

# Release Note for Nokia S60 VoIP Releases

Version 1.2; 28 May 2009

VoIP

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## Change history

14 November 2007	Version 1.0	Initial document release
1 October 2008	Version 1.1	Added information on Nokia S60 VoIP Release 3.0 and other minor updates
28 May 2009	Version 1.2	Added information on Nokia S60 VoIP Release 3.1

## 1 Introduction

This document describes how the Nokia S60 Voice over IP (VoIP) implementations have evolved between releases 1.0 and 3.1. It identifies the main new features implemented for each release and provides references to the relevant technical documentation.

This document can be used to identify the VoIP functionality for each Nokia VoIP device. The devices supporting Nokia VoIP implementation can be seen in the table [VoIP Support in Nokia Devices](#) in the [VoIP](#) section on the Forum Nokia website.

## 2 Release 1.0

Nokia S60 VoIP Release 1.0 is the first implementation of the Nokia VoIP solution intended for enterprise use. The basic content of release 1.0 is described in this chapter.

### 2.1 Features

- Mobile-originated (MO) Internet calls:
  - From idle, contacts, message, logs, speed dialling, and voice dialling.
- Mobile-terminated (MT) Internet calls.
- Call hold:
  - Ongoing VoIP call can be placed on hold.
  - New call (VoIP or circuit-switched) can be placed on hold.
  - Swapping between original and new call.
- Call waiting:
  - During an ongoing VoIP call, the user is alerted audibly and visually of another incoming call.
  - Call waiting can be enabled/disabled in the device settings.
- Calling line identification presentation (CLIP):
  - Identity of the calling subscriber is displayed in incoming VoIP calls.
- Calling line identification restriction (CLIR):
  - Identity of the calling subscriber can be hidden from called subscribers.
  - CLIR can be enabled/disabled in the device settings.
- Unattended call transfer:
  - Transfer of a call to another user. Transfer can be done during ringing phase.
  - Transfer is only possible between two VoIP users.
- Attended call transfer:
  - Transfer of a call to another user. Transfer can only be done during call phase and not during ringing phase.
  - Transfer is only possible between two VoIP users.
- Voice mailbox with Message Waiting Indication (MWI):
  - Voice mailbox for VoIP calls.
  - Users receive an indication of new voice mailbox messages.
- Call barring:
  - Anonymous internet calls can be barred by activating Internet Call barring.
  - Barring can be enabled/disabled in the device settings.
- Do not disturb (DND):
  - Incoming VoIP calls are rejected with busy information without alerting the called user.
  - DND can be enabled/disabled in the device settings.

- Call forwarding indication:
  - Support for the 'Call is being forwarded' indication that informs the calling user that the call is forwarded (unconditional, busy, and no answer) by the called user.
- Dual-tone Multifrequency (DTMF):
  - For example, voice mail via gateway (PSTN interworking from infrastructure required).
- Emergency Internet calls:
  - By default, GSM emergency calls are used.
  - Internet emergency calls are only used if no GSM coverage is available.
- VoIP settings are defined manually, via OMA Client Provisioning and Device Management.

## 2.2 Dual-mode device

Nokia VoIP is fully integrated together with basic circuit-switched telephony. Both GSM and VoIP service can be used simultaneously in the same device.

- Combination of Internet and GSM calls:
  - Call waiting, indication of an incoming Internet call while a GSM call is active.
  - Swapping between Internet and GSM calls.
- Automatic and manual log-in to Internet call services.

In addition, the Nokia VoIP solution is interoperable with major Voice over IP vendors' infrastructure and is based on Internet Engineering Task Force (IETF) standards.

## 2.3 Supported devices

The list of supported devices can be found in the table [VoIP Support in Nokia Devices](#) in the [VoIP](#) section on the Forum Nokia website.

## 2.4 Related documentation

*VoIP-related OMA CP documentation*

- VoIP – Profile-specific settings:
  - [Client Provisioning Registration](#) (see w9013.txt in the VoIP\_Rel\_1\_0 folder).
- SIP settings:
  - [Client Provisioning Registration](#) (see w9010.txt in the VoIP\_Rel\_1\_0 folder).

## 3 Release 2.0

Nokia S60 VoIP Release 2.0 introduces Voice over IP for consumers.

