



IMPROVE YOUR BUSINESS COMMUNICATION



SMS SERVER v5.1

Product White Paper

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Table of Contents

Introduction	4
Architecture	5
Product Components	6
SMS Server.....	6
SMS Server Configuration	6
SMTP Gateway	6
Server Manager	6
Message Sender	6
Client for Microsoft Outlook	6
Developer Tools.....	6
Outbound Messaging	7
Internet (Recommended)	7
GSM	7
PSTN/TAP	8
Backup Transport.....	8
Inbound Messaging	8
Internet (Recommended)	9
Inbound Routing.....	9
Delivery Receipts.....	9
GSM	9
SMS Plug-in.....	9
Enterprise Integration (SMTP Gateway)	10
Virtual Domain for SMS	10
Implementation Scenarios	10
Filtering.....	10
DNS	10
Forwarding.....	10
Microsoft Outlook Integration	11
Security and User Management	13
SMS Authentication.....	13
Windows Authentication	14
Session Management	15
Address Book Management	16
SMS Address Books.....	16
ODBC Address books.....	17
Using Address Books	17
Inbound Numbers Management	18
Queue Management	19

Developer Tools	20
Client API.....	20
SMS Plug-in.....	20
SMS Plug-in.....	20
Service Availability	21

Introduction

M:Science SMS Server enables organisations to provide two-way SMS messaging facilities to their personnel and corporate information systems using existing messaging infrastructure and line of business applications. SMS Server is based upon a true three-tier client server architecture using DCOM technology.

SMS Server boasts a Microsoft Outlook plug-in, thus providing out of the box integration with the most popular desktop email and collaboration client for all authorised users. In addition, enterprise integration is provided for the vast majority of server based messaging and collaboration systems through an SMTP Gateway component. Using the SMTP Gateway, users of Microsoft Exchange Server, Lotus Notes (Domino) and Novell GroupWise (to name but a few) can enjoy SMS functionality without any client implementation whatsoever.

The SMS Server application is designed to operate under Microsoft Windows NT/2000/2003/XP/Vista/7/8 operating systems and runs as a 'Service'. The Server Manager can be run from any Microsoft Windows 32 bit operating system and provides the management interface for administration of message queues, users and sessions.

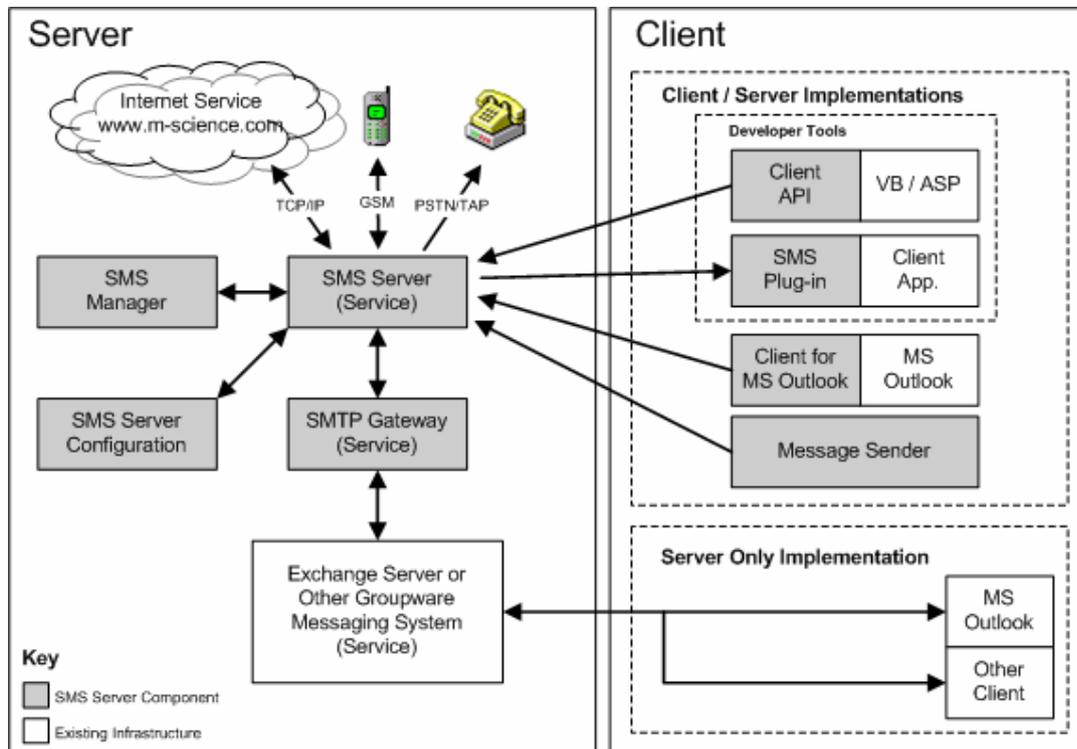
The product facilitates the sending of text-based messages via three types of transport; Internet (Recommended), GSM and PSTN/TAP, these are fully explained within this document.

