

OMTP

MANAGEMENT OF VOIP SETTINGS

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1 INTRODUCTION

1.1 DOCUMENT PURPOSE

This document defines the minimum requirements for the management of VoIP settings on Terminals offering voice calling using Embedded VoIP Technologies over all type of network bearer.

This document contains use cases and functional requirements to ensure a consistently applied management of VoIP settings on Terminals.

1.2 BUSINESS RATIONALE

The business rationale for this document is:

- Operators can source and distribute Terminals that support voice calling using VoIP, where the Operator's VoIP settings are securely protected.
- Operators can source and distribute Terminals that support voice calling using VoIP, where this capability is locked to the Operator's VoIP settings for the duration of a service contract.

If achieved, this is expected to deliver the following business benefits:

- Customers will be able to source Terminals with built-in VoIP settings that work "out-of-the-box".
- Operators will be able to uphold current subsidy models on Terminals with VoIP capability, therefore offering customers the ability to enjoy the benefits of VoIP calling at reduced startup prices.
- Customers will be able to use "out-of-contract" Terminals for voice calling with any VoIP provider they wish, once the contract has expired.

1.3 INTENDED AUDIENCE

- Operators
- Terminal vendors, i.e. the equipment and technology vendors that will be asked to create implementations of the OMTP platform.
- Other projects inside OMTP that will take these requirements as input.

1.4 CONVENTIONS

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC2119 [1].

- **MUST:** This word, or the terms "REQUIRED" or "SHALL", mean that the definition is an absolute requirement of the specification.
- **MUST NOT:** This phrase, or the phrase "SHALL NOT", means that the definition is an absolute prohibition of the specification.
- **SHOULD:** This word, or the adjective "RECOMMENDED", mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.
- **SHOULD NOT:** This phrase, or the phrase "NOT RECOMMENDED" mean that there may exist valid reasons in particular circumstances when the particular behaviour is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behaviour described with this label.
- **MAY:** This word, or the adjective "OPTIONAL", mean that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation which does not include a particular option **MUST** be prepared to interoperate with another implementation which does include the option, though perhaps with reduced functionality. In the same vein an implementation which does include a particular option **MUST** be prepared to interoperate with another implementation which does not include the option (except, of course, for the feature the option provides.)

The requirements within this document are uniquely identified using the following format:

VOIP-####

- where: #### is a 4 digit number that identifies the requirement (e.g. 0020) and which is to be unique within the document.

2 USE CASES

2.1 KEY OPERATOR USE CASES

The key Operator use cases are listed below.

2.1.1 CUSTOMER ACQUIRES SUBSIDISED MOBILE TERMINAL FROM MOBILE SERVICE PROVIDER

In this scenario the customer has acquired the Terminal as part of a communications service product that is structured in such a way that a portion of the cost of the Terminal is subsidised by the mobile Operator. This service provider could be the mobile Operator directly, or an authorised agent of the mobile Operator's communications service products.

2.1.1.1 When the Terminal is supplied to an Operator

As part of the mobile Terminal supply process, the Operator and Terminal manufacturer agree the initial VoIP settings that the Terminals should be shipped with. These settings are securely protected in the Terminal, and can only be changed by the Operator. Furthermore, at the time of supply of the Terminal by the manufacturer, any telephony applications on the Terminal that offer VoIP calling services should be locked to these agreed settings.

2.1.1.2 When the Terminal is supplied to customer

In this scenario, the customer has entered into a service contract which allows him to use the mobile Terminal for voice and video calling, texting, browsing, taking pictures, playing games, listening to music, etc. in return for service charges that, in part, contribute to the Operator's purchase cost of the Terminal. Any voice calls that the customer makes using any pre-installed voice applications will utilise the Operator's provided services whatever network service bearer is used e.g. GSM, UMTS, Wi-Fi etc. The locking of the VoIP settings to the nominated VoIP platform ensures that any VoIP calls made by the customer using these pre-installed applications are handled in accordance to the terms and conditions of the mobile service contract.

2.1.1.3 When the customer contract expires

When the service contract comes to an end, the mobile service provider assumes that the initial cost of the Terminal is recovered to the extent planned in its business case. At this point the customer can choose to

contract again for communications services using the same Terminal. If the customer wishes to do this, then it should be possible to use the same Terminal with mobile service providers of the customer's own choosing. The customer requests the original mobile service provider to unlock the Terminal's VoIP settings to permit the customer to associate the pre-installed voice applications with alternative VoIP service providers. This unlocking is done either "over-the-air" by the Operator, or by the customer when they unlock the Terminal using the Control Key provided for the Subsidy Lock.

2.1.1.4 Use of alternative VoIP applications

The requirements in this document are not designed to prevent the customer from using other VoIP applications with alternative providers.

