

SMS Connectivity Service Description



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Tieto Connection Service Description

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1 General

Tieto Connection is a versatile, easy-to-implement service intended for service providers, mobile content providers and other companies. Using Tieto Connection, 3rd party developers can access the messaging and billing platforms of mobile network operators connected to the Tieto Connection service¹⁾. 3rd parties can send text messages to and receive text messages from mobile phone users within the mobile networks of offered operators.

In addition to two-way text messaging, Tieto Connection supports transmitting binary content, e.g. logos, ring tones or calendar entries. By implementing the Tieto Connection interfaces, 3rd parties are able to offer versatile text and content messaging services. Pricing is flexible and suits many different service types.

2 Benefits for Service Providers

Premium-rate two-way messaging

Tieto Connection offers service providers access and a charging method the mobile subscribers of Tieto Connection operators, irrespective of whether they are prepaid or postpaid customers.

Wide range of services

Tieto Connection offers versatile provisioning of service numbers and keywords. Routing and pricing can be configured based on service numbers or keywords. Depending on the service requirements, tariff classes can be restricted or selected per each MT message. Open pricing model gives more flexible euro based pricing interface to the selected service categories separately agreed with Tieto.

Easy deployment

Accessing Tieto Connection takes place via one of two interfaces based on either CIMD2 or HTTP protocol. Service providers can choose an interface that fits their existing system environment and suits the intended service. Connecting to Tieto Connection does not necessarily require extensive programming work or complicated applications at the service provider's end as the HTTP interface allows testing with a normal web browser.

Extensive reporting

For Tieto Connection customers, a monthly statement is generated that shows configuration fees, monthly fees and SMS traffic information. The traffic is clearly listed per service number and tariff class, detailing revenue shares and value added tax. Summary information of failed SMS deliveries is also supplied.

Customer Support

There is a dedicated team supporting Tieto Connection customers, configuring new services, implementing changes, and answering questions.

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1) The list of available network/service operators offered through Tieto Connection is available from vascenter@tieto.com

3 Terminology

Term	Explanation
MO-SMS	Mobile Originated SMS – the SMS that a subscriber sends from his/her handset
MT-SMS	Mobile Terminated SMS – the SMS that a service sends to a subscriber's handset
pull service	A service that a subscriber initiates by sending a MO-SMS to the service
push service	A service that is delivered to the subscriber's handset by MT-SMS
service provider	A company that partners with Tieto and uses the Tieto Connection platform to offer mobile service and content to subscribers of mobile operators offered through Tieto Connection
service number	A short number available from Finnish Communications Regulatory Authority that consists of 5 or 6 digits and starts with 12-, 13-, 16-, 17-, or 18-. Payment service starts with 169-, 177- or 178-.
keyword	The first word in the SMS message body. A keyword can be any word followed by a space character.
group message	An MT-SMS that is sent to several recipients at the same time
Delivery Service Report (DSR)	A report from Tieto Connection to the service provider's client application that contains the status or outcome of a MT-SMS. Typical values are <i>delivered</i> , <i>failed</i> , or <i>expired</i> .
SMSC	SMS Centre – a mobile network component that handles the communication to and from handsets

4 Service Description

4.1 General

Using Tieto Connection, service providers can:

- send SMS message(s) to one subscriber and several subscribers (group message). Free messages can be sent to subscribers within any network. Premium-rate messages can only be sent to subscribers of operators connected to Tieto Connection service
- Receive MMS messages sent from the handset of mobile subscriber of an operator connected to Tieto Connection service
- receive Delivery Service Reports (DSR) – delivery confirmations and reasons for delivery failure for each submitted MT message

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The system environment is shown below.