SMS Server also provides a fully functional Active X API for developers who wish to integrate the product with 3rd party windows applications or web based applications using Visual Basic, C++, Borland Delphi, VBScript, ASP or JavaScript.

This white paper provides an analysis of the product and enables an organisation to appraise the product on an architectural and technical level prior to purchase.

Architecture

M:Science SMS Server is built on a full 3-tier client server model using DCOM (Distributed Component Object Model) technology as shown in the figure below. The ActiveX API is part of the core architecture of the product and its use by developers is available through an additional API license (please refer to associated pricing).



Product Components

SMS Server

The SMS Server is the primary hub for message transmission via the available transports, and runs as a Microsoft Windows Service.

SMS Server Configuration

The Server Configuration tool enables configuration of all SMS Server options, including the transport method to be used and SMTP Gateway settings.

SMTP Gateway

Also running as a Windows service, the server based SMTP gateway provides connectivity between Groupware or messaging applications such as Microsoft Exchange Server, Lotus Domino and Novell GroupWise and SMS Server. Fundamentally it enables users to avoid the implementation of any client-side software which minimises configuration time and allows users to utilise their existing messaging client for SMS.

Server Manager

The Server Manager provides a user interface for supervisors and administrators for server status information and administration of all messages in the queues. It retains a comprehensive log of all Queued, Sent and Failed messages and any associated failure reasons. The Server Manager also displays the current status of the server itself and provides a management console for administering Users and User Sessions.

Message Sender

The Message Sender is a standalone application that may be installed on any SMS client or server machine and provides a simple interface to select recipients and then compose and send messages.

Client for Microsoft Outlook

The Client for Microsoft Outlook provides this industry standard messaging client with the ability to connect and provide access to the SMS Server. It supports Microsoft Outlook versions 98, 2000, XP and 2003.

Developer Tools

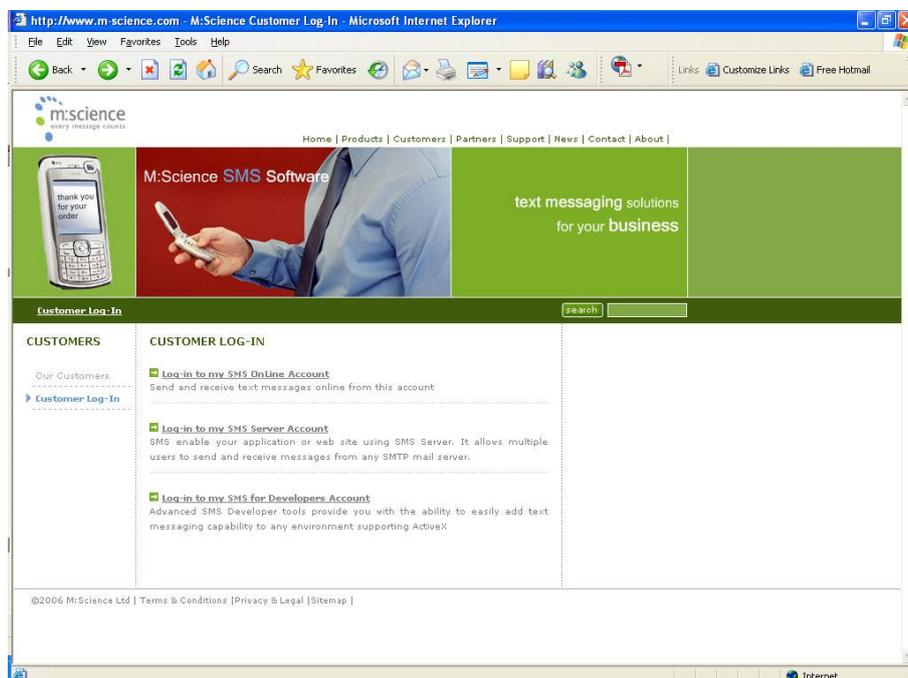
The M:Science SMS Server Developer Tools enable customers to SMS enable virtually any part of their IT infrastructure above and beyond the standard connectivity within the product itself.

