC, page A- 8	Pocket PC
3. Configuring mSync on the Pocket PC, page A-10	Pocket PC
4. Performing a Full Synchronization to Retrieve Oracle Mobile Field Service and Data, page A- 8	Pocket PC
5. Launching Oracle Mobile Field Service/ Pocket PC, page A-11	Pocket PC

Downloading and Installing the Oracle9i Lite Setup Program

Perform this procedure from the client PC desktop. In this procedure, you will download the mobile client from the mobile server and install the Oracle9i Lite setup program.

Steps

1. Open your browser.

2. Enter the following URL in your browser, where `<Mobile Server>` is the domain name or IP address of the mobile server:

   `http://<Mobile Server>/setup`

   For example: `http://130.35.88.214:8000/setup`

3. Click the link to download the mobile client for Windows CE 3.00 on Pocket PC StrongARM setup program and save it.

   If you are using Internet Explorer, right click with the mouse, choose the option **Save target as**, and then click **OK**. Choose a location to save the setup program and click **Save**.

4. Using Windows Explorer, double click the setup.exe file that you just downloaded in order to run the setup program.

   Once started, the setup program prompts you to specify an install directory.

5. Choose an install directory, for example, `C:\MOBILECLIENT`, and then click **OK**.

   The Setup program downloads all the required components.

Performing an ActiveSync to put Oracle9*i* Lite Components, Oracle Mobile Field Service, and the Database on the Pocket PC

Steps

1. Connect the device to the client PC.

2. If you have not installed the Microsoft ActiveSync, install it and rerun the setup program.

3. Start Microsoft ActiveSync and then install Oracle9i Lite

   Choose Tools > Add remove > [processor type], where [processor] is either SH3, SH4 or ARM.
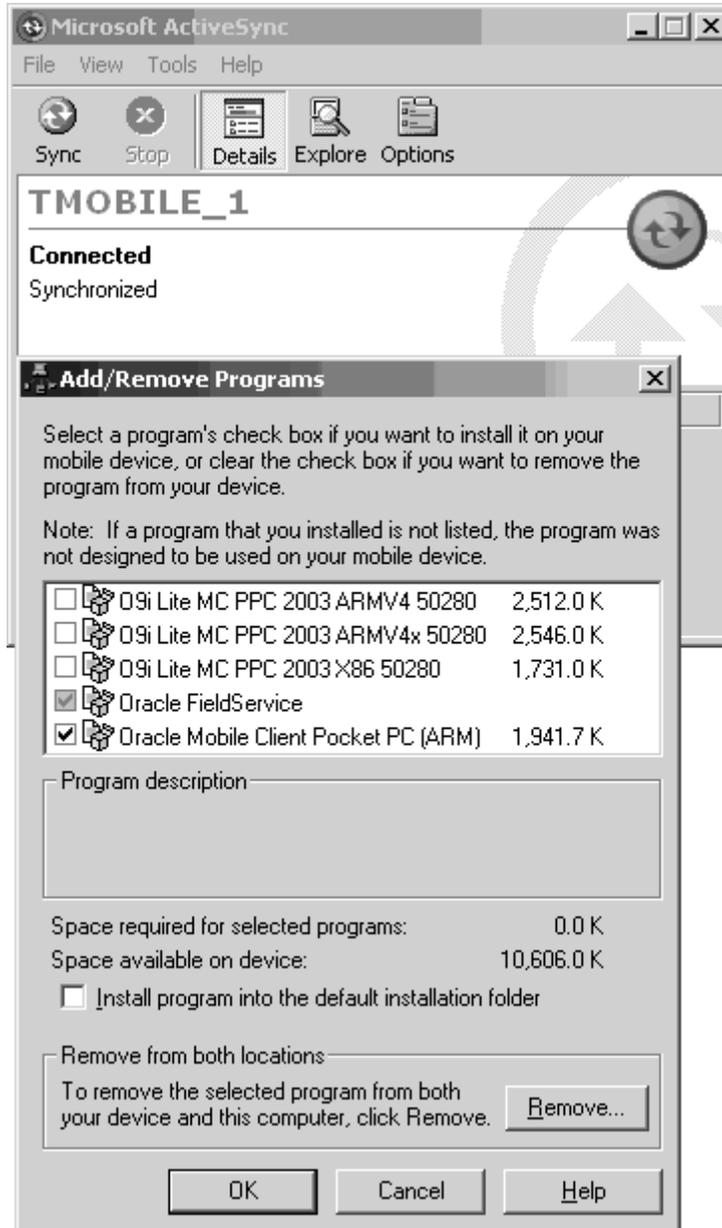
4. Perform an ActiveSync to put Oracle9*i* Lite components on the Pocket PC.

> **Note:** To do an ActiveSync to retrieve Oracle Mobile Field Service/Pocket PC itself and the data associated with it, the computer that hosts the ActiveSync manager must be able to connect to the mobile server using HTTP. Therefore, you must be able to connect to the mobile server through HTTP.

You can also retrieve the application and copy the data onto the Pocket PC by connecting to any of the following modes:

- Wireless

- Infrared

- USB

- ActiveSync

- Modem

Configuring mSync on the Pocket PC

Follow this procedure to install the Oracle Mobile Field Service application and the database on the Pocket PC.

Steps

1. On the Pocket PC, choose Start > Programs.

   The Programs screen opens.

2. Tap the File Explorer icon.

   The My Documents screen opens.

3. From the drop-down menu, choose MyDevice.

   The My Device screen opens.

4. Tap the Orace folder.

   The Orace screen opens containing the mSync file.

5. Tap on the mSync file to open it.

   The mSync screen opens.

6. For each field, enter the value as indicated in the following table and then tap **Apply**:

Field	Value
User Name	mSync client user name. This is case insensitive. (This is the Mobile Field Service username.)
Password	mSync client password. This is case insensitive.
Change	Leave this check box deselected.
Save Password	Select this check box to save the mSync username and password.
Server	IPaddress:port
Use Proxy	Select this check box if appropriate.
Force Refresh	Leave this check box deselected.

Performing a Full Synchronization to Retrieve Oracle Mobile Field Service and Data

Steps

Complete the following steps to perform a full synchronization:

1. Ensure that you are connected to the network.

2. Tap **Sync** to start the synchronization.

   After the ActiveSync, the mobile database and the mobile application are replicated to the client.

Launching Oracle Mobile Field Service/Pocket PC

Complete the following procedure to launch the Oracle Mobile Field Service application on the Pocket PC.

Steps

1. On the pocket PC device, choose `Start > Programs`.

   The Programs screen opens.

2. Tap the File Explorer icon.

   The My Documents screen opens.

3. From the drop-down menu, choose `MyDevice`.

   The My Device screen opens.

4. Tap the Orace folder.

   The Orace screen opens containing the `Fieldservice.exe` file

5. Click on `Fieldservice.exe`.

   The Oracle Mobile Field Service/Pocket PC opens.

Creating a Shortcut for Oracle Mobile Field Service/Pocket PC

Complete the following steps to create a desktop shortcut for Oracle Mobile Field Service/Pocket PC:

1. Select the `FieldService.exe` file in the `\My Device\Orace` directory to get the selection options.

   This is the same as the cut-and-paste option on the Pocket PC.

2. Choose the **Copy** option.

3. Go to the directory where the link is to be created.

   For example, `\My Device\Windows\Start Menu`.

4. Click on the **Edit** option in the bottom menu bar.

5. In the menu pop-up, select **Create Shortcut**.

   The application can now be accessed through the shortcut and will be listed in the Start Menu List of programs.

Subsequent Synchronizations for Oracle Mobile Field Service/Pocket PC

This section describes how to synchronize the database on the Pocket PC.

Steps

1. Go to the Oracle Mobile Field Service application.

2. Go to the home page of the application.

3. Click on the mSync icon.

B

Item Handling

This appendix covers the following topics:

- Limiting System Item Download
- Setting Up System Items for Install Base Transactions
- Setting Up Install Base Profile Options
- Removing and Installing Parts in Oracle Mobile Field Service
- Ordering and Transferring Parts

Limiting System Item Download

This section describes the profiles used to filter system items by category. The Item Category Filter and Item Category Set Filter profiles allow for the reduction of system items downloaded to the mobile computer device.

The following system items are replicated to the mobile computer device:

- Items used in a service request assigned to or created by the mobile user
- Item instance items used in a service request assigned to or created by the mobile user
- Items used in debrief lines
- Items used in item orders
- Items present in a good subinventory assigned to the mobile user
- Items present in the inventory organization specified by the Service: Inventory Validation Organization profile

For Oracle Mobile Field Service/Laptop, set the following profiles to filter the system by category:

- CSL: Item Category Filter
- CSL: Item Category Set Filter

See "Setting Up Profile Options for Oracle Mobile Field Service/Laptop", page 4- 4 for a complete description of these profiles.

For Oracle Mobile Field Service/Pocket PC, set the following profiles to filter the system by category:

- CSM: Item Category Filter
- CSM: Item Category Set Filter

See "Setting Up Profile Options for Oracle Mobile Field Service/Pocket PC", page 4- 9 for a complete description of these profiles.