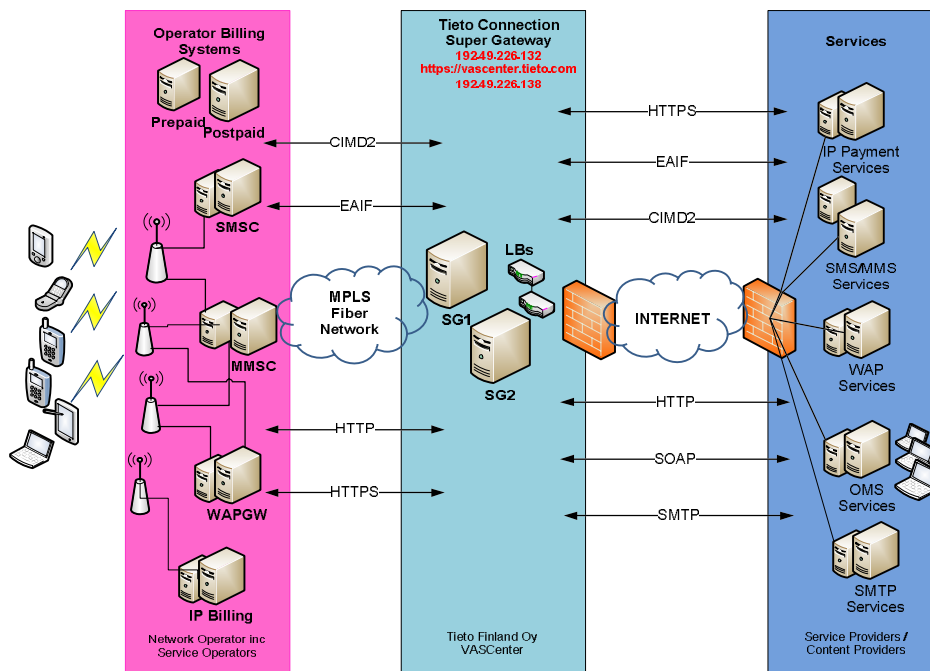


Figure 1. Tieto Connection SMS Connectivity service environment.

Connecting to Tieto Connection requires a fixed Internet connection and a client application that runs in the Service Provider’s environment. The client application is a customised application designed and implemented by the Service Provider. It is often integrated with the Service Provider’s other systems. It is the Service Provider’s responsibility to ensure that the client application meets the Tieto Connection specifications and implements the interfaces correctly. Service Provider also installs and supports the client application.

The client application connects to Tieto Connection over one of the defined programming interfaces. For SMS Connectivity, the client application can use CIMD2 or HTTP protocol to connect to Tieto Connection platform.

The Tieto Connection service is connected to network operators’ billing and message transmitting systems. It forwards messages from the client application to the subscribers’ mobile phones and vice versa over the GSM network. It handles possible error situations within the network, and takes care of retry management.

4.2 Sending MT Messages to Mobile Subscribers

Sending messages from the client application to mobile phones (MT-SMS) is simple. The client application initiates the sending by submitting a mobile phone number and the message content along with a number of different parameters. Tieto Connection acknowledges whether the



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message has been accepted for delivery. This means that the MT message is on its way to the subscriber's terminal. It does not mean that the MT message has been delivered. Each SMS message can be sent to one or several recipients (group message). The service number of the client application is shown as the sender of the message. In some cases, the sender can be shown as an alphanumeric string describing the service or Service Provider.

If the recipient of the message is unavailable, for example the handset is switched off or there is not enough credit on a prepaid number for a premium rate message, the Tieto Connection service will, depending on the failure reason, either keep retrying or disregard the message.

When sending MT messages, the client application can select whether a Delivery Service Report (DSR) is required. The DSR tells whether and when the actual transmission of the MT message was successful all the way to the mobile terminal, and the reasons why it may have failed. The usage of DSRs is strongly recommended for MT-billable services where the successful billing is required. The premium cost of an MT-message is only charged to the subscriber upon a successful delivery of the MT message. The delivery, and therefore the billing, can fail due to numerous reasons, the most common of which is that there is not enough credit on the subscriber's prepay account. The destiny of each MT message – whether it has been delivered or not – can only be checked by using DSRs. It is Service Provider's responsibility to implement a service logic that does not offer the service or content if the delivery or billing fails.