Outbound Messaging

Outbound messaging can be achieved through one of three methods, depending on the requirements and the existing infrastructure available. These three methods have different characteristics, features and cost implications and these are discussed below.

Internet (Recommended)

The most powerful transport in terms of functionality, throughput and reliability, the internet transport provides connectivity to an internet hosted service (via TCP/IP) for two-way delivery of messages and confirmed delivery to the device. An account can be created on-line in less than a minute and message credits purchased according to your requirements. Full customer management and message purchasing is available through the web portal provided at www.msscience.com.



The internet transport connects directly or indirectly (via a proxy) to a prescribed domain and messages are handed off to the service at speeds of up to 900 messages/minute (100 times the speed of GSM). The transport requires a connection to the internet via dial-up (PSTN), dial-up (ISDN), Leased Line or DSL (Digital Synchronous Line) service. The cost of using this transport is via messages bought in advance through the portal where progressive message volume discounts are available.

The internet transport supports Dial-Up Networking and Socks 4a and Socks 5 proxy with or without authentication. The transport also supports automatic service fail-over.

GSM

The GSM transport provides support for selected GSM devices; currently the Sony Ericsson GC75

PC Card Modem for use in a laptop PC and the Wavecom M1300 series. In general the transport will achieve rates of up to 9 messages per minute.

The cost of using this transport is via the tariff of the SIM in the GSM device you are using. See your cellular telephony provider for this information.

PSTN/TAP

The PSTN/TAP Service uses a standard PSTN modem to deliver messages to a TAP (Telecator Alpha-Numeric Protocol) service provided by one of many cellular providers including Vodafone and One2One etc. This transport can achieve between 2 and 5 messages per minute. Note that a standard analogue line or analogue extension is required.

The cost of using this transport is via the telephone bill of the standard telephone line you are using. For call charges, please consult your telephony provider.

Although other modems and TAP services are likely to operate normally, M:Science cannot support usage with other models.

Backup Transport

When using the internet transport method it is possible to select and configure either GSM or PSTN/TAP as the backup transport method. This will then be automatically used should the internet connection be disrupted for any reason and will continue until the internet connection is re-established.

Inbound Messaging

Inbound messaging can also be achieved through one of two methods, depending on the requirements and the existing infrastructure available. These methods have different characteristics, features and cost implications and these are discussed below.

Internet (Recommended)

When using the internet service, an account is hosted at www.m-science.com. This account can support an unlimited number of inbound numbers.

If you have a permanent connection to the internet, the product is permanently connected so that messages arrive 'real time' taking a few seconds from the device to inbox and vice-versa. Alternatively, for dial-up systems, message collection can be scheduled during working hours or simply when outbound messages are delivered.

Inbound Routing

A number of inbound numbers, equivalent to the number of unique users or groups of users who wish to receive messages, are allocated by M:Science. The product then allows routing to be set up for each of these numbers by assigning the inbound number to one or more users. The inbound routing uses the SMTP Gateway component in reverse to deliver messages to their intended recipient(s) through the messaging or groupware server.

In turn, a recipient of an inbound SMS message can reply to that message, which will then be received back on the originating device. In this way, an end-to-end two-way conversation can be conducted between an individual at their pc and a remote worker.

Delivery Receipts

Delivery receipts can be requested when sending a message through the Message Sender application or via your email client in the normal way you would use for mail. The delivery receipt is only generated when the message is actually received on the device, so if the device is switched off, the receipt is received when the device is activated and the message is received.

GSM

Inbound messaging is now available for the GSM transport. Message routing is the same as that used for the internet transport and delivery receipts are also available. As for outgoing messages, the cost of using this transport is via tariffs of the SIM in the GSM device.

SMS Plug-in

Through the developer tools, an SMS Plug-in may be created to provide an inbound message handler which can be used to accept inbound message data for use in bespoke applications. Once a new plug-in has been created, it may then be selected as the delivery receipt handler for specific inbound numbers.

Enterprise Integration (SMTP Gateway)

The SMTP Gateway is a highly optimised, multi-threaded SMTP Server and Client, which acts as a bridge between any SMTP compatible messaging system and the Server component.

Virtual Domain for SMS

Use of the SMTP Gateway requires the definition of a 'virtual domain' for SMS messaging traffic.

E.g. - send.sms or <company name>.sms

This 'virtual domain' is only relevant within the organisation concerned and has no relation to your own internet domains. That said, you should choose a domain that does not exist on the internet because it is used to identify SMS traffic within your organisation.