The two category profiles for the Oracle Mobile Field Service applications enable you to setup category sets (profile 1) and relate categories to this (profile 2). The category set and category profile make the unique key for replication. The values that can be selected for the category set profile are all categories sets of the master organization and the inventory organizations.

> **Note:** You can set the category profiles for the Oracle Mobile Field Service applications at all levels.

The following are the rules governing the use of category profiles.

- If the category profile is not set (no category is entered), then all items related to the default inventory organization are replicated to the mobile clients

- If the category profile is set (category is entered), then the system items replicated are filtered based in inventory organization and category.

- Items used in a service request created on the backend will not be impacted by this profile. But for service requests that the field service representative wants to create on a mobile computer device the category profile will limit the list of items available.

- The category profile does not affect the OnHandQty (stock in subinventory).

  If profiles CSL_ITEM_CATEGORY_SET_FILTER and CSL_ITEM_CATEGORY_ FILTER are also both set, an additional filter on the item category/category set combination applies.

Items used in a field service report debrief are replicated as normal. This is independent of the category profile.

Setting Up System Items for Install Base Transactions

Steps

Complete the following steps to set up system items for install base transactions:

1. Log in to the Forms application using the responsibility Inventory.

2. Create a miscellaneous transaction, putting the item in a Subinventory.

3. Navigate to `Setup > Organizations > Subinventories`.

4. Create at least one subinventory in the Service Master Organization.

   The subinventory should be a Quantity Tracked, Asset Subinventory.

5. Set the Locator Control value to `None`.

6. Create a subinventory in the inventory organization, which will be used as the good subinventory.

7. In the same organization as the subinventory of the mobile resource, create system items that are one of the following:

   - Transactable (Inventory tab page)

   - Trackable (Inventory tab page)

   - Serviceable (Service tab page)

- Of type Material (Service tab page)

8. Put the trackable item you defined above in your good Subinventory (using Miscellaneous Transactions). Also put a non-trackable item there. The trackable item should be created as an install base product instance in the back end.

9. Under the responsibility Field Service Manager, navigate to `Spares Management > Setup > Resource Addresses and Subinventories`.

10. Create a new record for your mobile resource by entering its name. Assign a Primary Address and the two Subinventories you created to it.

11. The condition of the Subinventory in the Master Organization should be set to `Defective` and the condition of your Transaction Organization Subinventory should be set to `Usable`.

Setting Up Install Base Profile Options

Set up profiles as indicated in the following table:

Profile Name	Value	Comments
CSE: Miscellaneous Issue to Project Transaction Type	Issue to	none
CSE: Miscellaneous Receipt From Project Transaction Type	Receipt from	none
CSE: PA Expenditure Type	Material	none
CSE: Bypass Event Queue	Y	This profile is used to bypass some queues, so when miscellaneous transactions are created they will be directly inserted into Install Base.

Adjusting transaction types so they can be used for install base updates can be done under the responsibility Installed Base Admin and navigating to `Setups > Transaction Types and Sub Types`. Transaction types can be used for removing install base products by setting the Change Owner To field in the Source Info section of the form to `Internal`. By setting this field to `External`, the transaction type can be used for installing new install base products.

Removing and Installing Parts in Oracle Mobile Field Service

Whether an install base update is done when removing a part in Oracle Mobile Field Service depends on the selected transaction type when doing a material transaction.

If the `Change Owner To` value of the selected transaction type is set to `Internal`, then the install base product to be removed can be indicated in Oracle Mobile Field Service.

If the `Change Owner To` value is set to `External`, than a trackable product can be indicated from a usable subinventory. An install base product will be created upon debriefing the material transaction in Field Service Report with the Update Installed Base check box selected.

Ordering and Transferring Parts

To create an item order in an Oracle Mobile Field Service application, at least one usable (good) subinventory has to be defined and assigned to the field service representative. Two usable subinventories have to be defined and assigned to the field service representative in order to do transfers.

Subinventories are set up using the Field Service Administrator responsibility and the Resource Addresses and Subinventories form. See the *Oracle Field Service Implementation Guide* for more details.

C

Signature Capture

This appendix covers the following topics:

- Overview

Overview

A field service representative can capture the signature of a customer after performing the debrief on the Pocket PC or on the laptop computer using an appropriate external Topaz signature tablet. The signature is then synchronized with the enterprise system.

You can view a captured signature in the appropriate debrief screen of the Forms application. Viewing a signature in the Debrief form is exactly the same as viewing any other attachment.

On the toolbar, there is a paper clip icon. When you select an attachment linked to the debrief, the icon changes to a paper clip attached to a yellow document.

If the attachment viewer in the Forms application is not working, then check that the entries in wdbsver.app (found in the Forms tier setup) are similar to the following:

- connect_string = mobxbld1
- password = apps
- username = apps
- default_page = APPS.fnd_web.ping
- document_table = APPS.fnd_lobs_document
- document_path = docs
- document_proc = (null)
- name_prefix = (null)
- always_describe = (null)
- after_proc = (null)
- before_proc = (null)
- reuse = YES
- connmax = 30
- upload_as_long_raw = (null)
- upload_as_blob = *

- pathalias = fndgfm
- pathaliasproc = fnd_gfm.dispatch

D

National Language Support

Overview

This appendix describes how to use National Language Support (NLS) to change the default language of Oracle Mobile Field Service, English, to the desired language of the user.

The profile option ICX: Language determines the language in which field service representatives receive data, messages, and labels for Oracle Mobile Field Service/Laptop or Oracle Mobile Field Service/Pocket PC.

As a prerequisite, install the NLS language for the Oracle E-Business Suite and then apply all patches in the NLS language when applicable.

From the Forms application, complete the following steps to change the default language of Oracle Mobile Field Service:

1. Change the profile ICX: Language to the desired language.

    1. Login with System Administrator responsibility.

    2. Navigate to Profile / System.

    3. Check the User check box and then enter the username.

    4. Enter the profile option name, ICX: Language, and then click **Find**.

    5. Change the language of the user level.

2. Run the Manage Mobile Users concurrent program (if it is not scheduled).

    1. Login with Mobile Administrator responsibility.

    2. Navigate to Concurrent / Requests.

    3. Click **OK** to submit a single concurrent request.

    4. Choose the Manage Mobile Users concurrent program from the list of values.

    5. Click **OK**.

The Manage Mobile Users concurrent program detects the language change and then removes all records in the old language and insert them in the new language. This in turn, causes a full synchronization. After this synchronization, the user sees the application and data in the new language.

Oracle9*i* Lite can only use one language code set at a time. Oracle9*i* Lite has five sets of client libraries, one for each language (encoding). English/Western European, Japanese, Korean, Traditional Chinese, and Chinese are supported. When the Oracle9*i* Lite mobile server is installed, it will only install one set of client

libraries. Therefore, an additional mobile server installation is required for every language if it uses a different code set. The administrator has to setup different URLs for each language. For example, the URL for English is the following: `server/webtogo/setup_eng.htm, server/webtogo/setup_jp.htm`. Users have to be informed of which URL they should use, based on the language they want.

As long as the languages use the same code set (such as English and Spanish), only one mobile server is required, as explained earlier.

E

Troubleshooting

This appendix covers the following topics:

- Troubleshooting the Application Publishing

- Troubleshooting the Mobile User Concurrent Program

- Reviewing Upload Errors

- Manually Publishing Mobile Applications

- Understanding the Java Utility Command Syntax

- Usage Examples

- Publishing Applications with Multiple Mobile Server Instances

- Tracing Oracle9i Lite Mobile Server

Troubleshooting the Application Publishing

Use this appendix to troubleshoot any problems that you are having with Oracle Mobile Application Foundation or Oracle Mobile Field Service.

Please check to ensure that the environment variables are set correctly in the file asgovars.env. Run the relevant diagnostic check as described in "Running Pre-seeded Tests", page 5- 1 .

Troubleshooting the Mobile User Concurrent Program

This section discusses known issues regarding the concurrent program that creates mobile users, MANAGE MOBILE USERS. This Java concurrent program creates mobile users. JDK 1.3.1 is required in the concurrent tier. Therefore, you need to apply patch 2356331 and follow the instructions in Oracle*MetaLink* Note 130091.1 in order to use JDK 1.3.1.

Problems and Resolutions

The Concurrent Program Fails to Create Mobile Users

Problem: After the patch is applied and the post-installation setup is completed, the concurrent program still does not work.

Resolution: Restart the concurrent managers so that the new environment settings are initialized. To find out whether a concurrent request is being initialized to JDK 1.3.1 settings, use the following script:

```
select variable_name,value
from fnd_env_context e,
fnd_concurrent_processes p,
fnd_concurrent_requests r
where p.concurrent_process_id = e.concurrent_process_id
and p.concurrent_process_id = r.controlling_manager
and r.request_id=&request_id
and e.variable_name in ('AF_JRE_TOP','AFJVAPRG','AF_CLASSPATH')
```
This script accepts a concurrent request ID and prints the environment settings for that request.

The Concurrent Program Only Works Intermittently

Problem: The concurrent program only works intermittently.

Resolution: Make sure all concurrent managers are restarted. It is possible that only one concurrent manager was restarted. However, a concurrent request might be started by any of the concurrent managers. If all the concurrent managers are not restarted, then some of the requests might not have the correct settings. To verify this, use the script listed above for requests that fail.