4.3 Receiving MO Messages from Mobile Subscribers

Messages sent from a mobile phone to a service (MO-SMS) are transmitted to the correct Service Provider and correct client application on the basis of the service number. MO messages can only be sent to Service Provider if the client application is up and running and accessible. If Service Provider's application is unavailable, Tieto Connection buffers the incoming messages while awaiting a functioning connection for a maximum of configurable period.

With each MO message, the mobile phone number of the sender and other parameters as described in the interface documentation are transmitted to the client application.

In addition to using the service number, the message can be routed on the basis of a keyword in the SMS message body. Keywords and associated tariff are configured by Tieto according to Service Provider's specification.

4.4 Delivery Service Reports

DSRs are status reports that confirm the delivery or a failure of an MT message. DSRs are typically used with MT-billable services when it is important to confirm that the billing has been successful, for example before any content is sent to the subscriber.

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If Service Provider wishes to receive DSRs, they must be explicitly turned on per each MT. When the client application submits an MT to Tieto Connection for delivery, it must request a DSR for that MT message.

Using DSRs is strongly recommended as they provide run-time feedback to Service Provider of delivery and billing success rates. DSRs are the only tool available to confirm that the subscriber has been successfully billed. Monthly revenue statements show only a collective total of failures, but DSRs offer a per-message confirmation of successful deliveries. Using DSRs is extremely important for premium-rate services that are offered to prepaid subscribers, as there are no guarantees that there will be enough credit on the prepaid account to receive the premium-rate MT message.

4.5 Routing by Keyword

Tieto Connection allows running multiple services on a single service number. This is achieved using keywords. Keywords and associated MO tariff are configured in Tieto Connection which then takes care of all logic required to separate SMS traffic to several different destinations based on the keyword. Services can be located at different addresses and may have varying pricing. A “default” keyword, destination and pricing can also be configured.

Keyword routing managed by Tieto only suits MO-billable services that have a definite amount of keywords that do not change often. Otherwise it is worth considering implementing a keyword routing system in the client application.

4.6 Service Numbers

The service number is a 5- or 6-digit short number that depends on the purpose of the service. All Payment service content, a physical product, must be under the category of payment service short codes, number beginnings of 169-, 177- and 178-. The service provider applies for a service number from the Finnish Communications Regulatory Authority that manages all short numbers in Finland. Once granted, the number is reserved for use on all Finnish mobile network operators, even if the service is only offered to the subscribers of one operator. When applying for a service number and running a service on it, the service provider must follow the rules and regulations set for service and content providers. Available and reserved service numbers can be browsed on the Finnish Communications Regulatory Authority's list [1].

By signing both SMS Connectivity and MMS Connectivity agreements, the Service Provider can use the same short code to send and receive both SMS and MMS messages. Premium-rate services can be configured to both or either channels – for example, enable using free-to-subscriber MO-SMS to subscribe to the service and then offer the content through premium-rated MT-MMS.



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4.7 Multipart Messages

Tieto Connection supports sending and receiving multipart messages. When sending multipart MT messages through the CIMD2 interface, the client application must cut the content into parts no longer than 160 characters. When using the HTTP interface, Tieto Connection service automatically divides a long content into multiple parts. Binary content must always be divided by the client application before it is passed on to Tieto Connection.

When sending premium rate multipart messages, it must be noted that only the first part can be sent as a premium-rated message and all subsequent parts must be free to subscriber. It is the service provider's responsibility to ensure that this pricing is implemented by the client application unless using the automatic processing of multipart messages in the HTTP interface.

For MO traffic, Tieto Connection passes all available information from the handset to the client application. This includes reference information required to assemble multiple parts into a single long text message. Although the delivery order to the client application may differ from the order that the handset sent the parts, it is possible to link the parts into a single long text message in the client application.

4.8 Service Coverage in Finland and Abroad

Free-to-subscriber MT messages sent through Tieto Connection are delivered to other Finnish and foreign mobile network subscribers. However, billing for premium rate services can only take place for the subscribers of mobile networks available through Tieto Connection service.