SMS messages are then addressed as <mobile phone number>@<virtual domain>

E.g. - 0777700001@send.sms

Implementation Scenarios

There are three primary ways in which the SMTP Gateway can be used to implement SMS Server connectivity within your existing infrastructure. This section discusses when to use each method and how to configure it.

Filtering

This method involves the diverting of mail traffic for the virtual domain or domains (e.g send.sms) via the SMTP server. To do this, the functionality of the groupware or mail server is used to specify which domain is diverted to the SMTP Gateway and all other mail traffic is treated exactly as it ever was.

DNS

If you have your own DNS server and are using DNS to route mail across the internet then it makes sense to continue to use the same method for SMS traffic. In order for mail addressed to your virtual SMS domain to reach the SMTP Gateway, you need to set up a zone for the domain, an A record to name the address of the SMTP Gateway and an MX (Mail eXchanger) record to specify the A record used for mail to this domain.

In this way, without changing the settings of your groupware or mail server, mail destined for the virtual domain will be re-routed via the SMTP Gateway and hence the SMS Server.

Forwarding

If your mail server is unable to accommodate the diverting of certain domains to a given host and you are not using DNS for mail routing then you can use the forwarding method. In this method, all of your mail traffic goes through the SMTP Gateway and

only that destined for the virtual domain for SMS is re-routed to the SMS Server. The remainder of the mail is forwarded to your normal mail-relay service.

To use this method, you must enable Forwarding within the SMTP Gateway configuration and have a fixed connection to the internet, as the forwarding option does not support dial-up connections.

Microsoft Outlook Integration

SMS Server provides a Client for Microsoft Outlook in the form of a native MAPI Service to enable SMS to the desktop through Microsoft Outlook. The service provides a resilient transport for SMS messaging.



Once installed, the service can be added to any number of outlook profiles from the standard Services dialog from Tools, Services within Microsoft Outlook. The connection can be tested here once the logon credentials are entered, before saving the settings.

The service boasts seamless auto-reconnect features for resilience and convenience. Using the Client for Microsoft Outlook, messages are addressed as follows;
[SMS:<Mobile Phone Number>]

Security and User Management

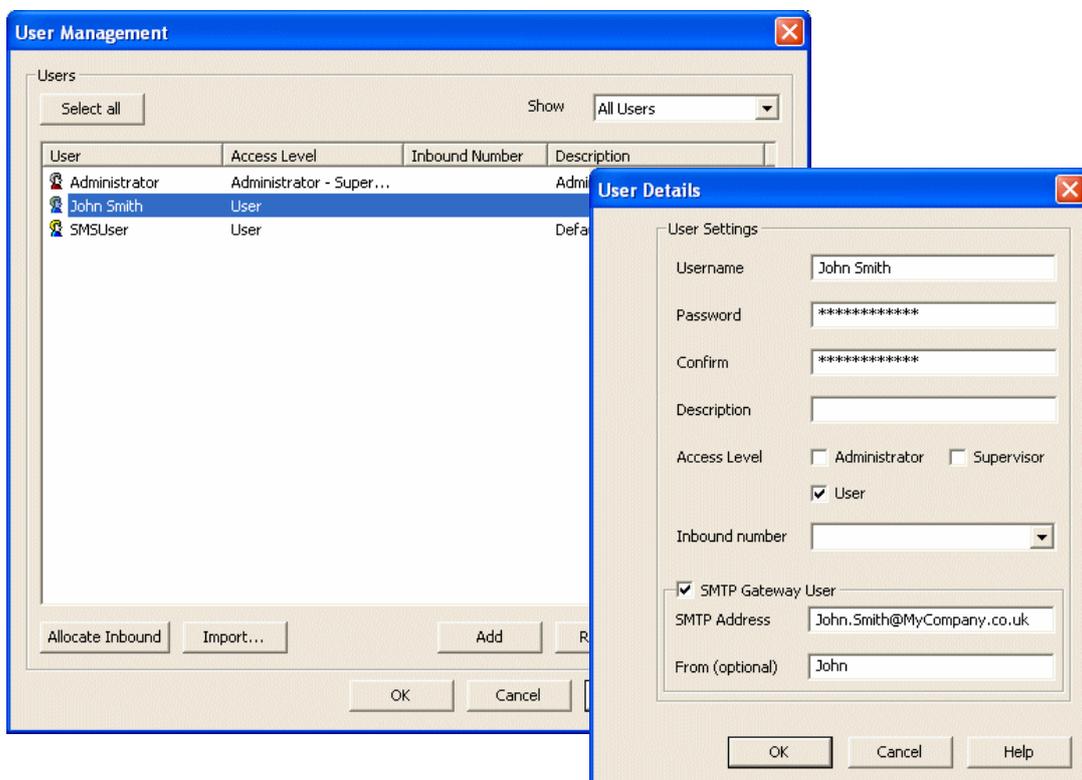
SMS Server boasts a three level security model, offering User, Supervisor and Administrator access rights as defined below.