For example, at any point during the lifetime of the Terminal ("in-contract" or "out-of-contract") the customer may be able to install third-party applications (e.g. Java or other Terminal OS applications) that offer VoIP calling using third-party VoIP providers (e.g. Skype, etc). The only VoIP applications that are forced to use the Operator's settings are those that were pre-installed on the Terminal, and only during the term of the contract that the Terminal was supplied with.

2.1.1.5 Use of alternative network bearers

These requirements are not designed to prevent the customer from using the Terminal in other ways.

For example, at any point during the lifetime of the Terminal (in-contract or out-of-contract) the customer may use the Terminal's capability to utilise alternative network bearers for other applications e.g. for the transfer of media files between the Terminal and a PC using WiFi, or the ability of the customer to play multiplayer games using Bluetooth etc.

2.1.1.6 Summary Illustration

Figure 1 illustrates an example of the choices available from the pre-installed telephony application to the customer during the time when the Terminal's settings are locked to the initial VoIP settings and the time after the lock is removed:

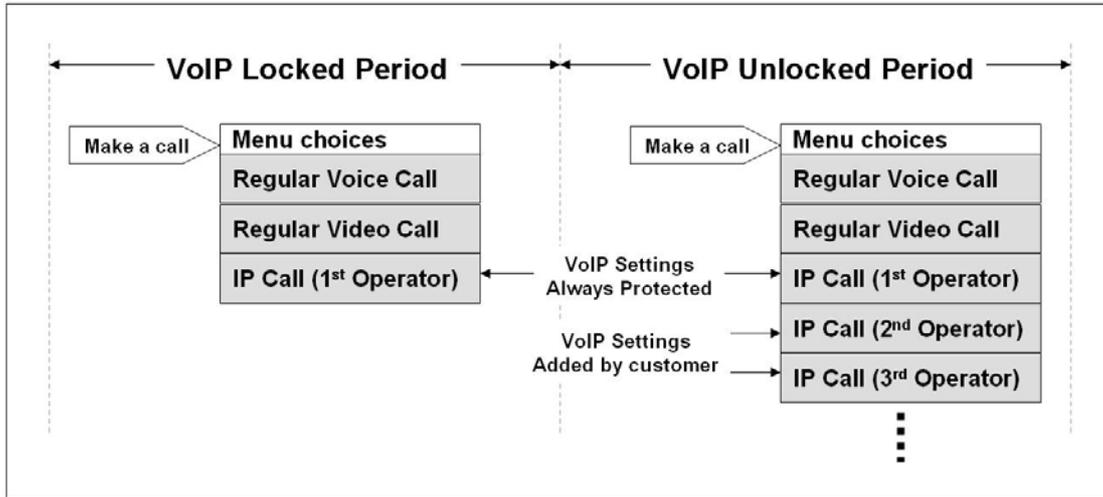


Figure 1: Example of choices available to the customer from the preinstalled telephony application

2.1.2 CUSTOMER ACQUIRES PRE-OWNED TERMINAL FROM INTERNET AUCTION SITE, FRIEND OR RELATIVE

In this scenario the customer has acquired a mobile Terminal with VoIP capability in the pre-installed configuration from somewhere other than a mobile Operator or mobile service provider e.g. given by a friend or relative, or purchased from an internet auction site. If the mobile Terminal originally entered into circulation via an Operator, there is a chance that the VoIP settings are locked. In this case the customer can obtain the code to unlock the Terminal from the original Operator. These settings will remain stored in the Terminal, but the customer can now use the Embedded VoIP Technology with alternative settings.

2.1.3 CUSTOMER ACQUIRES MOBILE TERMINAL FROM A RETAILER

In this scenario the customer has acquired a mobile Terminal with Embedded VoIP Technology from a retailer that carries new (or pre-owned) mobile Terminals for sale that are not in any way associated with an Operator.

This use case is out of scope of this document.

2.1.4 CUSTOMER ACQUIRES MOBILE TERMINAL FROM EMPLOYER

In this scenario, the customer has acquired the mobile Terminal through an issuer of terminals within an enterprise, e.g. the internal Communications or IT department that looks after the distribution of mobile Terminals to employees. In this case, the “enterprise issuer” is considered to act as an Operator and the scenario described in 2.1.1.1 applies.

2.1.5 CUSTOMER ACQUIRES MOBILE TERMINAL FROM OPERATOR WITH NO VOIP SERVICE

In this scenario, the Operator is still able to lock at the time of organising the purchase of Terminals with Embedded VoIP Technology from the Terminal manufacturer.

2.2 A NOTE ABOUT ENTITIES “LOCKED” AND “PROTECTED”

This document refers to the lock as the possible non-changeable binding of the Pre-Defined VoIP Settings during the period of subsidy of a Terminal with Embedded VoIP Technology. This is distinct from the protection of the Pre-Defined VoIP Settings themselves.

So, for clarification, what the use cases and recommendations state is that the Pre-Defined VoIP Settings should be “protected” so that it can never be changed by the user, and be resilient to Terminal and master resets. They should only be changeable through Operator Device Management.