### 3.1 New features

- User interface and usability improvements:
  - VoIP can be used for Internet calls over wireless local area network (WLAN) in enterprises, hotspots, and homes.
  - VoIP connection from active idle.
  - VoIP service provisioning plug-ins (wizard).
- Added support for Network Address Translation (NAT) traversal and use of Secure Real-Time Transport Protocol (SRTP):
  - Simple Traversal of User Datagram protocol (UDP) is provided through NATs (STUN)/rport support to NAT detection and address binding.
  - Session Border Controller support with persistent TCP/IP.
- Added support for 'RTP/SAVP' transport handling.
- Added support for AMR codec parameters `mode-set`, `mode-change-period`, and `mode-change-neighbor` according to IETF RFC 3267 [1].

### 3.2 Supported devices

The list of supported devices can be found in the table [VoIP Support in Nokia Devices](#) in the [VoIP](#) section on the Forum Nokia website..

### 3.3 Related documentation

*VoIP-related OMA CP/DM documentation*

- VoIP – Profile-specific settings:
  - [Client Provisioning Registration](#) (see w9013.txt in the VoIP\_Rel\_2\_0 folder).
  - [OMA DM: Management Object for Nokia VoIP Implementation](#).
- VoIP – Terminal-specific settings:
  - [Client Provisioning Registration](#) (see w9033.txt in the VoIP\_Rel\_2\_0 folder).
  - [OMA DM: Management Object for Generic VoIP Settings](#).
- SIP settings
  - [Client Provisioning Registration](#) (see w9010.txt in the VoIP\_Rel\_2\_0 folder)
  - [OMA DM: Management Object for SIP](#)
- NAT/Firewall settings
  - [Client Provisioning Registration](#) (see w902E.txt in the VoIP\_Rel\_2\_0 folder)
  - [OMA DM: Management Object for NATFW](#)
- [Nokia S60 VoIP Release 2.0 Configuration Tutorial](#)
- [Implementation Specifications for Nokia S60 VoIP](#)

- [SIP/VoIP Call Flow Messages](#)
- [Nokia N80 Internet Edition: VoIP FAQ](#)
- [Nokia S60 VoIP Implementation Troubleshooting Guide](#)
- [SIP VoIP Settings User Guide](#)

For more information, see the VoIP documents listed in Section 10.1, 'Generic Nokia S60 VoIP documentation'.

## 4 Release 2.1

Nokia S60 VoIP Release 2.1 introduces changes to the configuration and implementation.

### 4.1 Changes in configuration and implementation

- Secure call preference

Enables media security (SRTP) if SIP Transport Layer Security Protocol (TLS) has been used for signalling. If the other end does not support security, a fallback to a normal call takes place if allowed by this setting.

- Caller ID characters

Defines the number of characters used in caller identification (the value can be from 3 to 30). This functionality depends on the URI domain ignore rule parameter.

- URI domain ignore rule

Enables the definition of whether the domain part of an address for an incoming internet call is displayed in the user interface.

- Emergency call

Only one circuit-switched (CS) emergency call attempt is made at first if CS coverage exists and then a VoIP emergency call is attempted.

### 4.2 Supported devices

The list of supported devices can be found in the table [VoIP Support in Nokia Devices](#) in the [VoIP](#) section on the Forum Nokia website.

### 4.3 Related documentation

*VoIP-related OMA CP/DM documentation*

- VoIP – Profile-specific settings:
  - [Client Provisioning Registration](#) (see w9013.txt in the VoIP\_Rel\_2\_1 folder)
  - [OMA DM: Management Object for Nokia VoIP Implementation](#)
- VoIP – Device-specific settings:
  - [Client Provisioning Registration](#) (see w9033.txt in the VoIP\_Rel\_2\_1 folder)
  - [OMA DM: Management Object for Generic VoIP Settings](#)
- SIP settings:
  - [Client Provisioning Registration](#) (see w9010.txt in the VoIP\_Rel\_2\_1 folder)
  - [OMA DM: Management Object for SIP](#)
- NAT/Firewall settings:
  - [Client Provisioning Registration](#) (see w902E.txt in the VoIP\_Rel\_2\_1 folder)
  - [OMA DM: Management Object for NATFW](#)
- [Nokia S60 VoIP Implementation Configuration Tutorial](#)
- [Implementation Specifications for Nokia S60 VoIP](#)
- [SIP/VoIP Call Flow Messages](#)

- [Nokia N80 Internet Edition: VoIP FAQ](#)
- [Nokia S60 VoIP Implementation Troubleshooting Guide](#)
- [SIP VoIP Settings User Guide](#)

For more information, see the VoIP documents listed in Section 10.1, 'Generic Nokia S60 VoIP documentation'.

## 5 Release 2.2

Nokia S60 VoIP Release 2.2 provides for minor changes to existing features. Modifications are also visible in the provisioning specifications.

