



# EasyRoster™ Deployment Manager

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## Specification

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EasyRoster Software (Pty) Ltd

Tel: +27 (0)(12) 809-4270

Fax: +27 (0)(12) 809-4276

[support@easyroster.net](mailto:support@easyroster.net)

[www.easyroster.net](http://www.easyroster.net)

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# 1 Introduction

The EasyRoster™ Deployment Manager (ERDM) is to be used to control the deployment of personnel at different sites, by using biometric, Radio Frequency Identification (RFID), proximity readers or telephony devices (Caller ID). The EasyRoster™ Deployment Manager eventually updates the attendance information in the EasyRoster database.

It is important to understand the principles behind the use of EasyRoster™ in order to understand the concept of the Deployment Manager properly.

EasyRoster™ helps to ensure that the correct numbers of personnel of the correct grade are scheduled for the correct number of hours at the correct sites. It furthermore helps to ensure that work done at an overtime rate is limited as far as possible. Once the schedule for a period is done, it is important that the necessary controls are implemented in order to ensure that personnel are actually deployed according to the schedule as far as possible.

In a typical scenario EasyRoster™ will be run at branch level within a company. The company will have contracts to provide a manned services with somewhere between 10 and 100 different clients at multiple different sites. Each one of these sites will have different requirements with respect to the number of personnel, the grades of personnel and the hours that the service should be provided. The locations of these sites may be close to the office or far from the office. They may be in a built-up area or in a rural area.

From a control point of view, it is important to know (in real-time) whether the applicable personnel are at the applicable sites at the applicable times, or not. This will enable control staff (at the central office) to make the necessary arrangements to correct any problem situations as soon as possible. The EasyRoster™ DM software will give deployment control staff the capability of making the necessary adjustments and recording the actual situation.

The attendance registration (in, out, call check, duress etc) could be done manually or automatically by making use of available technologies such as proximity cards, telephony (Caller ID), RFID and biometrics. The same technology could be used to ensure that personnel are doing required patrols at a site. This would require multiple readers along a patrol route at a site.

## 2 Specifications

### 2.1 ERDM Functionality

ERDM will give the Deployment Officer the capability of displaying the deployment situation at selected sites in real time. The application will furthermore give this officer the capability of handling displayed exceptions in an informed manner.

The above-mentioned deployment situation at a site can be defined in the following terms:

- a. The requirement in terms of the number of personnel per grade for the selected shift
- b. The names of the persons that have been scheduled to work on the selected shift
- c. The names of the persons for which attendance has been registered
- d. An indication of whether there are too many or too few personnel on site

#### 2.1.1 Options

ERDM will make provision for options which determine the 'parameters of acceptability' of each client. Examples of these options are:

- a. What measures of minutes are deemed to be significant?
- b. Should time be subtracted from a worked shift if a person signs on late?
- c. Should time be subtracted from a worked shift if a person signs off early?

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- d. Should time be added to a worked shift if a person signs on early?
  - e. Should time be added to a worked shift if a person signs off late?
  - f. Automatically change early sign on to scheduled start time?
  - g. Automatically change late sign off to scheduled end time?
  - h. Default sort order for columns on the view.
  - i. Colours to depict different exceptions.
  - j. SMS options.

## 2.1.2 Views

At each change of shift, the Deployment Officer will typically select the date and type of shift (e.g. 2002-11-05 Day shift) for which he wishes to view the deployment details. Only sites that have the facility for automatic attendance registration will be displayed here.

ERDM will then display the deployment situation at the selected sites in near real-time. As messages are received from the biometric/proximity/telephony devices via the Central Control Management (CCM) system, the display of the deployment situation will change to reflect the signing in or out of personnel at the applicable sites.

This view should contain the following columns:

- a. Site ID
- b. Site Name
- c. Personnel No
- d. Person Name
- e. Scheduled Time On
- f. Actual Time On
- g. Scheduled Time Off
- h. Actual Time Off
- i. Scheduled Hours Worked
- j. Actual Hours Worked

The Deployment Officer must choose whether he wants to view either all people Present, all Scheduled but not yet Present, or both.

