

*easy  
configuration  
over the air*



## Terminal Management Platform Technical Overview



Mobilethink Terminal Management Platform is a solution for over-the-air configuration of mobile terminal settings. The platform enables operators to manage advanced data settings on mobile terminals deployed on their network and facilitates easy distribution of user-friendly interfaces for remote configuration of mobile terminals to customers, customer care and other relevant user groups.

Mobilethink Terminal Management Platform is a modular software platform offering turnkey front-end interfaces, developer tools and comprehensive administration interfaces to support the various needs of operators and to provide a flexible and efficient solution for terminal management.

### ▣ Contents:

Page 1  
Introduction

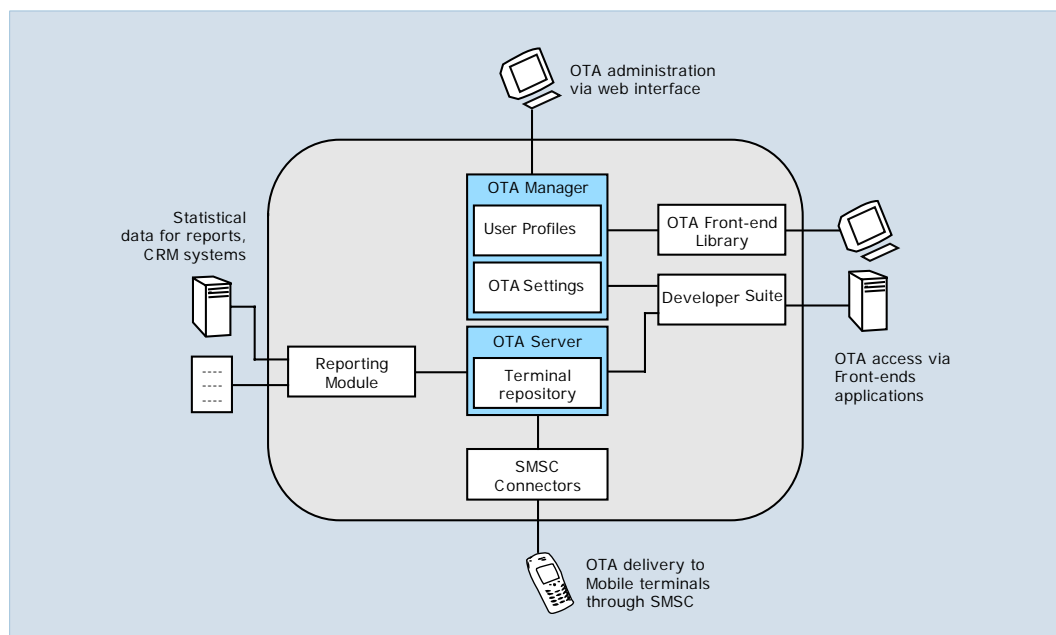
Page 2  
System architecture

Page 3  
Turnkey Front-ends and Developer Suite  
Management tools  
Reporting tools

Page 4  
Update of terminals  
Support tools  
Service agreements

Page 5  
Technical specifications  
Contact

## System architecture



Core architecture components of the Terminal Management Platform

### OTA Server

The OTA Server is the core engine of the solution providing the basic functionality for over-the-air configuration of mobile terminals. The server contains the Terminal Repository with information about supported handsets and connects to external applications and other components of the platform through application programming interfaces.

### SMSC connectors

The OTA Server connects to the operator's SMSC through powerful SMSC connectors supporting all common SMSC protocols.

### OTA Manager

The OTA Manager is an administration module, which provides functionality for easy distribution and management of multiple interfaces to end-users and applications. The web-interface of the OTA Manager allows the operator to manage OTA setting profiles as well as to create and customise end-user interfaces without intervention of system developers.

### OTA Front-end Library

The OTA Front-end Library contains a number of turnkey OTA Front-end applications, which can be used 'out-of-the-box' or customised according to the requirements of the operator.