The Concurrent Program Log Shows the Error Message "oracle.lite.web.resource. ResourceException: java/lang/ThreadLocal"

Problem: The log generated by the concurrent request shows this error.

Resolution: This is the clearest indication that the JDK version is not 1.3.1. The above mentioned class (ThreadLocal) is in JDK 1.2.2 or higher. Again, check if the environment settings are correct.

All Environment Settings Appear Correct, But the Concurrent Program Still Does Not Work

Problem: The environment settings that appear in the script listed in "The Concurrent Program Fails to Create Mobile Users", page E- 1 indicate that JDK 1.3.1 is used. However, the concurrent program still fails.

Resolution: Look into the concurrent request's log file and look for any exceptions. Then for each of the environment variables AF_JRE_TOP, AFJVAPRG, and AF_CLASSPATH, check if the files listed exist.

Reviewing Upload Errors

Upload errors are generated during the upload process when some of the data fails to be applied to the enterprise database. Upload errors can be caused by the following:

- System issues

  It is possible that the system is on a different mobile patch level than what is required.

- Setup issues

  The correct business process type or the correct profile setting is not set on the enterprise system. For example, it is necessary that the expense type for an expense line is set correctly.

- Faulty data or conflicts

Oracle Mobile Application Foundation maintains a log of all upload errors. You can use the Mobile Application Foundation Administration Console to view and manage

these errors. See the upload errors sections in Chapter 6, "Administrative Tasks", page 6-1 for further details.

Manually Publishing Mobile Applications

For the mobile applications to function, you must create mobile application objects and publish the mobile application file. You can accomplish this by running the Java post-install program for each mobile application. The Java post-install program does the following:

- Registers the mobile object definitions for the mobile applications in the Oracle9*i* Lite mobile server repository.

- Publishes the mobile applications to the Oracle9*i* Lite mobile server repository.

Use the following procedure to run the Java post-install program:

- Shut down the mobile server while publishing mobile applications and then restart the mobile server after publishing is complete.

- Before publishing the mobile applications, open the webtogo.ora file and set the following parameters:

  Note: - TRACE_ENABLED = YES

  - TRACE_DESTINATION = CONSOLE

  - TRACE_LEVEL = 7

  These parameters appear twice in the webtogo.ora file and should be set identically in both places.

  After you publish the Oracle Mobile Field Service applications, reset the above parameters to their original values.

Steps

1. Run the environment variable script.

   See "Steps to Run the Environment Variable Script", page 3-2 for a complete description of this procedure.

2. Publish the application for the mobile framework (JTM):

   ```
   java -DJTFDBCFILE=<DBC FILE PATH>  -DAFLOG_ENABLED=TRUE


   -DAFLOG_LEVEL=STATEMENT oracle.apps.asg.setup.InstallationMgr <DB
   _HOSTNAME> <DB_PORTNUM> <ORACLE_SID> <APPS_USER_NAME> <APPS_PASSWD
   > JTM_TOP JTM/JTM.ini html/download/jtm.zip
   ```

   See "Understanding the Java Utility Command Syntax", page E-4 for an explanation of the command syntax of this Java program.

3. Publish the mobile applications for the mobile products that you want to implement.

   See "Usage Examples", page E-4 for usage examples for Oracle Mobile Field Service/Laptop and Oracle Mobile Field Service/Pocket PC.

Understanding the Java Utility Command Syntax

The following Java utility is used in the preceding procedure, "Manually Publishing Mobile Applications", page E- 3 :

```
java -DJTFDBCFILE=<DBC FILE PATH>  -DAFLOG_ENABLED=TRUE
```

```
-DAFLOG_LEVEL=STATEMENT oracle.apps.asg.setup.InstallationMgr <DB
_HOSTNAME> <DB_PORTNUM> <ORACLE_SID> <APPS_USER_NAME> <APPS_PASSWD
> <PROD_TOP_NAME> <INI_FILE_NAME> <ZIP_FILE_NAME>
```

Its command syntax is as follows:

- `DJTFDBCFILE`, `DAFLOG_ENABLED`, and `DAFLOG_LEVEL` are used by the JTT Logging Framework.

- `DBC_FILE` is usually found under the `$FND_TOP/secure` directory.

- The parameters `<DB_HOST_NAME>`, `<DB_PORT_NUMBER>`, `<ORACLE_SID>`,`<AP PS_USER_NAME>`, and `<APPS_PASSWD>` are used to generate the connection string to the database.

- `<PROD_TOP_NAME>` refers to the application directory for the mobile product for which the publishing is done. It should be `NULL` if publishing is not done.

- `<INI_FILE_NAME>` refers to the name of the list file which has the list of files to be published. It should be NULL if publishing is not done.

- `<ZIP_FILE_NAME>` refers to the name of the zip file which contains the files to be published. The location of this file is relative to the `<PROD_TOP_NAME>`. It should be `NULL` if publishing is not done.

Usage Examples

In order to run the post-install step for Oracle Mobile Field Service/Pocket PC, the command would be:

```
java -DJTFDBCFILE=<DBC FILE PATH>  -DAFLOG_ENABLED=TRUE
```

```
-DAFLOG_LEVEL=STATEMENT oracle.apps.asg.setup.InstallationMgr <DB
_HOSTNAME> <DB_PORTNUM> <ORACLE_SID> <APPS_USER_NAME> <APPS_PASSWD
> CSM_TOP CSM/CSM.ini html/download/CSM.zip
```

In order to run the post-install step for Oracle Mobile Field Service/Laptop, the command would be:

```
java -DJTFDBCFILE=<DBC FILE PATH>  -DAFLOG_ENABLED=TRUE
```

```
-DAFLOG_LEVEL=STATEMENT oracle.apps.asg.setup.InstallationMgr <DB
_HOSTNAME> <DB_PORTNUM> <ORACLE_SID> <APPS_USER_NAME> <APPS_PASSWD
> CSL_TOP CSL/CSL.ini html/download/csl.zip
```

Publishing Applications with Multiple Mobile Server Instances

If you plan to set up multiple mobile servers in order to support a greater number of mobile users and distribute the load, you should publish the mobile application only once, to the primary server.

The primary server is usually the mobile server which you set up first and installed the repository on. This server contains the directory location where the mobile application files are stored when you publish them. The webtogo.ora file contains an entry, `ROOT_DIRECTORY`, which points to this location.

Secondary mobile servers need to have access to the location of this root directory through network file sharing (NFS). The ROOT_DIRECTORY webtogo.ora entry of the secondary mobile servers will point to this directory location.

When you publish applications, you need to set the ORACLE_HOME to the location of the directory where the primary mobile server is installed.

Tracing Oracle9i Lite Mobile Server

This section lists the steps required to enable or disable tracing in Oracle9*i* Lite mobile server for selected users. These steps do not require the mobile server to be restarted.

Enabling Tracing in Oracle9i Lite Mobile Server

1. Access the Mobile Server Login page.

   This page is available at: `http://<mobile_server_host>:<port>/webtogo`
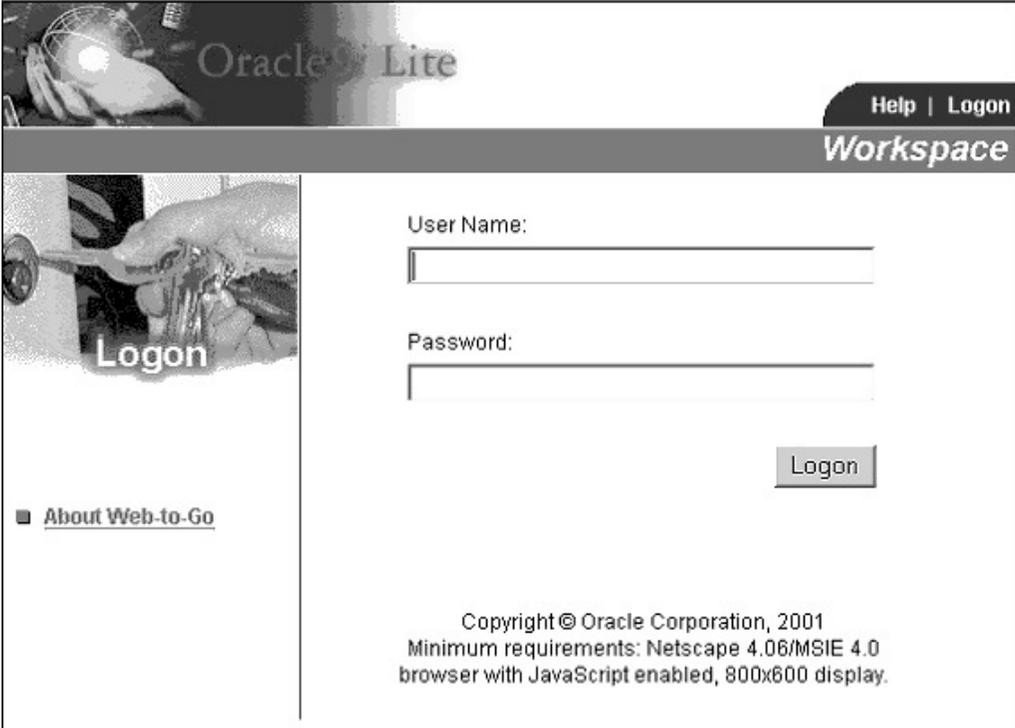
2. Enter Administrator in the User Name field and the password in the Password field, and then click **Logon**.