- User - A User is able to send messages through the server via Microsoft Outlook or other applications using the ActiveX API.
- Supervisor - A Supervisor has the rights of a User and is also able to review and manage the message queues.
- Administrator - An Administrator has the rights of a Supervisor and is also able to manage sessions.

SMS Server provides its own inbuilt SMS authentication system, or Windows authentication may be used; both selectable through the Server Configuration dialog. Users are then assigned security levels, depending on the authentication method used, to manage access to the product features.

SMS Authentication

When SMS Authentication is chosen, SMS User authentication is controlled by an Administrator via the SMS Manager, through which users may be added or deleted and Administrator, Supervisor or User rights assigned to them.



If using an SMTP Gateway, the SMTP Address is specified for each user in order to verify that SMS mail can be accepted from that address, in this way the SMTP Gateway is secured from abuse externally.

In addition, the 'From' setting is used to insert a prefix for each message sent so that the recipient can identify the sender immediately and the sender avoids having to sign off each message. Users can be imported from any MAPI address book 'en-masse' including the Microsoft Exchange Server GAL (Global Address List).

Other features include the allocation of inbound numbers to one or multiple users and the importing of users either manually from existing SMS address books or automatically through an import facility via a .csv file.

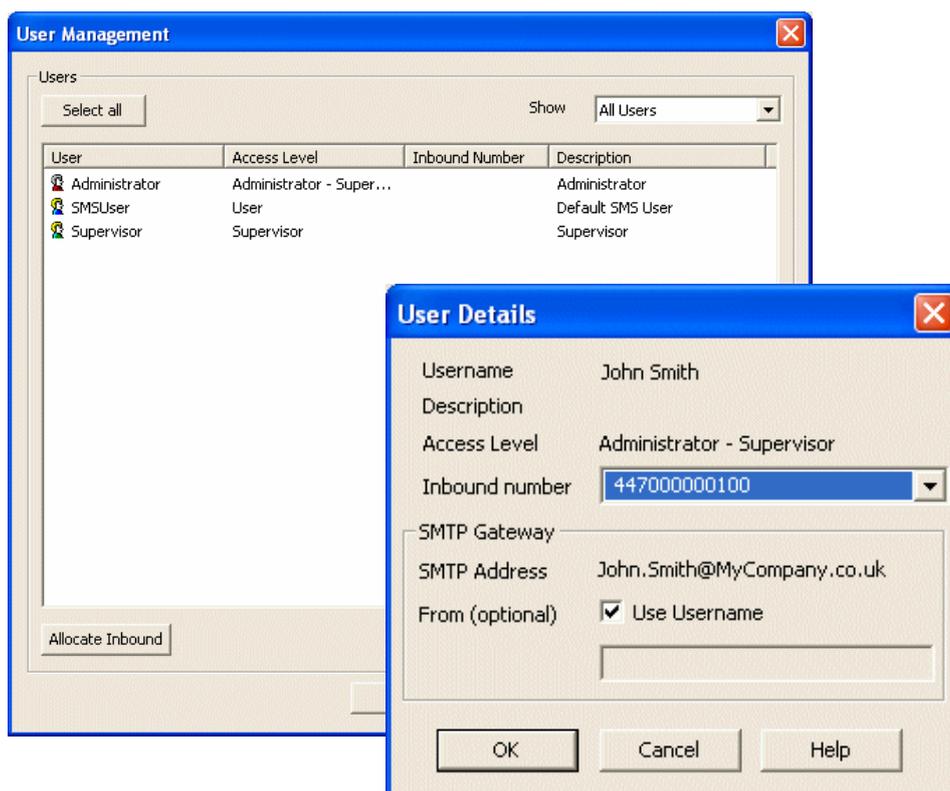
Windows Authentication

Using Windows authentication precludes having to set up multiple user accounts as the Windows active directory is used. Through a group mapping feature in Server Configuration, Windows security groups may be selected and mapped to any of the SMS Server access levels.