### 5.1 Feature changes

- AMR codec values for the `mode-change-period` parameter are changed according to IETF RFC 4867 [2].
- The `max-red` parameter is used to define the maximum length of time in milliseconds that elapses between the first transmission of a frame and any redundant transmission that the sender will use. This parameter allows the receiver to have a bounded delay when redundancy is used. If the parameter is omitted from the codec settings provisioning, no limitation on the use of redundancy is present. The value must be a multiple of the used frame time (the AMR frame time is 20).
- The `max-red` parameter enables Forward Error Correction (FEC), that is, the redundancy added by the coding allows the decoding to detect and correct errors.
  - For example, if the `max-red` parameter value is 20, redundancy level 1 is used. The parameter value 0 is valid and indicates that no redundancy is used.
  - By default, the implementation can handle redundancy levels up to 5 without any signalling.

### 5.2 Supported devices

The list of supported devices can be found in the table [VoIP Support in Nokia Devices](#) in the [VoIP](#) section on the Forum Nokia website.

### 5.3 Related documentation

*VoIP-related OMA CP/DM documentation*

- VoIP – Profile-specific settings
  - [Client Provisioning Registration](#) (see w9013.txt in the VoIP\_Rel\_2\_2 folder)
  - [OMA DM: Management Object for Nokia VoIP Implementation](#)
- VoIP – Device-specific settings
  - [Client Provisioning Registration](#) (see w9033.txt in the VoIP\_Rel\_2\_1 folder)
  - [OMA DM: Management Object for Generic VoIP Settings](#)
- SIP settings
  - [Client Provisioning Registration](#) (see w9010.txt in the VoIP\_Rel\_2\_1 folder)
  - [OMA DM: Management Object for SIP](#)
- NAT/Firewall settings
  - [Client Provisioning Registration](#) (see w902E.txt) in the VoIP\_Rel\_2\_1 folder
  - [OMA DM: Management Object for NATFW](#)
- [Nokia S60 VoIP Implementation Configuration Tutorial](#)
- [Implementation Specifications for Nokia S60 VoIP](#)
- [SIP/VoIP Call Flow Messages](#)

- [Nokia S60 VoIP Implementation Troubleshooting Guide](#)
- [SIP VoIP Settings User Guide](#)

For more information, see the VoIP documents listed in Section 10.1, 'Generic Nokia S60 VoIP documentation'.

## 6 Release 2.3

Nokia S60 VoIP Release 2.3 implements some minor clarifications and changes to features.

### 6.1 Feature changes

- It has been clarified in the documentation that in profile-specific VoIP settings, the start and end media port numbers need to be even and in the range of 1024-65534.
- In Codec payloads, the G.711 MIME parameter `p_time` also works with values 10 and 30 ms, that is, multiples of 10 ms packet sizes are supported in sending and receiving.

### 6.2 Supported devices

The list of supported devices can be found in the table [VoIP Support in Nokia Devices](#) in the [VoIP](#) section on the Forum Nokia website.

### 6.3 Related documentation

- VoIP – Profile-specific settings
  - [Client Provisioning Registration](#) (see w9013.txt in the VoIP\_Rel\_2\_2 folder)
  - [OMA DM: Management Object for Nokia VoIP Implementation](#)
- VoIP – Device-specific settings
  - [Client Provisioning Registration](#) (see w9033.txt in the VoIP\_Rel\_2\_1 folder)
  - [OMA DM: Management Object for Generic VoIP Settings](#)
- SIP settings
  - [Client Provisioning Registration](#) (see w9010.txt in the VoIP\_Rel\_2\_1 folder)
  - [OMA DM: Management Object for SIP](#)
- NAT/Firewall settings
  - [Client Provisioning Registration](#) (see w902E.txt) in the VoIP\_Rel\_2\_1 folder
  - [OMA DM: Management Object for NATFW](#)
- [Nokia S60 VoIP Implementation Configuration Tutorial](#)
- [Implementation Specifications for Nokia S60 VoIP](#)
- [SIP/VoIP Call Flow Messages](#)
- [Nokia S60 VoIP Implementation Troubleshooting Guide](#)
- [SIP/VoIP Settings User Guide](#)

For more information, see the VoIP documents listed in Section 10.1, 'Generic Nokia S60 VoIP documentation'.

## 7 Release 3.0

Nokia S60 VoIP Release 3.0 provides new features and changes in configuration.