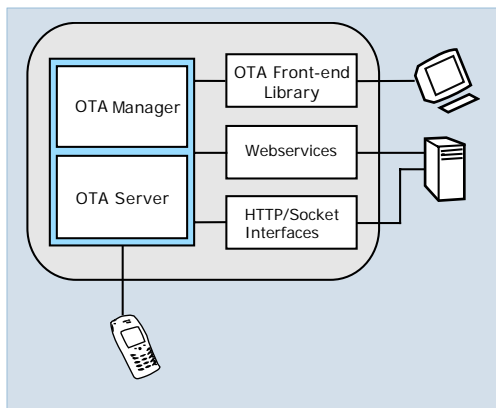
### Developer Suite

The platform provides the operator with a number of developer tools for easy and efficient development of applications connected to the Terminal Management Platform. Developer tools include a library of predefined functions, which can be used as building blocks in applications as well as low-level, application programming interfaces apt for different operating environments.

### Reporting Module

The Reporting Module facilitates access to precise statistical data regarding usage of the platform, including details about phone models, OTA setting profiles and end-user interfaces. Statistical data can be extracted for reporting purposes and fed into CRM and billings systems.

## Turnkey Front-ends and Developer Suite



The platform includes turnkey OTA Front-ends, which can be used 'out-of-the-box' as well as developer tools for easy and efficient development of interfaces and applications.

The developer tools are optimized to combine high flexibility with fast and easy creation of front-ends and applications for over-the-air configuration of mobile terminals.

### OTA Front-end Library

Contains turnkey applications that allow the operator to create end-user interfaces directly from the administration module without having to write a single line of code. This allows operators to set up, customize and distribute new interfaces within minutes.

### Web Services

The Web Services offered by the Terminal Management Platform is a software component, which makes itself available over the Internet and uses a standardized XML messaging format. The Web Services can be used to develop complex web applications rapidly and with a high degree of software reuse.

### HTTP/XML Interfaces

The Developer Suite includes HTTP/XML Interfaces which give application developers the possibility of building powerful applications using different technologies apt for different operating environments. The application programming interfaces of the platform communicate with external applications through a XML messaging format.

## Management tools

The Terminal Management Platform provides administration tools for easy and efficient rollout and management of over-the-air configuration services to subscribers.

The management tools are provided through the OTA Manager, which is an administration module that contains functionality for easy distribution and management of interfaces, end-users and applications.

The administration module is accessible through a web-interface and provides the operator with the necessary tools to efficiently manage all end-user interfaces and applications connected to the platform through the application developer interfaces.

The OTA Manager allows the operator to manage configuration profiles with setting parameters for configuration of data services on mobile terminals as well as to create and customize end-user interfaces without intervention of system developers.

Following tasks can be handled through the OTA Manager:

- Creation and management of administrator accounts
- Creation and management of OTA settings
- Test of OTA settings
- Customization of front-ends
- Configuration of front-end security

## Reporting tools

The platform includes a Reporting Module, which allows the operator to obtain detailed information about the usage of the platform.

All transactions performed on the Terminal Management Platform are recorded and stored in a database. The Reporting Module collects information about users accessing the platform, including information about data services and handsets configured.

The reporting module provides an interface to export data to external systems and to query the database from applications using a simple programming interface. Data from the reporting module can be used to feed other information systems like, for example, billing or CRM systems or to develop customized online reporting applications or automatic generation of statistical data distributed by e-mail.

## Update of phones

The Mobilethink solution offers a standardized method for updating the platform with new compatible phone models.

Information about supported handsets and precise configuration schemes of each mobile terminal are stored in the Terminal Repository on the OTA Server. Phone specifications can be updated continuously without disturbing the operation of the platform to assure support of the newest handsets in the market.

New phone models added to the system will automatically be available to all applications connected to the platform including the administration module and turnkey front-ends from the OTA Front-end Library.

As part of a license agreement Mobilethink offers continuous updates of the platform with new terminals supporting over-the-air configuration.



## System tools

The Mobilethink solution provides system tools for operation and maintenance including a monitoring module based on SNMP agents that interface to the network management system in the operating environment.