3. Click **Control Center Link**.

   The Control Center window opens.
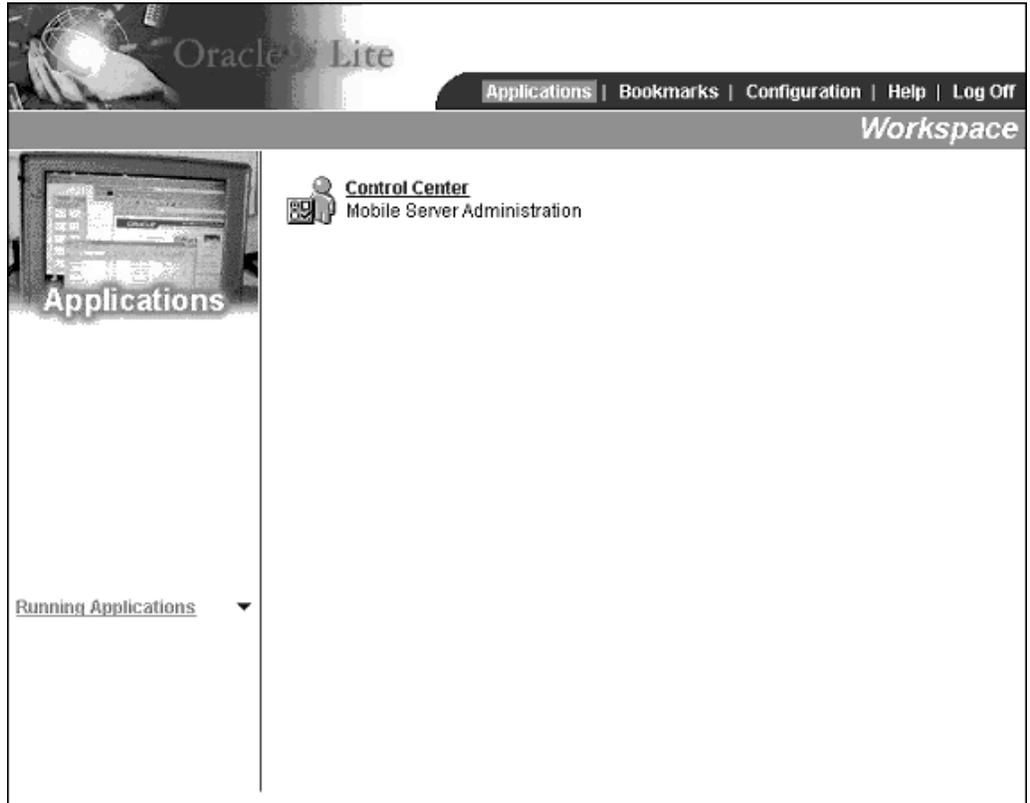
4. Click the Server tab.

5. Click **Trace** on the left side of the page.

   The Server Trace Setting page opens.
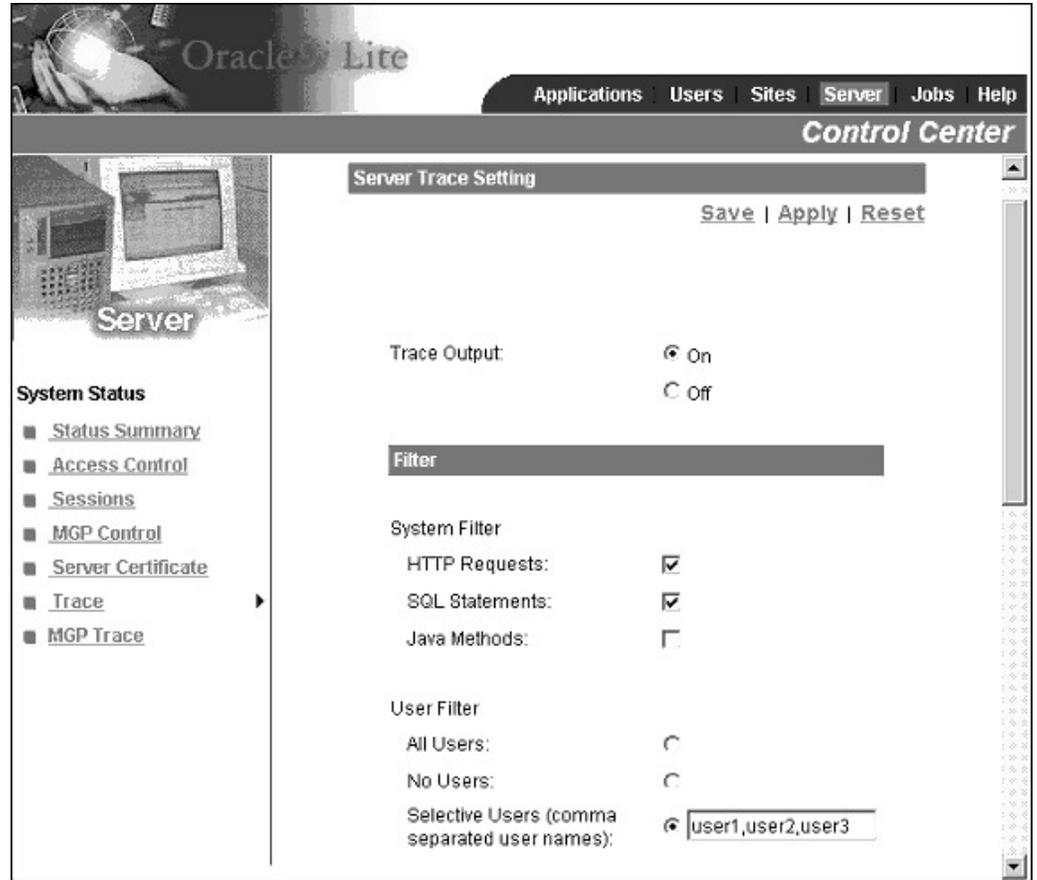
6. Set the following parameters:

- For Trace Output, click the On radio button.

- For System Filter, select both the HTTP Requests and SQL Statements check boxes.

- In User Filter section, click the Selective Users radio button and then type the comma-separated list of users.

7. Scroll down and specify the following:

- Click the File radio button to specify the destination.

- Type trace.log in the Trace File base name field.

- Type 10 in the Trace file size of (in MB) field.

- Type 15 in the Trace file pool size field.

- Select the Create trace file for every user check box.

With the above settings, every user will have a separate trace file. These trace files are located in the Oracle9i Lite $ORACLE_HOME/mobile/server/bin folder. The files are named trace_log_<user_name><log_file_num>.log. So, for example, user FBRAMER's trace files are named as trace_log_FBRAMER1.log, trace_log_FBRAMER2.log, etc. The Trace file pool size (15 in this case) specified above controls when the log_file_num cycles. For example, once trace_log_FRBAMER15.log

reaches 10MB size, the next file name will be trace_log_FBRAMER1.log. Note that it will overwrite existing file with the same name. So, the Trace file pool size should be set so that all the files will be available as needed.
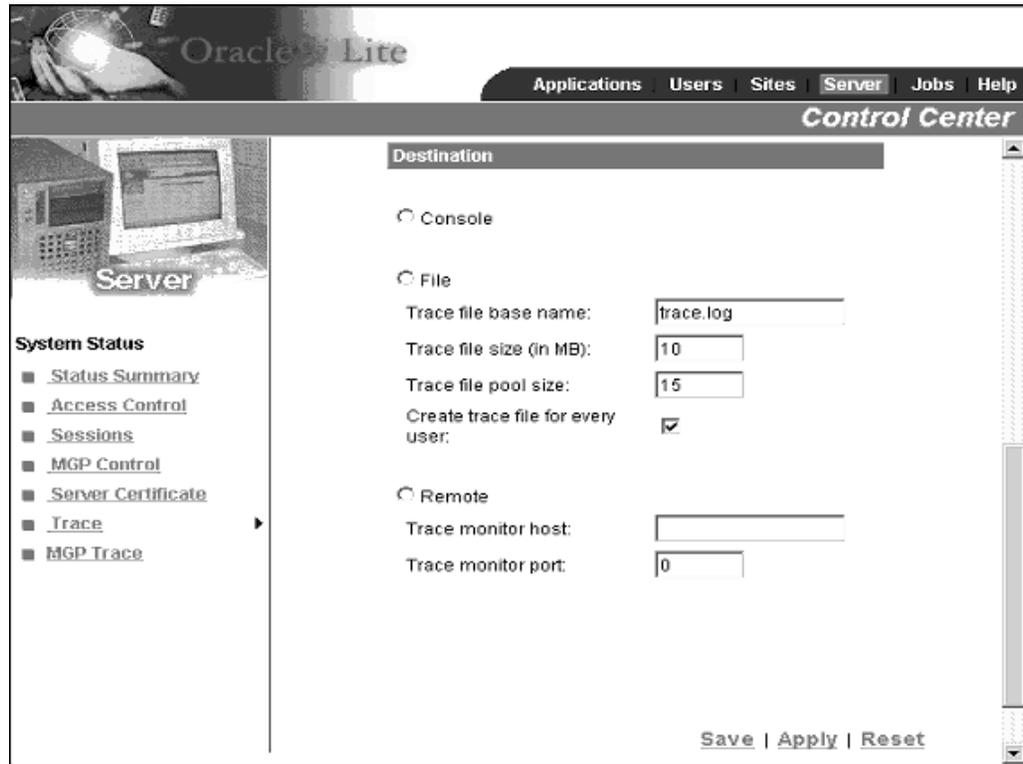
8. Click **Save**.