Receiving MO messages through a service number to the client application is only possible from subscribers of mobile networks available through Tieto Connection Service.

4.9 Security

Service providers can use an encrypted data transfer between the client application and Tieto Connection (SSL or HTTPS). In addition, each connection is only accepted from a pre-defined range of Service Providers' IP addresses.

5 Application Interfaces

5.1 CIMD2 Interface

The Tieto Connection CIMD2 interface implements the Nokia CIMD2 protocol. CIMD2 is a Nokia specific data exchange protocol for connecting application programs to a short message service centre (SMSC). CIMD2 protocol packets are transmitted as text over the TCP/IP protocol.



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Technical specifications and various programming tools, such a Java library, are available from Nokia Forum [2].

5.2 HTTP Interface

The HTTP interface allows client applications to easily send and receive messages and DSRs over the HTTP protocol. Communication between Tieto Connection and the client application takes place via a set of defined parameters that are posted over a HTTP connection using either POST or GET method. To receive MO messages and DSR receipts, any web server with a client application capable of receiving and acknowledging messages can be used.

5.3 Selecting the interface

When deciding which interface to use, Service Provider must consider different factors such as:

- desired speed and reliability
- client application software and hardware environment
- planned functionality

CIMD2 has traditionally been the choice of many service providers as it offered as a connection interface by many operators in Finland. However, if service provider wishes to implement other mobile services, such as MMS or LBS (Location Based Services), it is worth considering using the HTTP interface as these functionalities are available through that too.

6 Deployment

6.1 Service Agreement

The implementation of the Tieto Connection service requires the signature of a service agreement and the relevant attachments.

The following services can be selected (SMS or MMS or both):

- Two-way service to subscribers of Tieto Connection operators using a dedicated service number
- Send-only service to subscribers with other operators
- MT or MO-billing for premium-rate services
- Keyword based routing and pricing

To use SMS Connectivity service, the Service Provider must submit a completed service agreement, including the following information:

- Description of the intended service
- Selected technical interface
- Address and location of the client application

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Upon receiving a signed service agreement, Tieto will send the customer a user ID and a password as well as selected interface documentation and the address details of the TEConnection service.

6.2 Testing

It is Service Provider's responsibility to ensure that the client application is tested properly and functionality is as expected, also in error situations. For premium rate services, it is extremely important to check that the billing is working correctly for all users. It is Service Provider's responsibility to make sure that service works correctly when MT-billing is used and MT messages fail to reach their destination. Service Provider must also ensure MMS content compability between different handsets.

When a new service is launched, Service Provider gets required details such as passwords and addresses of Tieto Connection. When testing, Service Provider keeps a log of sent and received messages. These logs are then double checked against Tieto's transaction and billing ticketing systems to ensure correct billing. The service is ready to launch only after testing has been completed successfully.

7 Pricing

7.1 Basic Charges

There is an activation fee and monthly fees for the Tieto Connection service, each dedicated service number and each configured keyword. Any configuration or technical change incurs an additional modification fee. For all premium rate services, an invoicing fee is charged to produce monthly revenue statements and returns. A minimum monthly fee also applies. For non-premium traffic, Service Provider is charged on a per-message basis in accordance with the applicable Tieto Connection tariff.

7.2 Traffic Charges

For non-premium rate services, the service provider can select from three different charging models. The cost of one SMS message, either MO or MT direction, can be charged either always to the service provider (service type 1B), or always to the subscriber (subscribers of Tieto Connection operators only, service type 1C). Alternatively the cost of sending can be charged to the sender, i.e. to the subscriber for an MO message and to the service provider for an MT message (service type 1A). Open Pricing Interface can be activated only selected services and it must be agreed with Tieto separately. OPI pricing model is supported in MT-direction and one of these pricing interfaces, either TC or OPI, can be activated per short code.

The traffic charges are per message. When charged to the subscriber, the cost depends on the subscriber's contract agreement. When charged to Service Provider, the cost is per message in accordance with the applicable Tieto Connection tariff.