In the case of exceptions the Deployment Officer will simply click on a row to activate a menu, then select the necessary action from the menu. The following are typical actions that should be on the menu:

- a. Sign On
- b. Sign Off
- c. Change Actual Hours
- d. Specify different Shift Type (eg. Absent, Sick, IOD etc.)
- e. Replace Person
- f. Manually register attendance for a person
- g. SMS Responsible Manager

## 2.1.3 Typical Exceptions to display

There are a number of exceptions that the Deployment Officer should be made aware of as they happen, as follows:

- a. Too many people on site.
- b. Too few people on site.
- c. Unscheduled person on site.
- d. Wrong grades of person on site.

## 2.2 Interface

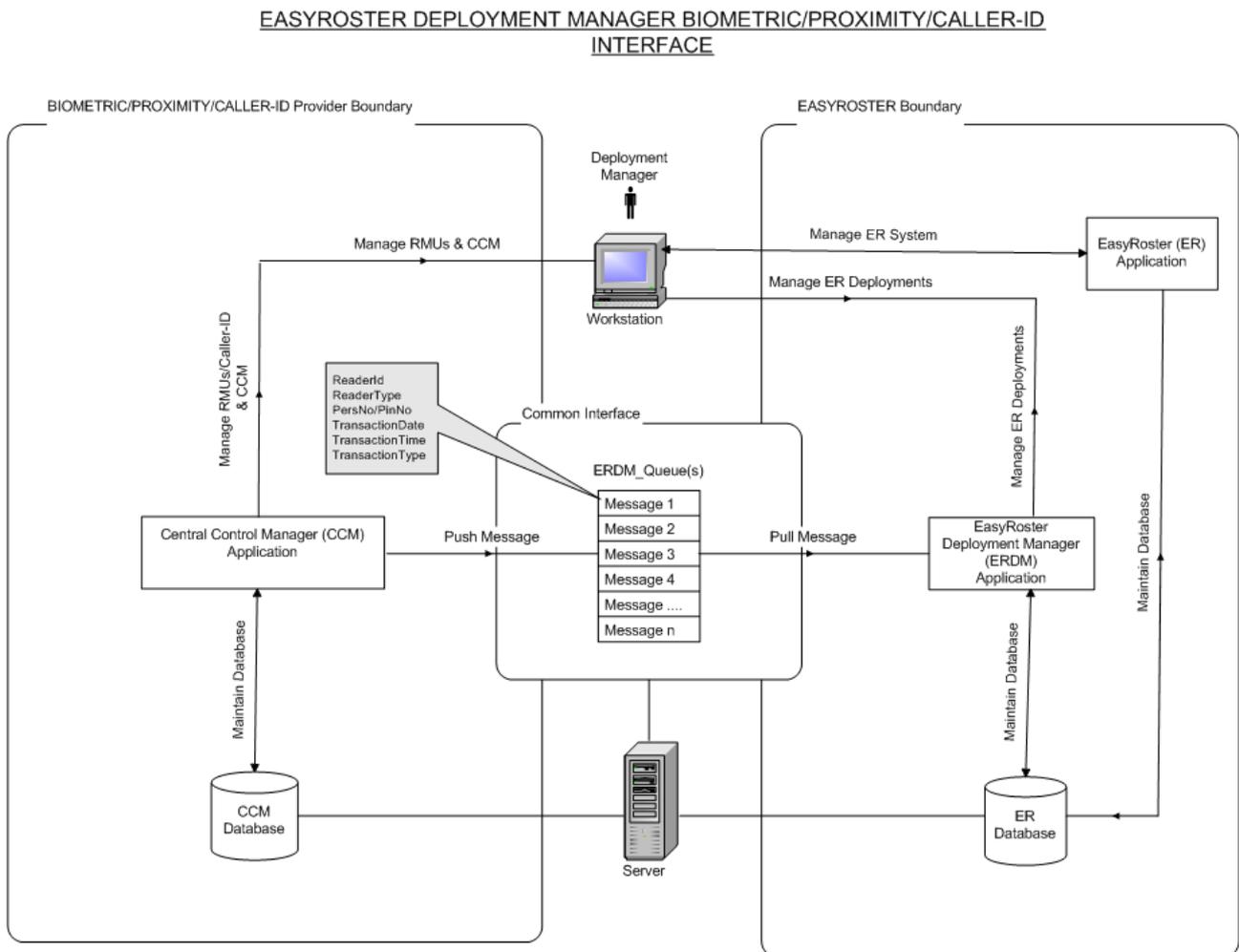
This section describes the envisaged technical interface between the EasyRoster™ Deployment Management (ERDM) system, and the remote biometric/proximity management Units (RMUs), or Caller-ID Central Control Management (CCM) system.