   A dialog box appears indicating that the save was successful.

9. Click **OK**.

Files to be Uploaded

The following files need to be uploaded after obtaining trace.

- trace_sys1.log. If available, trace_sys2.log and so on.

- trace_log_main1.log. If available, trace_log_main2.log and so on.

- trace_log_<user_name>*.log. See step 7 in "Enabling Tracing in Oracle9*i* Lite Mobile Server", page E- 5 .

Disabling Tracing in Mobile Server

1. Complete steps 1 through 4 in "Enabling Tracing in Oracle9*i* Lite Mobile Server", page E- 5 .

2. Click **Trace** on the left side of the page and then set Trace Output to Off.

3. Click **Save**.

   A dialog box appears indicating that the save was successful.

4. Click **OK**.

F

Mobile Synchronization Scalability and Performance

This appendix covers the following topics:

- Overview
- Test Environment
- Test Results
- Performance Tuning of Mobile Application Foundation

Overview

The Oracle Mobile Application Foundation (MAF) provides data synchronization for Oracle Mobile Field Service/Laptop and Oracle Mobile Field Service/Pocket PC of the Oracle E-Business Suite. This appendix provides benchmark results that demonstrate the scalability of the MAF architecture to large numbers of mobile users on low-cost server hardware running Linux. You can use these results to determine hardware requirements for implementing Oracle Mobile Field Service.

Mobile users periodically synchronize their mobile computer devices with the enterprise system in order to download new Oracle Mobile Field Service data and upload changes that they have made in their applications.

Synchronizing a mobile client with the server consists of three basic steps:

1. Preparing data and connecting to the network
2. Communicating with the Oracle9*i* Lite mobile server
3. Disconnecting from the network, processing and displaying the new data

While all three steps are important factors in determining the total synchronization time experienced by mobile users, only the time spent communicating with the mobile server affects the ability of the system to scale to large numbers of mobile users.

> **Note:** When modems are used with circuit-switched networks, the connection time may be a large portion (up to 30 to 40 seconds) of the total synchronization time.

In this benchmark, the server load is characterized by the number of connections per minute. Simulated connections are started at a constant rate and the behavior of the server is measured under this steady load. Eventually, as the connection rate is

increased, the server is no longer able to complete the requests at the rate that they are being started.

When the incoming load exceeds the maximum steady-state performance of the system, connections are queued until the load decreases and the server is able to catch up. This allows the server to handle sudden bursts of activity without a failure. However, in this case connection times will be longer due to the queuing.

In order to prevent arbitrarily long connection times, the server can be configured to refuse new connections if the queue exceeds a specified size. Mobile users will instead receive a message stating that the server is unavailable and to try again later.

Test Environment

The test system consists of a load generator running on a set of PCs, a single Oracle9*i* Lite mobile server, plus a separate Oracle9*i* database server. The load generator simulates mobile client connections, and can be programmed to initiate connections at a specified rate. The load generator is connected to the mobile server via a LAN connection.

The load generator simulates the actual Mobile Field Service client application. The Oracle9*i* Lite database and Mobile Field Service application are pre-installed and an initial full synchronization is performed prior to the test.

The connections are made over a high-speed LAN rather than a dial-up network, but the total load on the mobile server for a given synchronization rate does not depend strongly on the speed of the connections.

System Configuration

The following is the hardware and software configuration for the test system:

Load Generator

Server Type:	4 PCs
Number of CPUs per PC:	1 Intel Pentium III CPU
CPU Speed:	531-598 MHz
Main Memory per PC:	512 MB
Network Interface:	100 Mbps Fast Ethernet NIC
Operating System:	Microsoft Windows NT 4.0 SP6

Mobile Server and Database Server

Server Type:	Dell PowerEdge 2650
Number of CPUs:	2 Intel Xeon CPUs
CPU Speed:	2.8 GHz
Main Memory:	6 GB
Network Interface:	Two Integrated Gigabit NICs
Operating System:	Red Hat Enterprise Linux AS 2.1

Software

Oracle E-Business Suite:	Release 11i.8 Rapid Install
Oracle Mobile Field Service:	Patch set 8.3.5
Oracle9*i* Lite:	Release 5.0.2.3d
Oracle9*i* Database:	Release 9.2.0.2

> **Note: Note:** For the mobile and database servers, Red Hat Enterprise Linux AS 2.1 supports the Hyper-Threading feature of the Intel Xeon processors in the Dell PowerEdge 2650. The total cost of these systems is less than $10,000 USD each.

The Oracle E-Business Suite was installed using the 11i .8 Rapid Install. Oracle9i Lite was installed as described in "Installing and Configuring Oracle9i Lite", page 3- 1 . No special database or application tuning was performed.

Test Data

Each test run simulates connections from 100 distinct mobile users. Prior to starting the test, transactions are performed on the enterprise system to queue up data for each mobile user. To simulate a typical load for a field service representative, each mobile user is assigned three service requests, three tasks, and three notes, plus additional supporting records. A total of 21 rows from 10 tables are downloaded to each mobile user. The total compressed size of the downloaded data is 2.6 KB. No data is uploaded to the mobile server from the mobile clients during this test.

Test Results

This section describes the test applied to Oracle Mobile Field Service and resulting performance specifications.

Synchronization Time

During the test, the time taken by each mobile user to communicate with the mobile server is recorded. The top and bottom 5% of the synchronization times are discarded before computing the minimum and maximum synchronization times.
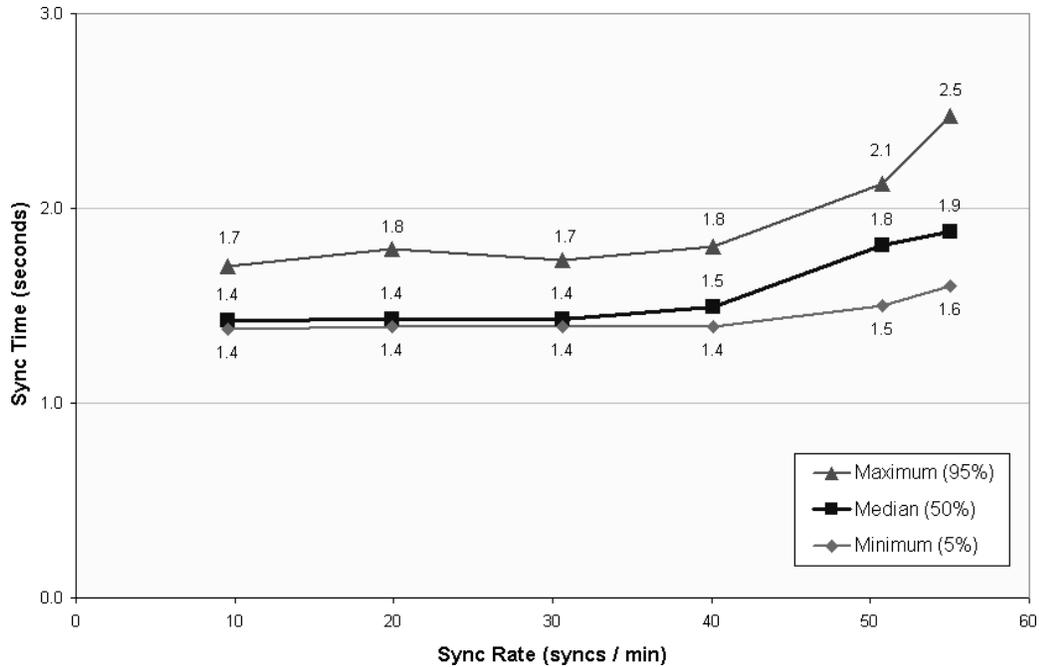
The median synchronization time rises quite slowly as the synchronization rate is increased. Up to a synchronization rate of 40 synchronizations/minute, the synchronization time is essentially constant at just under 1.5 seconds. The median synchronization time increases from 1.4 seconds to 1.9 seconds (32%) as the synchronization rate increases from 10 to 55 connections per minute.

CPU Load

The average CPU load on the database computer and middle tier computer rises nearly linearly as the synchronization rate is increased. At 55 synchronizations per minute, the average database load is 13% while the average mobile server load is 20%. For a graphics representation of the CPU load, see the graph in "CPU Usage Tuning."

> **Note: Note:** The Xeon Hyper-Threading is enabled during the test, so the average CPU usage is calculated over the four logical processors rather than the two physical processors.