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7.3 Premium Rate Services

Tieto Connection offers the possibility to run premium-rate services, i.e. services that cost more than normal text messaging and are charged to the subscriber's mobile phone bill. Charges can only be made for subscribers within mobile networks that are available through Tieto Connection. Service Provider must select the used billing model or mechanism, i.e. whether billing takes place on MO or MT basis. If the charge is added to the subscriber's account when he/she sends in an MO, it is called MO-billing. If the premium charge is added to the subscriber's account when the service sends an MT to him/her, it is called MT-billing.

Several different tariff classes are offered for both billing mechanisms. The tariff class can be configured per service number, keyword or if using MT-billing, per individual messages. The revenue share scheme depends on the selected tariff class. Please see applicable Tieto Connection tariff.

Please note that in general, Tieto recommends MT-billing with DSRs over MO-billing. When MO-billing is used, the subscriber is charged regardless whether he/she gets the service or content in case of service failure. With MT-billing, it is straight-forward making sure that a subscriber is only charged after a successful delivery of the requested service.

7.4 Charging Models

Tieto Connection offers two different charging models that determine the revenue share scheme. The available choices are described below: MO or MT. Please note that it is only possible to apply one charging model per each service number. The charging model is selected on the basis of the services run on the service number.

7.4.1 MO Charging Model

In MO charging model, the premium fee is charged to the subscriber's account upon his/her sending a multimedia message to the service number (service type 2A). If the fee can be charged successfully (i.e. it's a post-pay subscriber or there is enough credit on a prepaid subscriber account), the message is delivered to the client application. Charging and routing the message to the client application can also take place based on the keyword found in the text message (service type 2B). This makes it possible to run differently priced services on a single service number. All keyword handling and traffic routing is automatically done on Tieto Connection platform.

The client application can send one return MT message per each received MO-billed message free of charge. Any additional MT messages are charged from the Service Provider in accordance to the applicable Tieto Connection tariff.

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7.4.2 MT Charging Model

In MT-billable services, the premium fee is charged to the subscriber's account upon his/her receiving a text message from the service number (service type 2C). The activation fee of MT charging model includes configuring five (5) different tariff classes in each service number, with the possibility of connecting further tariff classes.

As with MO-billing, the MT billing model includes one MO request and one MT return message. Additional MT messages, both premium-rate messages and free-to-subscriber messages, are possible and are charged to Service Provider in accordance with the applicable Tieto Connection tariff.

The tariff class for MT-billable services is set on a per-message basis. When the client application sends MT messages, it must submit the correct tariff class or euro based price (Open Pricing) and VAT parameters to Tieto Connection. It is Service Provider's responsibility to ensure that a correct tariff class or end user price is being used. Tieto Connection charges the subscriber based on the tariff class or euro cents that the client application submits. If a wrong tariff class or euro based pricing is submitted, payouts to Service Provider are affected.

8 Guidelines for Service Providers

All SMS services are controlled by the Finnish Communications Regulatory Authority. When using a short service number, Service Provider is obliged to follow the regulations imposed by the authority. In addition and in line with the regulations, all services must meet the following guidelines:

- When sending MT messages, the originator (sender) of the MT must be Service Provider's service number unless otherwise agreed with Tieto in writing
- Service Provider must ensure to the best of their ability that a subscriber is charged the published price and is not charged for a service or piece of content that fails to reach him/her.
- It must be clearly advertised how the subscriber may cancel or stop the service. It is a good policy to implement a STOP command and advertise it clearly.
- On the higher price points, a confirmation message is needed to verify that the subscriber is aware he/she is going to get billed

More details about the responsibilities of Service Provider can be found in Terms&Conditions of the Tieto Connection agreement, and the SMS Connectivity – Frequently Asked Questions document.

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9 Further Information and Orders

- [1] The Finnish Communications Regulatory Authority:
<http://www.ficora.fi>
- [2] Forum Nokia: <http://forum.nokia.com>
- [3] Information and Orders: vascenter@tieto.com
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