The Terminal Management Platform provides extensive logging of all transactions on the platform. Precise information about the delivery status of all messages sent from the platform is available through system log files.

## Service Agreements

Mobilethink offers comprehensive service agreements to operators licensing the Terminal Management Platform.

### Terminal updates

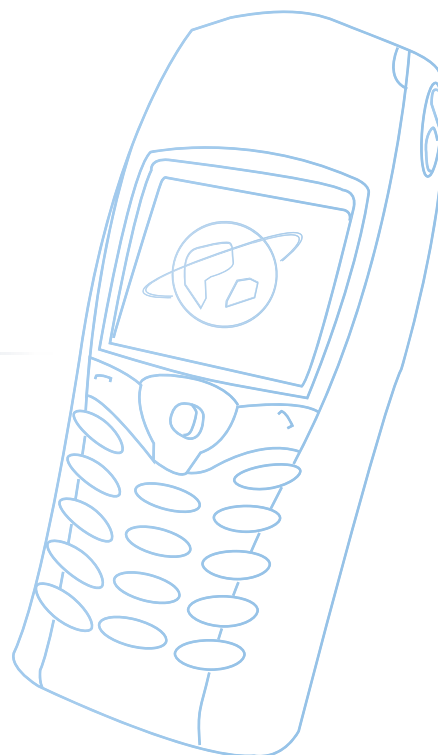
– Continuous updates of new mobile terminals implemented on the platform.

### Software updates

– Providing bug-fixes and improvements of the implemented functionality.

### Technical support

– Is available through a 24 hour hotline service offered by e-mail or phone.



## Technical specifications

### Supported OTA configuration types

Following configuration types are supported by the Terminal Management Platform: (The platform can be upgraded to support other OTA configuration types available through the implemented OTA specifications.)

- WAP CSD/GPRS
- MMS CSD/GPRS
- Internet CSD/GPRS
- E-mail
- Bookmarks
- SyncML
- Service indication
- Service loading
- vCard/vCalendar
- Presence

### Supported OTA specifications

Following specifications are implemented in the Terminal Management Platform: (The solution can be upgraded to support other setting types available through the implemented OTA specifications.)

- Nokia Smart Messaging Specification
- Nokia/Ericsson OTA Settings Specification
- Openwave specification
- OMA Client Provisioning
- Wireless Village

### SMSC connection

The OTA Server connects to the SMSC through powerful SMSC connectors supporting different SMSC protocols. The message throughput of SMSC connectors can be up to 40 messages per second per connection depending on SMSC performance. SMSC connectors are available for UCP, SMPP and CIMD2. SMSC Connectors for other SMSC protocols can be added upon request.

### Technology

The Mobilethink Terminal Management Platform is developed using Java 1.4 technology. The solution is running on a Servlet engine and Apache webserver and is using a JDBC compatible database.

### System requirements

Mobilethink recommends the following minimum hardware configurations for running the Terminal Management Platform:

- Intel Server with 1GHz P4 processor
- 1 GB RAM and 40 GB hard disc
- Linux, Sun Solaris or Windows OS
- Java 1.4
- Servlet engine 2.2
- JDBC compatible database

### System capacity

The system capacity is 40 messages per second in a single node system. (Network performance and API's used on the operator side might decrease performance of the system). OTA configurations are normally bundled in 1-3 messages. The capacity is therefore approximately 15-25 OTA configurations per second depending on the types of configurations that are sent. Adding more nodes to the system can easily scale the capacity.

### System availability

High availability (> 99.5 %) can be supported in a clustered hardware set-up with a minimum of 2 nodes. Capacity will scale with multiple nodes.

## Mobilethink

Mobilethink provides high quality, innovative software solutions to mobile operators, service providers and handset manufacturers. The main focus of the company lies in the area of terminal management solutions and advanced, high volume messaging platforms for global partners.

Mobilethink offers flexible business models and delivers full service solutions, including an international gateway and infrastructure as well as software for installation in the premises of our customers.

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