As Windows authentication is being used, details for the current user are automatically obtained from the system as shown in the dialogs above and are therefore managed through the standard Windows application dialogs.

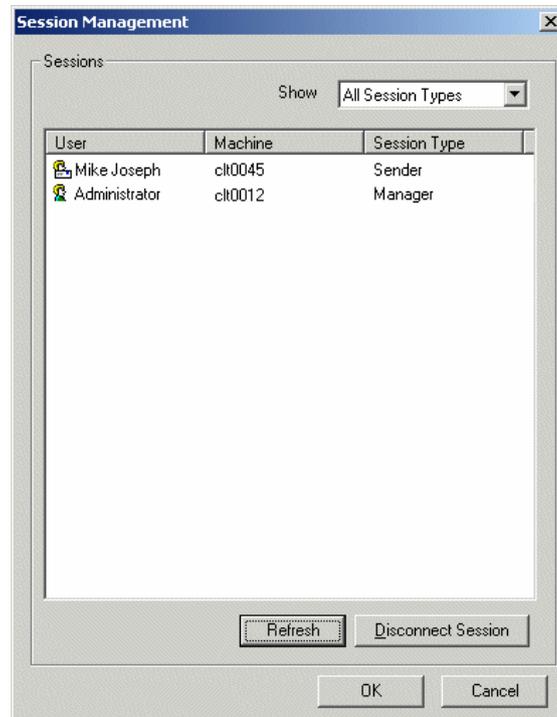
As for SMS authentication, inbound numbers may also be allocated to one or multiple users and the 'From' setting used to insert a prefix for each message sent.

Session Management



Session Management

An Administrator can manage user sessions from the Server Manager. He or she can see who is logged on to the SMS Server and even disconnect sessions remotely.



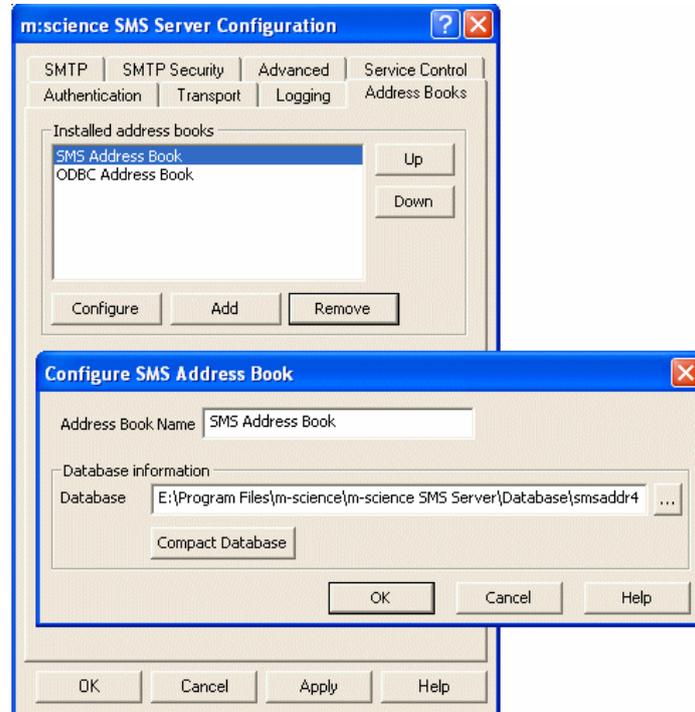
There are two session types:

- Manager – displays details of Administrators and Supervisors currently logged in to the Server Manager.
- Sender – displays details of Users currently logged in.

Address Book Management

SMS Address Books

SMS address books consist of databases, created and named through the SMS Server Configuration tool, containing two fields populated with names and phone numbers.