Maximum Steady-state Performance

At a synchronization rate of 55 connections per minute, the average synchronization time remains very low and the peak CPU load on the database computer and middle tier computer is reasonable. However, beginning at a synchronization rate of 60 connections per minute, the server can no longer process the requests as fast as they arrive, so the excess requests are queued up. When the incoming load stops at the end of the test, the mobile server completes the remaining requests. All of the requests completed without errors.
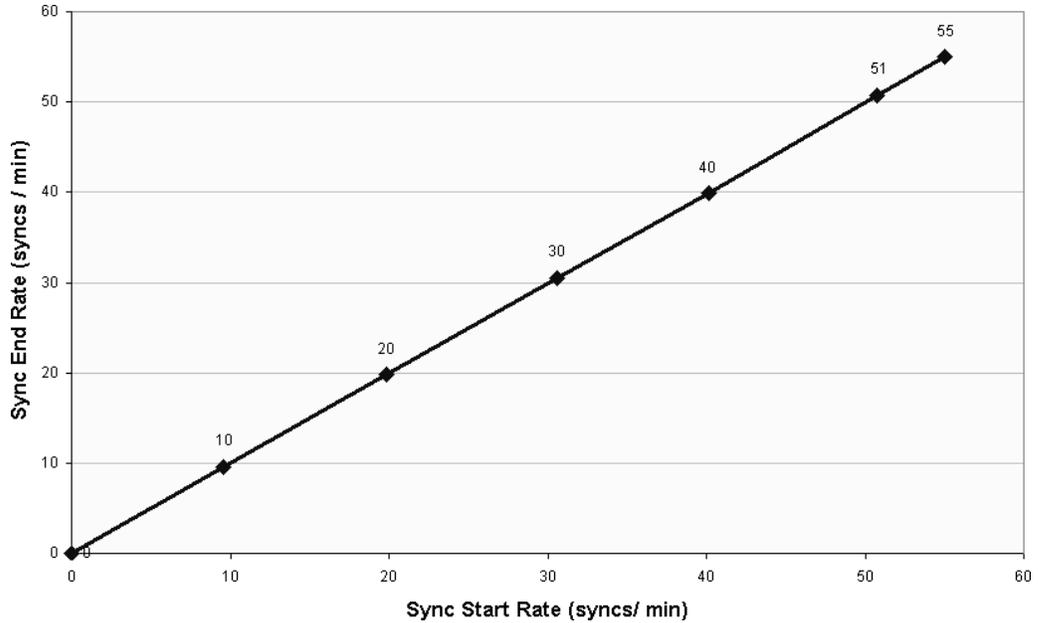
Laptop End-End Synchronization Test

In addition to the server capacity, the end-user is interested in what is the end-end synchronization time. For Oracle Mobile Field Service/Laptop, this is the time that elapses from the point the user initiates synchronization in the application to the point the application returns to the calendar screen. This time includes the following:

- Time to contact the mobile server and authenticate the user and process data for the user

    Server side scalability is only impacted by this and has been discussed in depth in the preceding sections.

- Time taken to check if there is an application upgrade

    Apart from data transfer, the synchronization operation also checks if there is a new version of the software. If there is a new version of the software it downloads the same. This being a search against the server file system does not impact scalability

- Time taken for the application to restart the calendar screen.

    This does not depend on the number of users and is only a function of the device the user uses.

The following table describes the synchronization data amount and synchronization times for end-end synchronizations for Oracle Mobile Field Service.

Scenario	Amount of Data Transferred	Fixed Overhead (Logon, Authentication and Application Upgrade)	Time Taken on LAN	Time Taken on Wireless Network (50 kbps)
Null End-End synchronization with no updates either on client or server	1K	5.6K	16s	29s
Synchronization with user updating one task with two notes, six debrief lines	4K	5.6K	17s	31s
Synchronization with three new service requests, three new tasks and three new customers and three new install base items	4K	5.6K	17s	33s

Bulk Record Update Test

In addition to normal daily transactions, organizations periodically make changes to large numbers of records in the enterprise system, such as a quarterly update to the System Items table in a field service organization. After such a bulk update of records, the modified records are downloaded to each mobile user during their next synchronization.

To test the scalability of the Mobile Application Foundation for bulk updates, the synchronization time was measured for a single mobile user after modifying 96,000 system item records. The test was performed with the mobile client connecting over a high-speed local area network. The following table summarizes the results:

Test Case	Total Time
Initial Download All application data, including 96,000 system items	4:14
Incremental Update After 96,000 system items were updated	4:04
Incremental Delete After 96,000 system items were deleted	2:54

The test results show that synchronization times for bulk updates are essentially limited by the transfer size of the modified records rather than scalability of the mobile server. On a wireless network, transferring 12MB of data will take at least 40 minutes

(even at an ideal connection rate of 40kbps), which is an order of magnitude greater than the processing time. The mobile server compresses all data transfers for optimum performance. In this case, the system items average 125 bytes each.

The key to limiting the worst-case synchronization time is to intelligently limit the maximum amount of data that is downloaded to the mobile users. For example, Oracle Mobile Field Service products provide a category mechanism to specify which system items are needed for mobile users. Only those system items will be downloaded.

System Sizing

In order to determine the appropriate hardware for the mobile server and database, develop a model of the anticipated system load during the workday. For example, the graph in this section shows a load model for an organization with 3,000 mobile users working in four U.S. time zones.

The workforce is assumed to be divided among the time zones as described in the following table:

Time Zone	Usage	Amount of Users
Eastern	35%	1,050
Central	30%	900
Mountain	10%	300
Pacific	25%	750
Total	100%	3,000

As described in the following table, it is assumed that users synchronize three times per day, according to the normal distributions:

Synchronization	Mean Time	Standard Deviations
Start of workday	7:55	10 min
Middle of workday	13:00	3 hrs
End of workday	17:30	30 min
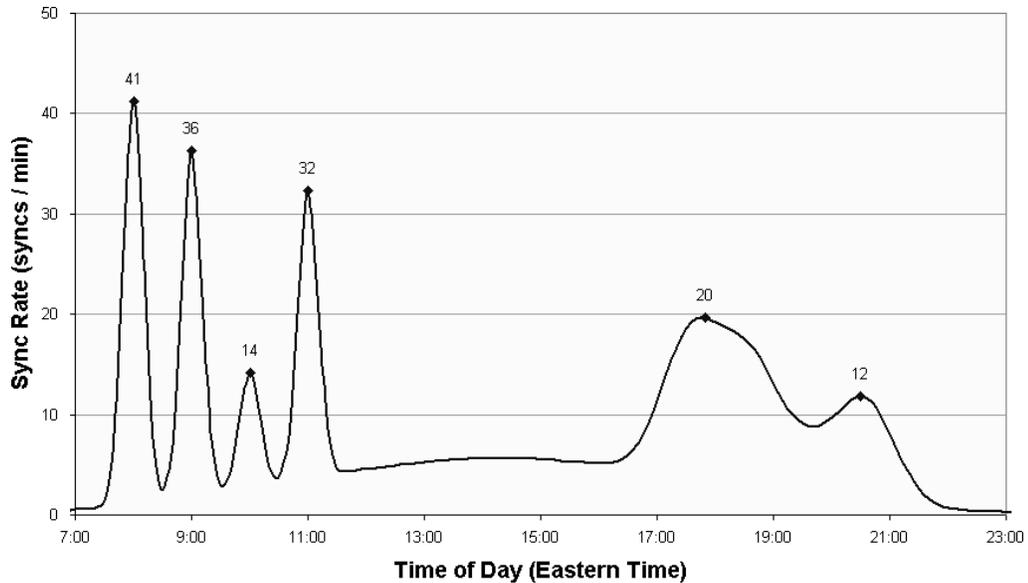
For this model, the peak load is 41 synchronizations per minute at 7:55 Eastern Time. This load is well within the capabilities of the reference configuration used for the benchmarks in this appendix. At the time of the peak load, the estimated synchronization time is 1.6 seconds and the average CPU load is 9% for the database and 13% for the mobile server.

Conclusion

This benchmark demonstrates the high scalability of the Oracle Mobile Application Foundation running on low-cost hardware using Linux. Synchronization times for typical Mobile Field Service connections are very short (one to two seconds), and they remain low as the incoming request rate is increased. The CPU usage scales nearly linearly with the incoming request rate.

For the reference test configuration, the maximum steady-state synchronization rate is shown to be at least 55 connections per minute. At this rate, approximately 500 mobile users can synchronization in a 10-minute period. Depending on how concentrated the synchronization activity is at the peak times during the workday, this rate can support a field organization of several thousand mobile users. To determine system requirements, develop a model of the anticipated number of synchronizations per minute throughout the day, taking into account time zones and business processes.

The Oracle Mobile Application Foundation also robustly handles surges in load. When the incoming request rate exceeds the maximum steady-state performance of the system, the mobile server queues the excess connections and completes all of the requests without error, once the load drops below the maximum rate.