### 7.1 New features

- User interface and usability improvements:
  - Internet communication contacts in Contacts application tabs:
    - i. A new service tab with internet communication contacts is available in the Contacts application for each VoIP service installed.
    - ii. The contacts in the VoIP service tabs can be enhanced with presence information.
  - Stay connected:
    - i. The VoIP services work in automatic mode, that is, once the service has been enabled, registration to the service is automatic whenever in WLAN coverage.
    - ii. Access points can be grouped (called a destination) and destinations linked to various applications. The device automatically selects the best available access point and roams between the access points defined inside a particular destination.
  - Internet communications settings:
    - i. All VoIP service settings are installed and managed from the Internet communications settings.
    - ii. Quick access through the Download! application for searching, creating, and activating new services available in the Nokia catalogue.
    - iii. Advanced settings to edit all parameters for internet calls and presence services.
- New settings introduced:
  - Presence settings.
  - XDM settings.
  - Voice mailbox-specific VoIP settings.
- A new application to configure VoIP settings from within the Internet communication settings application:
  - [SIP VoIP Settings](#) is a plug-in for the Internet communication settings application, with which the VoIP settings that are normally not visible from the standard S60 settings features can be configured and edited. The plug-in is optional and must be installed separately.

### 7.2 Changes in configuration and implementation

#### 7.2.1 VoIP profile settings

- Auto-accept buddy requests  
This parameter defines the rule for automatic acceptance of presence subscription requests.
- Add user phone  
This parameter defines the rule for adding the text string 'user=phone' to all SIP URIs containing only numbers as a user name.

- Service provider bookmark URI  
This parameter defines the URI for the service provider bookmark, for example, *http://www.example.com*.
- NAT/FW profile ID  
ID of the domain-specific NAT/FW settings.
- Min session interval  
This parameter defines the minimum value for a session interval in delta seconds.
- Session expires  
This parameter defines the session interval for a SIP session in seconds; a value in range of 0-3600.
- Presence settings ID  
ID of the presence settings.
- Destination network ID  
ID of a destination network. Links the provisioned VoIP settings to the existing destination networks stored in the terminal.
- Auto-enable  
This parameter defines the VoIP service enabling after provisioning.

#### 7.2.2 SIP profile settings

- Destination network ID  
ID of a destination network. Links the provisioned SIP settings to the existing destination networks stored in the terminal.
- Signalling QoS  
Quality of Service for SIP signalling. DiffServ Code Point (Diffserv, DSCP bits) QoS values used in IP headers (Ipv4 TOS and Ipv6 TC).

#### 7.2.3 NAT firewall settings

- Used NAT protocol  
This parameter defines the NAT protocol used.
- STUN server user name:  
Needed for STUN server authentication with long-term credentials.
- STUN server password:  
Needed for STUN server authentication with long-term credentials.
- STUN shared secret:  
This parameter indicates whether the STUN server supports TLS and shared secret or not.
- Start port number:  
The lower limit of the domain port range.
- End port number:  
The upper limit of the domain port range.

### 7.3 Supported devices

The list of supported devices can be found in the table [VoIP Support in Nokia Devices](#) in the [VoIP](#) section on the Forum Nokia website.

### 7.4 Related documentation

#### *VoIP-related OMA CP/DM documentation*

- VoIP – Profile-specific settings
  - [Client Provisioning Registration](#) (see w9013.txt in the VoIP\_Rel\_3\_0 folder)
  - [OMA DM: Management Object for Nokia VoIP Implementation](#)
- VoIP – Device-specific settings
  - [Client Provisioning Registration](#) (see w9033.txt in the VoIP\_Rel\_3\_0 folder)
  - [OMA DM: Management Object for Generic VoIP Settings](#)
- SIP settings
  - [Client Provisioning Registration](#) (see w9010.txt in the VoIP\_Rel\_3\_0 folder)
  - [OMA DM: Management Object for SIP](#)
- NAT/Firewall settings
  - [Client Provisioning Registration](#) (see w902E.txt) in the VoIP\_Rel\_3\_0 folder
  - [OMA DM: Management Object for NATFW](#)
- [Nokia S60 VoIP Release 3.0 Configuration Tutorial](#)
- [Implementation Specifications for Nokia S60 VoIP](#)
- [SIP/VoIP Call Flow Messages](#)
- [Nokia VoIP Release 3.0 FAQ](#)
- [Nokia S60 VoIP Release 3.0 Troubleshooting Guide](#)
- [SIP VoIP Release 3.x Settings Application User Guide](#)

For more information, see the VoIP documents listed in Section 10.1, 'Generic Nokia S60 VoIP documentation'.