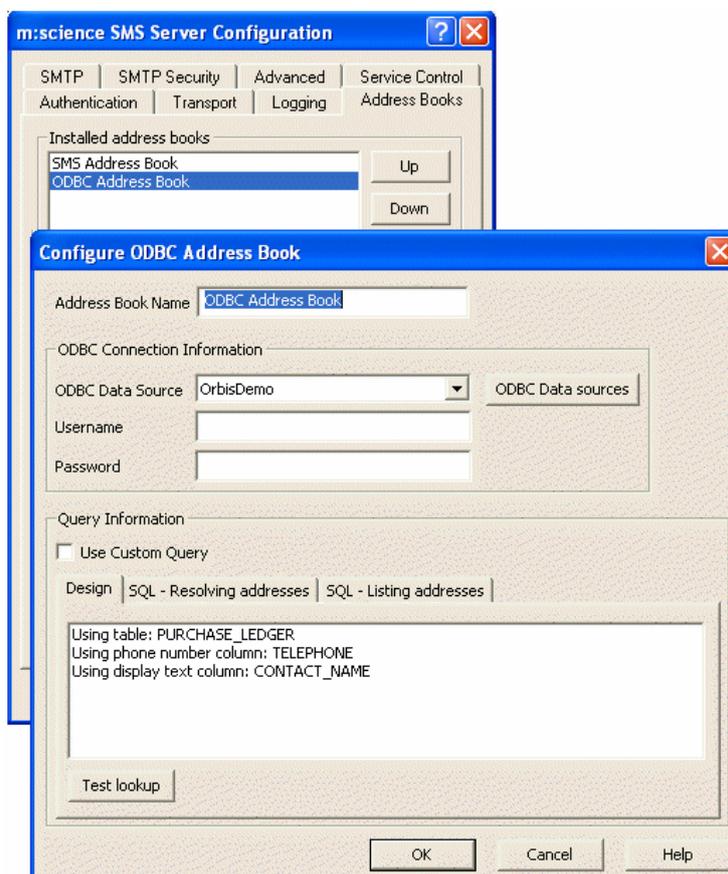


Using the SMS Manager, addresses may be added either manually or automatically from a .csv file through the Import facility.

ODBC Address books

ODBC address books consist of links to specified columns, containing names and phone numbers, located in tables from a selected ODBC data source.

Available addresses are therefore dynamic, depending on what is available from the data source.



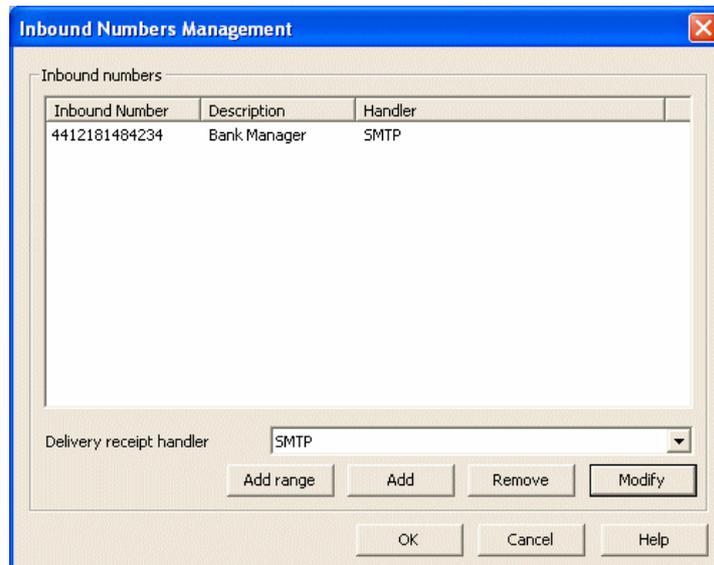
Using Address Books

When sending a message, all available address books may be used to select message recipients. When a message is received, the number is checked against those in all available address books.

Messages received from a number contained in an address book will then appear with a display name, similar to SMTP mail, rather than as an ambiguous mobile number. The order in which the address books are searched is set in the SMS Configuration tool.