Performance Tuning of Mobile Application Foundation

To achieve the test results described in this appendix, tune the Mobile Application Foundation as described in this section. Here, performance tuning issues specific to Oracle Mobile Field Service are addressed. The following figure illustrates the Oracle Mobile Field Service architecture.
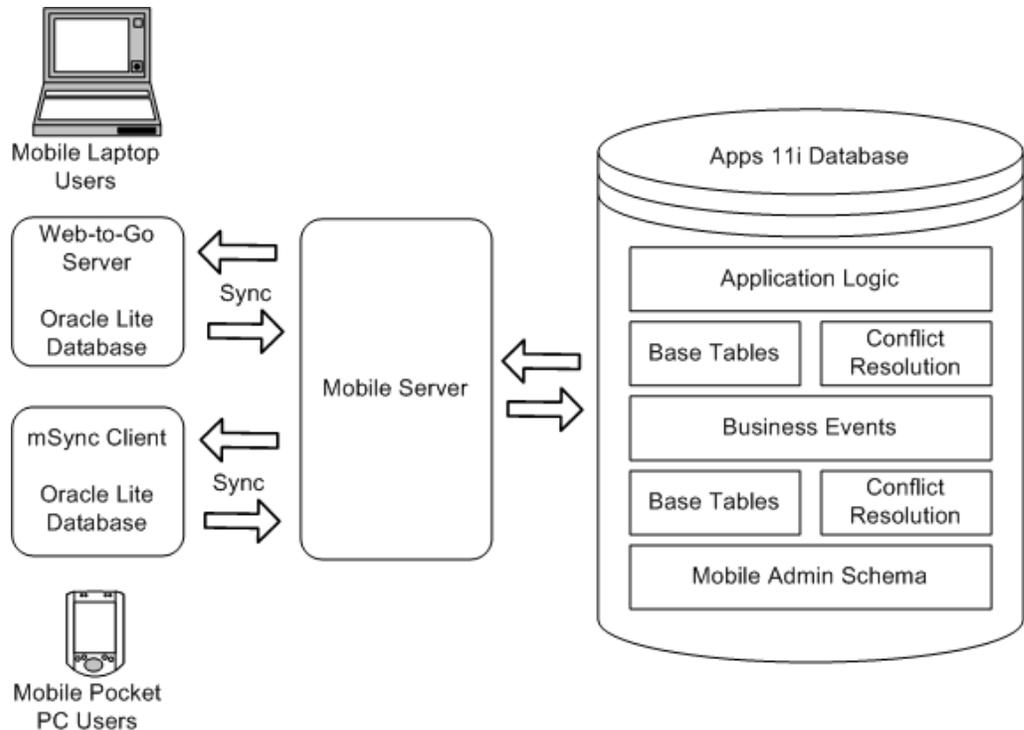
The Oracle9i Lite mobile server functions as a conduit between the mobile computer device and the enterprise database, transferring data and the Oracle Mobile Field Service application between the two. The first, or initial synchronization, from the mobile computer device installs the entire Oracle Mobile Field Service application as well as the data targeted for that mobile user. Subsequent synchronizations (also called incremental or fast synchronizations) only download application upgrades and incremental data. This incremental dataset consists of data updated on the mobile computer device since last synchronization and data ready on the server since the last synchronization. It can be expected that in a live or production instance, application upgrades are minimal and therefore incremental synchronizations mainly transfer new data. Synchronizations that do not involve either application upgrades or data transfer are called null synchronizations. Null synchronizations are useful for performance benchmarking since they provide the lowest possible synchronization time.

First-time synchronizations should be done on either a LAN or network with a high bandwidth so that the synchronization completes in a timely manner. First-time synchronizations over low-bandwidth (GPRS) networks can terminate due to low network time-out settings. In this case, the latency for preparing a first-time synchronization dataset could require minutes as opposed to seconds for subsequent synchronizations. If the first-time synchronization fails, the process must restart from the beginning.

You are not expected to tune the Oracle Mobile Field Service application on the mobile computer device, except to ensure that the minimum system requirements are met.

Administrators should use the following to assess system performance:

- Synchronization time.

Synchronization reports are provided to track synchronization times. Reports can be generated with various search criteria. See "Viewing User Synchronization Statistics", page 6- 6 .

- Mobile server CPU and memory usage.

  This can be done in UNIX using the SAR command and in Windows using the Performance Monitor.

- Concurrent program run times.

  Each mobile concurrent program should be monitored for excessive run times.

- Workflow background process run times.

Mobile Server Tuning

For best performance, install the Oracle9*i* Lite mobile server and Apps11*i* database on separate servers. When Oracle9*i* Lite mobile server shares system resources with another server, ensure that the memory and CPU usage of the Oracle9*i* Lite mobile server is tuned to handle synchronization requests without overloading.

Tuning Memory Usage

For optimum mobile server performance, ensure that the server has ample memory. The rule of thumb is to allocate a minimum of 512MB to the mobile server and then increment this amount by 512MB for every 1000 users. Therefore, for an installation with 1500 users, a memory allocation of 512MB (base allocation) plus another 512MB for a total of 1GB is best.

Start the mobile server as a java process to ensure that the server utilizes any extra memory. The command syntax to do this is given below:

```
java –Xms1024M –Xmx1024M –XX:+DisableExplicitGC ?XX:NewSize=128m
–XX:MaxNewSize=128m –XX:SurvivorRatio=2 oracle.lite.web.JupServer
 mode=server config-file=/u01/olite/mobile/server/bin/webtogo.ora
```
- where -

`?Xms1024M` and `?Xmx1024M` specify an initial and maximum heap size of 1024MB.

The rest of the java parameters optimize garbage collection.

To learn about performance tuning, see Oracle*MetaLink* Note 265164.1.

CPU Usage Tuning

CPU usage is directly related to the number of concurrent users. Concurrent users are mobile users who are actively synchronizing with the enterprise system at a given point of time. Typically, the maximum number of concurrent users is about 10% of the total user base. For example, if 250 mobile users are created, then you can expect a maximum of 25 concurrent users.

The following graph shows the CPU load with increasing concurrency from a benchmarking study. It shows a linear rate of increase in CPU load as the synchronization rate is increased. (See "CPU Load", page F- 4 .) *Synchronization* rate is the number of synchronizations that are initiated every minute. In this benchmark, the synchronization time was between one and two seconds.

The chart plots Avg CPU Load (y-axis, 0% to 25%) against Sync Rate (syncs / min) (x-axis, 0 to 60) for two series: Middle Tier and Database.

Middle Tier data points: 1%, 4%, 7%, 11%, 13%, 19%, 20%

Database data points: 1%, 3%, 5%, 7%, 9%, 12%, 13%
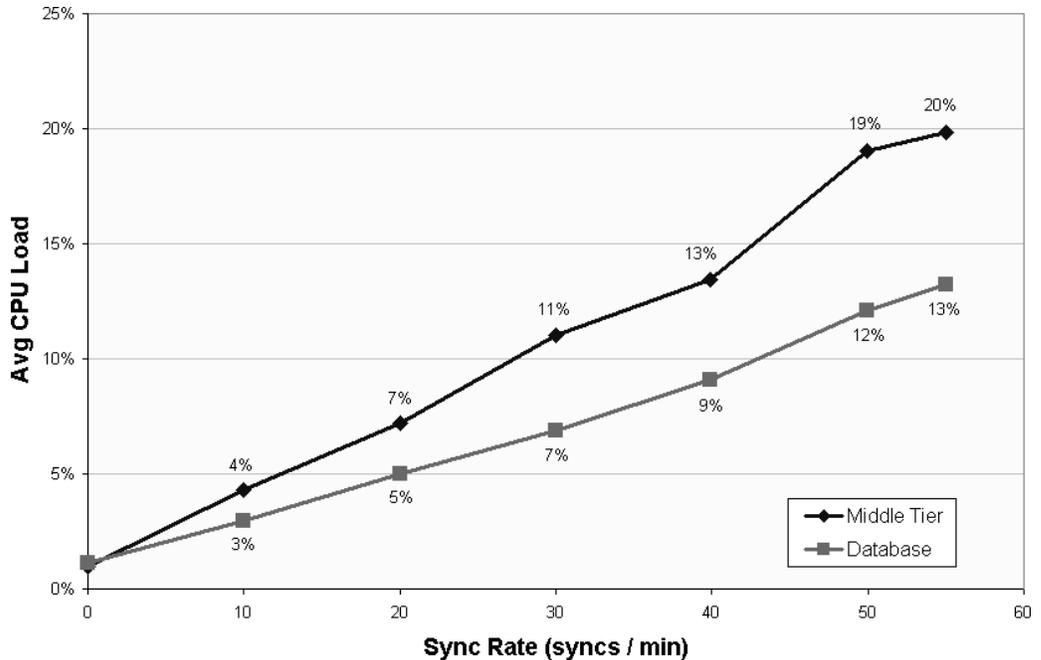
In order to limit the CPU load on the mobile server, it is possible to limit the number of concurrent users. The webtogo.ora parameter MAX_CONCURRENT can be used for this purpose.

Database Tuning

Mobile Field Service captures online business activities such as service request creation and task assignments and then downloads this data to the mobile users. Mobile Field Service uses both concurrent programs as well as workflow processes to find and prepare this data. Data that is prepared for synchronization is stored in the out queue. The out queue comprises two tables: ASG_SYSTEM_DIRTY_QUEUE and ASG_DELETE_QUEUE.