## 8 Release 3.1

Nokia S60 VoIP Release 3.1 provides new features and changes in configuration.

### 8.1 New features

- Support for Voice Call Continuity (VCC) as defined by the 3rd Generation Partnership Project (3GPP). This provides for seamless handovers among internet and voice calls using WLAN and 2G/3G as bearers.
- The AMR-WB codec is supported.

### 8.2 Changes in configuration and implementation

VCC and AMR-WB settings have been introduced. For detailed information these settings, please refer to the [SIP VoIP Release 3.x Settings Application User Guide](#).

### 8.3 Supported devices

The list of supported devices can be found in the table [VoIP Support in Nokia Devices](#) in the [VoIP](#) section on the Forum Nokia website.

### 8.4 Related documentation

*VoIP- and VCC-related OMA CP/DM documentation.*

- VoIP – Profile-specific settings
  - [Client Provisioning Registration](#) (see w9013.txt in the VoIP\_Rel\_3\_1 folder)
  - [OMA DM: Management Object for Nokia VoIP Implementation](#)
- VoIP – Device-specific settings
  - [Client Provisioning Registration](#) (see w9033.txt in the VoIP\_Rel\_3\_0 folder)
  - [OMA DM: Management Object for Generic VoIP Settings](#)
- SIP settings
  - [Client Provisioning Registration](#) (see w9010.txt in the VoIP\_Rel\_3\_0 folder)
  - [OMA DM: Management Object for SIP](#)
- NAT/Firewall settings
  - [Client Provisioning Registration](#) (see w902E.txt) in the VoIP\_Rel\_3\_0 folder
  - [OMA DM: Management Object for NATFW](#)
- VCC – Profile-specific settings
  - [Client Provisioning Registration](#) (see w9054.txt in the VoIP\_Rel\_3\_1 folder)
  - [OMA DM Management Object for Nokia VCC](#)
- [SIP VoIP Release 3.x Settings Application User Guide](#)

## 9 Terms and abbreviations

Term or abbreviation	Meaning
3GPP	3rd Generation Partnership Project
AMR	Adaptive Multi-Rate
AMR-WB	Adaptive Multi-Rate Wideband
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CP	Client Provisioning
CS call	Circuit-switched call
DM	Device Management
DND	Do Not Disturb
DTMF	Dual-Tone Multifrequency
FEC	Forward Error Correction
FW	Firewall
IETF	The Internet Engineering Task Force
IP	Internet Protocol
MIME	Multipurpose Internet Mail Extensions
MO	Mobile-originated
MT	Mobile-terminated
MWI	Message Waiting Indicator
NAT	Network Address Translation
OMA	Open Mobile Alliance
Ptime	The preferred amount of media (in milliseconds) which is encapsulated in a payload packet. The actual packetisation interval is usually the same as ptime, but can vary depending on the usage of VAD and/or DTX.
PSTN	Public Switched Telephone Network
RTCP	Real-Time Transport Control Protocol
RTP	Real-Time Transport Protocol
SIP	Session Initiation Protocol
SRTP	Secure Real-Time Transport Protocol
STUN	Simple Traversal of UDP through NAT; a protocol that allows applications to detect that network address translation (NAT) is being used.
TCP	Transmission Control Protocol
TLS	Transport Layer Security
UDP	User Datagram Protocol

<b>Term or abbreviation</b>	<b>Meaning</b>
URI	Uniform resource identifier
VCC	Voice Call Continuity
VoIP	Voice over IP
WLAN	Wireless local area network

## 10 References

- [1] RFC 3267, Real-Time Transport Protocol (RTP) Payload Format and File Storage Format for the Adaptive Multi-Rate (AMR) and Adaptive Multi-Rate Wideband (AMR-WB) Audio Codecs, <http://www.ietf.org/>
- [2] RFC 4867, RTP Payload Format and File Storage Format for the Adaptive Multi-Rate (AMR) and Adaptive Multi-Rate Wideband (AMR-WB) Audio Codecs, <http://www.ietf.org/>
- [3] 3GPP [TS 24.206](http://www.3gpp.com), 3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Voice call continuity between the Circuit Switched (CS) and IP Multimedia subsystem (IMS); Stage 3 (Release 7), <http://www.3gpp.com>

### 10.1 Generic Nokia S60 VoIP documentation

- [How To Provision Nokia VoIP Client](#)
- [Internet calling with Nokia Nseries multimedia computers: One device for all calls](#)
- [S60 Platform: Full-Duplex Audio Example v2.0](#)
- [Evolution of voice and beyond on Nseries multimedia computers](#)

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