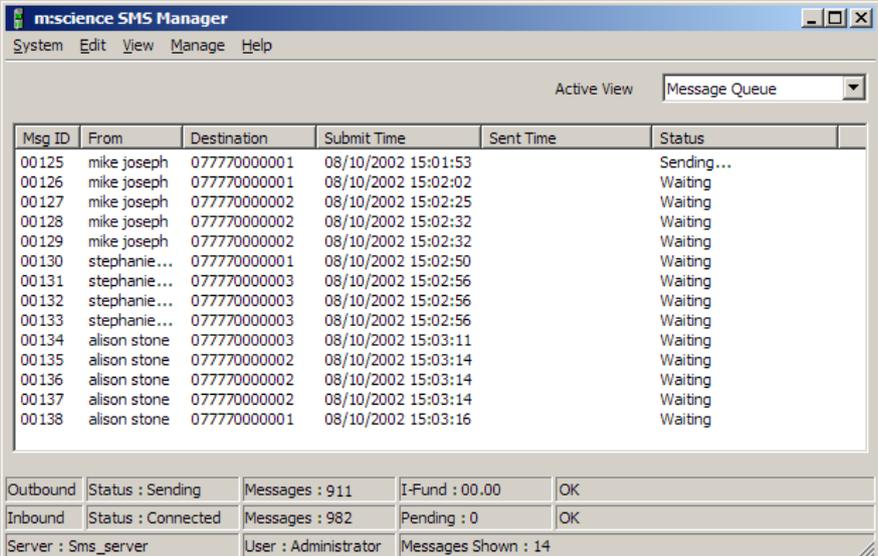
Inbound Numbers Management

The SMS Manager provides a dialog shown in the figure below which may be used to associate an individual mobile number or a range of numbers with display names. Messages received into a mail client from the number(s) will then appear with the selected display name.



Queue Management

Within the SMS Manager, an Administrator or Supervisor can monitor the message queues and individual messages in real-time. The manager interface allows viewing of the pending Message Queue, Sent Messages and Failed messages.



Msg ID	From	Destination	Submit Time	Sent Time	Status
00125	mike joseph	077770000001	08/10/2002 15:01:53		Sending...
00126	mike joseph	077770000001	08/10/2002 15:02:02		Waiting
00127	mike joseph	077770000002	08/10/2002 15:02:25		Waiting
00128	mike joseph	077770000002	08/10/2002 15:02:32		Waiting
00129	mike joseph	077770000002	08/10/2002 15:02:32		Waiting
00130	stephanie...	077770000001	08/10/2002 15:02:50		Waiting
00131	stephanie...	077770000003	08/10/2002 15:02:56		Waiting
00132	stephanie...	077770000003	08/10/2002 15:02:56		Waiting
00133	stephanie...	077770000003	08/10/2002 15:02:56		Waiting
00134	alison stone	077770000003	08/10/2002 15:03:11		Waiting
00135	alison stone	077770000002	08/10/2002 15:03:14		Waiting
00136	alison stone	077770000002	08/10/2002 15:03:14		Waiting
00137	alison stone	077770000002	08/10/2002 15:03:14		Waiting
00138	alison stone	077770000001	08/10/2002 15:03:16		Waiting

Outbound	Status : Sending	Messages : 911	I-Fund : 00.00	OK
Inbound	Status : Connected	Messages : 982	Pending : 0	OK
Server : Sms_server	User : Administrator	Messages Shown : 14		

The Queue Management dialog provides real-time feedback from the SMS Server Component and transport, including messages generated by the host internet service when using the internet transport.

Developer Tools

The M:Science SMS Server Developer Tools enable customers to SMS enable virtually any part of their IT infrastructure above and beyond the standard connectivity within the product itself. M:Science SMS Server already provides seamless integration with Microsoft Outlook and Microsoft Exchange Server and many other Groupware products.

However, it may well be that integration is required with specific operational systems including CRM, HR, ERP, Web Sites or Intranets. This integration is possible through the two developer tools described below.

Client API

The Client API enables developers to integrate the SMS Server seamlessly into line of business applications providing this as an ad-hoc service to users or as a notification mechanism.

The API can be called from any development platform supporting ActiveX technology, which includes Visual Basic, Visual C++, VBScript, JavaScript and ASP (IIS), VB.NET etc.

For example in order to send a message using VBScript, the following code would be used:

```
Dim Eng
Dim Con
Set Eng = CreateObject("SMSDo.Engine")
Set Con = Eng.Connect("sms_svr", "API User", "API Password")
Call Con.SendMessage("07777000001", "My first message", 0)
Set Con = nothing
Set Eng = nothing
```

SMS Plug-in

The SMS Plug-in provides a template for creating an inbound message handler which can be used to accept inbound message data. This data may then be used as required by developers. E.g. sent to a database that is accessed by another application.

Once a new plug-in has been created, it may be added for use through the Inbound Plug-in Management dialog and then selected as the delivery receipt handler for specific inbound numbers through the Inbound Number Management dialog.

Examples for creating Inbound plug-ins using VB6 and VB.NET are installed with the product.

Service Availability

To ensure optimum service availability we utilise a wide bandwidth leased line premium internet connection to and from the data centre so that you can be confident that messages are relayed instantly as well as having the ability to request current message status and delivery receipts. For users who require 100% mission critical performance a Service Level Agreement (SLA) is available as an option.

In addition, continuity of service is maintained through multiple levels of hardware, software and communications redundancy, including:

- Multiple load balanced servers
- Uninterruptable power supplies, including standalone generator backup
- Dynamic resilient message delivery routeing, ensuring high service availability at all times