Tuning Out Queue

Better synchronization times can be achieved by tuning the out-queue. The out-queue performance is constantly being improved by tuning the queries executed on the out-queue tables. Since the tables are insert/delete intensive, one of the important storage parameters is PCTUSED. For best performance, set this parameter to a high value like 70%. The size of the out-queue is related to amount of business activity relevant to mobile. Data prepared in the out-queue is automatically removed after the mobile computer device receives it.

There are several indexes defined in the ASG_SYSTEM_DIRTY_QUEUE table that eliminate the need for full table scans and optimize access. However, it is recommended that these indexes be managed carefully. Due to the insert/delete intensive nature of data management languages (DMLs) on this table, index-stagnation could become an issue. This will result in longer synchronization times even though the size of ASG_SYSTEM_DIRTY_QUEUE table remains about the same. In this case, index-rebuilds have proven to be helpful.

It is possible to purge the out-queue for dormant users by scheduling the JTM Master Concurrent Program with category type "purge." This will purge records for

dormant users. *Dormant users* are those who have not synchronized for the past N days, where N is the value of profile option, ASG: Dormancy Period. The JTM Master Concurrent Program will also remove any duplicate records in the out-queue. For best performance, schedule this program once every week.

Tuning Concurrent Programs

For mobile operations, mobile concurrent programs place a big demand on the database, even more so than synchronization. The JTM Master Concurrent Program is a good example of this. For this program, you must run three category types: Transaction, Lookup and Inventory. You should regularly monitor the times taken for each category type. You can use the following table to do this.

Category Type	Scheduled Interval	Average Run Time
Transaction	5 min	
Lookup	1 hour	
Inventory	1 day	

The actual scheduled interval for these programs depend on your business requirements. However, the average run time should be compared with the scheduled interval to make sure that it is a very small fraction of the scheduled interval (less than 5% for Lookup and Inventory, and 20% for Transaction). If the concurrent programs take a longer time, then increase the scheduled interval so that the system is not overloaded.

Workflow Background Process

The workflow background process is used only by Oracle Mobile Field Service/Pocket PC. You should submit this process with the Process Stuck parameter set to "No."

Finally, you should periodically analyze the database tables/indexes so that the optimizer can choose the best execution plan. The Oracle Mobile Field Service schemas are ASG, JTM, CSL and CSM. Tables in this schema should be analyzed together with tables from Field Service and other modules used by Oracle Mobile Field Service.

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Customization Support

This appendix covers the following topics:

- Overview
- Flexfield Support
- Changing Labels
- Generic Attachment Support
- Writing New Custom Screens

Overview

This appendix describes the customization support for the Oracle Mobile Field Service applications. This appendix is intended for system integrators and implementation consultants who want to develop custom extensions for these applications.

Oracle Mobile Field Service provides rich functionality built into the standard product In addition, you can tailor some customize the application to suit your business process.

The following are the means by which you can customize the Oracle Mobile Field Service application:

- Flexfield Support for additional data fields
- Changing Labels
- Attachment Support
- Writing New Custom Screens in the Oracle Mobile Field Service application to enable new features or extend additional features

Depending on your business needs, you may need to use one or more of the above means of customization.

What is not supported is modification to existing screens (adding/removing/hiding fields) or changing the navigation between the standard screens.

Flexfield Support

Flexfield support is available in both Oracle Mobile Field Service/Laptop and Oracle Mobile Field Service/Pocket PC. Descriptive flexfields can be used to display and capture additional information. Users can also use context-sensitive flexfields when the information stored by the application depends on other values users enter in other parts of the form. Table-validated flexfields are not supported by Oracle Mobile Field Service.

The following table describes the types of flexfields you can find in Oracle Mobile Field Service:

Flexfield	Laptop	Pocket PC
Service request	read/write	read/write
Task	read/write	read/write
Debrief header	read/write	read/write
Debrief line	read/write	read/write
Parts requirement	NA	read/write
Item	read	read
Product	read	read
Customer	read	read

Steps for Setting up Flexfields

Complete the following steps to set up the descriptive flexfields in Oracle Applications that are specific to an Oracle Mobile Field Service application:

1. Log in to Oracle Applications as a system administrator and choose the System Administrator responsibility.

2. Navigate to `Application > Flexfield > Descriptive > Segments`

3. Click the Application field and search for Oracle Service.

4. Click the Title field and search for the component for which the flexfield(s) should be created.

5. The Freeze Flexfield Definition check box indicates whether or not flexfields can be defined or updated. Make sure it is deselected so new flexfields can be defined.

6. Click **Segments** to display the Segments Summary form.

7. Click **New** to create a new flexfield definition or click **Open** to open an existing flexfield definition.

8. Enter the segment name in the Name field.

9. Click the button next to the Column field and select an attribute column from the Column list of values.

10. Enter a description in the Description field and a number in the Number field.

11. Click the search button in the Value Sets field and select a value set (this is the data type of the flexfield) from the list of values. The Description field will be automatically populated.

    You can also select a default type from the Default Type list of values to indicate a default value in the Default Value field. Select or deselect the Required check box to specify whether a value is required or not.

12. Specify the flexfield size information in the Sizes section of the form.

13. Optionally, specify prompt information in the Prompts section of the form.

    For example, prompts could be used when displaying a window that requests data input for the flexfield.

14. Optionally, click **ValueSet** to open the form where you can define new value sets or update existing value sets.

15. Click **Save** to save the new flexfield definition and close the Segments form.

16. Review the Segments Summary form shown and then close it.

17. If no more updates are needed, select the Freeze Flexfield Definition check box.

18. Click **Compile**.

Viewing the Flexfields

The flexfields are downloaded and displayed in the Oracle Mobile Field Service application after synchronization.

Oracle Mobile Field Service/Laptop displays the flexfields for an entity on the same page that describes the entity. For example, task flexfields are accessed from the Task Details page.

Oracle Mobile Field Service/Pocket PC has a separate icon, that opens a new screen with the flexfields.

Changing Labels

Both Oracle Mobile Field Service/Laptop and Oracle Mobile Field Service/Pocket PC support label changes. Newly defined labels are visible to the end user.

For Oracle Mobile Field Service/Pocket PC, all labels are stored in the FND_ NEW_MESSAGES table. Use the application developer responsibility to change labels.

Steps

Complete the following steps to customize the labels and messages seeded in FND_NEW_MESSAGES:

1. Log on to Forms.

2. Select the Application Developer responsibility

3. Select `Application > Messages Function`.

4. Search for messages starting with the CSMW prefix.

5. Message text can then be replaced for corresponding message.

For Oracle Mobile Field Service/Laptop, all labels are stored in AK Data. Use the application developer responsibility to change labels.

Generic Attachment Support

Attachments can be used for a variety of purposes, such as maps, driving directions, and product reference images.

Attachment Support

Oracle Mobile Field Service supports the download and display of attachments at a particular entity level.

The following entities have attachment-download. Multiple attachments are allowed on each entity.

- Service Request
- Task

The CSM: Maximum Attachment Size profile controls the maximum amount of attachment data to be downloaded.

The maximum attachment size in mega bytes is specified by the profile value.

If a single file exceeds the profile value, it will not be downloaded. For multiple files, the first n files, which are altogether less than the profile value, will be downloaded.

Steps

Complete the following steps to download the attachment:

1. In Forms, create an attachment on a service request or task.
2. Run JTM Concurrent Program: Lookup.
3. Synchronize.

Run the lookup program each time an attachment is added or changed. The new attachment will come down if attached after the last run of the lookup program.

Attachment Display For Oracle Mobile Field Service/Laptop

There is an attachment button on the service request and task screens for attachments.

Each attachment link points to a JSP page in order to return the data read from the attachments table.

Since the application is running in Internet Explorer, this browser renders the contents of the file.

Attachment Display for Oracle Mobile Field Service/Pocket PC

There is a button on the service request and task screens that opens a list of attachments.

Click on the attachment link to retrieve the data from the attachments table and to save it on the file system with the appropriate file name and extension. Clicking on this link will also open the file in Internet Explorer.

Writing New Custom Screens

This section summarizes how to customize the application. The details are provided in Oracle*MetaLink* Note: 248063.1

You can develop new screens based on new and existing features. You can also download additional data in some cases. You can also download additional attachments.

You can implement such features in custom screens:

- Maps and driving directions

- Custom invoicing support

- Knowledge base through attachments

In order to write custom screens for an Oracle Mobile Field Service application, you first need to do the following:

1. Identify what you want to build and from which screen on the laptop computer or the Pocket PC from which you want the custom screen to flow.

2. Data replication support:

    - Identify additional data to be downloaded.

    - Design the data model for a custom module and then identify the Oracle dummy application table(s) that should be replicated.

    - Place all additional data into the seven custom dummy tables, which are packaged into apps_custom.odb.

    - Synchronize data to the mobile computer device.

3. Identify additional screens to be designed and then develop the custom module of the mobile application.

    - For the laptop computer, this is a set of JSPs

    - For the Pocket PC, this is a C++ executable

    - All additional screens are packaged into <custom>.app

4. Create the wrappers on the server side to process upward sync data.

5. Test the application package and then deploy it.

    The custom data and application are packaged separately from the Oracle Mobile Field Service application. This arrangement allows the Oracle Mobile Field Service application to be transparent to upgrades.

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