Contrast this with the “lock” mechanism referred to, which represents the state in which the Embedded VoIP Technology can only utilise the Pre-Defined VoIP Settings for a period of time up until the unlock process is performed. After unlock, the Pre-Defined VoIP Settings continue to be protected, but now the Embedded VoIP Technology can be bound to (or powered by) other VoIP settings if desired by the user.

3 GENERAL REQUIREMENTS

REQ. ID	REQUIREMENT
VOIP-0010	The Terminal MUST provide a mechanism to lock the Embedded VoIP Technology to the Pre-Defined VoIP Settings.
VOIP-0020	The Operator MUST be able to choose to apply the lock described in requirement VOIP-0010.
VOIP-0030	The Terminal MUST provide a mechanism for the user to be able to select the Pre-Defined VoIP Settings for being used in any VoIP application including any VoIP application installed by the User.
VOIP-0035	The Terminal MUST NOT allow the use of the Embedded VoIP Technology until authentication of the Operator Smartcard has been successful.
VOIP-0040	The Terminal MUST unlock the Embedded VoIP Technologies from the Pre-Defined VoIP settings when the Subsidy Lock is removed, thereby allowing the Embedded VoIP Technologies to use alternative settings.
VOIP-0050	The Terminal MUST NOT allow the user to unlock the Embedded VoIP Technologies from the Pre-Defined VoIP settings using any mechanism other than that defined in requirement VOIP-0040.
VOIP-0060	The Terminal MUST NOT allow changes to the Pre-Defined VoIP settings by any party other than the Operator.
VOIP-0070	The Terminal MUST enable the Pre-Defined VoIP settings to only be configurable by a pre-defined provisioning server (i.e. OMA Client Provisioning or OMA Device Management [2]).
VOIP-0080	The Terminal SHOULD support the provisioning of VoIP settings from the Operator Smartcard.
VOIP-0090	The Terminal UI SHOULD clearly display that the Pre-Defined VoIP settings cannot be changed by the user.

REQ. ID	REQUIREMENT
VOIP-0100	The Terminal UI SHOULD clearly display when the Embedded VoIP Technology is locked to the Pre-Defined VoIP settings.
VOIP-0110	The Pre-Defined VoIP settings MUST be persistent (i.e. a Terminal master reset will not delete them)
VOIP-0120	OMA Device Management of the Pre-Defined VoIP Settings MUST NOT be visible to the user.

4 DEFINITION OF TERMS

TERM	DESCRIPTION
CONTROL KEY	A numeric code which when entered in the UI of the Terminal, disables the locking of the Terminal's communications functions to the network of the Operator that issued the Smartcard. This is part of the Subsidy Lock mechanism.
EMBEDDED VoIP TECHNOLOGY	Any VoIP capability that is included in the Terminal at the point of manufacture.
OPERATOR	A business entity that provides communications services to customers in the form of products that include a combination of Terminals and Smartcards.
PRE-DEFINED VoIP SETTINGS	VoIP related settings that are configured by default prior to the Terminal sale. (e.g. SIP proxy server address, realm, transport type and port number, SIP registrar server address, realm, transport type and port number etc.)
SMARTCARD	Tamper-resistant device (including trusted-by-the Operator memory and a trusted-by-the-Operator execution environment) that can communicate with the Terminal through its interface. The Operators issue Smartcards in the form of Security or User Identification modules. Possible types of Smartcards are: SIM (GSM), R-UIM (CDMA); or applications such as the USIM (UMTS) or the CSIM (CDMA).
SUBSIDY LOCK	A mechanism that permits the Operator to lock the communications functions of the Terminal to the network of the Operator that issued the Smartcard. It is described in 3GPP specification "Personalisation of Mobile Equipment (ME); Mobile functionality specification -TS 22.022 Release 6.0.0" [3]
TERMINAL	Used as an alternative term for a cellular telephone or handset.

5 ABBREVIATIONS

ABBREVIATION	DESCRIPTION
CDMA	Code Division Multiple Access
GSM	Global System for Mobile Communications
IEEE	Institute of Electrical and Electronic Engineers
IP	Internet Protocol
OMA	Open Mobile Alliance
R-UIM	Removable User Identity Module
SIM	Subscriber Identity Module
SIP	Session Initiation Protocol
UI	User Interface
UMTS	Universal Mobile Telecommunications System
USIM	Universal Subscriber Identity Module
VoIP	Voice over IP
Wi-Fi	Wi-Fi is a brand originally licensed by the Wi-Fi Alliance to describe the underlying technology of wireless local area networks (WLAN) based on the IEEE 802.11 specifications.

6 REFERENCED DOCUMENTS

No.	DOCUMENT	AUTHOR	DATE
1	RFC 2119 - Key words for use in RFCs to Indicate Requirement Levels	IETF	
2	OMA Device Management v1.2	OMA	
3	Personalisation of Mobile Equipment (ME); Mobile functionality specification – TS 22.022 Release 6.0.0	3GPP	Dec 2004

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