There are certain issues that should be considered with regard to the use of biometrics:

- a. Biometric details for each person who could possibly work or report at a specific site should be downloaded to the reader at that site.
- b. Consideration must be given to the fact that (in abnormal circumstances) it must be possible for a person that has not been scheduled at a site, to actually work at that site.

### 2.2.1 Application Boundaries

Figure 2.2.1-1 depicts the application boundaries for the interface.



In summary, this figure shows that:

- a. It is the responsibility of the Biometric/RFID/Proximity/Caller Id Provider portion of the system to:

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- Collect attendance details by making use of the Biometric, Prox, RFID or Caller-Id device
  - Send those details in real-time via some sort of network to the CCM application
  - Process those messages in the CCM application
  - Post a message onto the relevant message queue
- b. It is the responsibility of the ERDM portion of the system to:
- Retrieve attendance messages from the relevant message queue
  - Update the relevant attendance information in EasyRoster™
  - Display the effect of the message on the selected ERDM view
  - Give the applicable Deployment Officer the capability of sorting out all the current exceptions

## 2.2.2 Message Queues

The following assumptions are made:

- a. The solution will be deployed in a Windows based environment.
- b. The solution will make use of Microsoft Message Queuing technology.
- c. The solution will be able to function in a Message Queuing network consisting of multiple sites.
- d. RMUs must be configurable to send messages to any message queue on a server in the message queuing network.
- e. ERDM instances must be configurable to process messages from any queue on a server in the Message Queuing network.
- f. Messages will be sent as XML formatted documents as described in sections 2.2.4 and 2.2.5.
- g. The ERDM message queue can be a private or public queue, non-transactional with queue name ERDM\_Queue. The queue path should be configurable via a configuration file.

## 2.2.3 Caller-Id functionality

The interface is an automated telephony system that will allow personnel to ring base and clock in, clock out or check in to the EasyRoster Deployment Manager system. The system will be TAPI based in order to provide as much hardware independence as possible.

### Main Functionality

- a. When a person dials into base the system will answer the call and obtain the caller ID of the incoming call.
- b. The system will ask the person to enter a PIN number followed by #.
- c. When the PIN has been entered the system will ask the person to press 1,2 or 3 for a clock in, clock out or check in (call check).
- d. The system will then inform the person that the information has been taken and ask whether there are any more persons who wish to check in or out.
- e. If so, repeat the above, else hang up.
- f. If the callerID cannot be obtained the system will inform the person that there is a problem and hang up.
- g. The system will then put the information it has received into the EasyRoster message queue for processing.

### Additional Requirements

- a. The system will run as a service under Win2000, WinXP Pro or Windows 2003.
- b. The system will be capable of working with TAPI devices with multiple lines.
- c. The system will have a user interface that will allow a system administrator to
  - Configure the TAPI settings for the system, i.e. which device(s) to use etc

- Load the audio files for each of the outgoing messages the system will need to play
  - Configure any other settings that are required, such as timeouts, i.e. we may want to hang up if the call lasts longer than a certain amount of time, if someone forgot to hang up the phone on their end
- d. The system should write any errors to the event log for debugging / fault finding.
- e. The system will be tested using a Dialogic D/4PCI card (4 port analog card).

## 2.2.4 Message Layout

Table 2.2.4-1 depicts that layout of an ERDM message.

Description	Length	Type	Format
ReaderId	15	AN	AB0010001 or Caller-Id
ReaderType	1	AN	B=Biometric, P=Prox Card, R=RFID, C=CallerId
PersNo	8	AN	12445 or PinNo for CallerId
TransactionDate	10	AN	YYYY-MM-DD Eg 2003-02-25
TransactionTime	8	AN	HH:mm:ss Eg 14:20:48
TransactionType	1	AN	I=In, O=Out, P=Patrol, D=Duress/Distress, C=Call Check

## 2.2.5 XML Message Layout

```
<?xml version="1.0"?>
<ERDMMessage xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <ReaderId>AB00100001</ReaderId>
  <ReaderType>B</ReaderType>
  <PersNo>12445</PersNo>
  <TransactionDate>2003-02-25</TransactionDate>
  <TransactionTime>14:20:48</TransactionTime>
  <TransactionType>I</TransactionType>
</ERDMMessage>
```

Please note that the data contained in the message fields are of variable length, to the maximum length as defined for each field in 2.2.4 and should not be padded/appended with whitespace characters.