

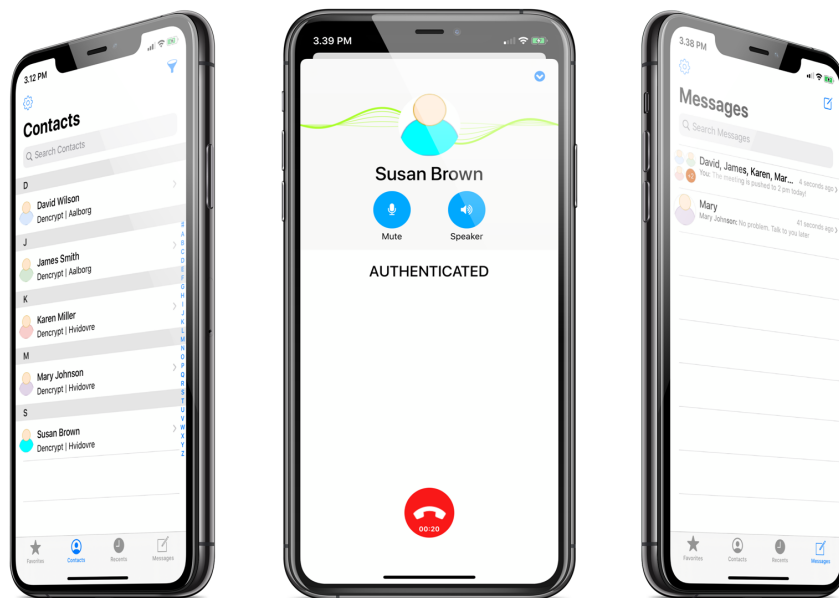


Dencrypt Communication Solution

Operational user guide

Dencrypt ConnexR

v. 6.2



March 21, 2022

Public

Contents

| | | |
|----------|--|-----------|
| 1 | Introduction | 3 |
| 2 | Security instructions | 3 |
| 2.1 | General security measures | 4 |
| 2.2 | Avoid acoustic coupling | 4 |
| 2.3 | Avoid screen exposure | 4 |
| 2.4 | Other security recommendations | 4 |
| 3 | Getting started | 5 |
| 3.1 | Installation | 5 |
| 3.2 | Activation | 6 |
| 3.3 | Agree on Terms and Conditions | 7 |
| 3.4 | Set permissions | 8 |
| 4 | Using Dencrypt ConnexR | 9 |
| 4.1 | Favourites | 10 |
| 4.2 | Contacts | 11 |
| 4.2.1 | Phonebook views | 12 |
| 4.2.2 | Filtering the phonebook | 13 |
| 4.3 | Recents | 13 |
| 4.4 | Messages | 14 |
| 5 | Making a secure call | 17 |
| 5.1 | Voice quality | 18 |
| 5.2 | In-call actions menu | 19 |
| 5.3 | Group calls | 20 |
| 5.4 | Incoming normal calls during a secure call | 21 |
| 5.5 | Incoming secure calls | 22 |
| 6 | Sending a secure message | 23 |

| | | |
|----------|---|-----------|
| 6.1 | Message delivery status | 24 |
| 6.2 | Sending attachments | 25 |
| 6.3 | Standard messages | 26 |
| 6.4 | Message expiry timer | 27 |
| 7 | Settings | 28 |
| | Appendices | 31 |
| A | Dencrypt Communication Solution | 31 |
| A.1 | End-2-end encrypted VoIP calls | 31 |
| A.2 | End-2-end encrypted instant messaging | 32 |
| A.3 | Authenticated connections | 32 |
| A.4 | Encryption keys | 33 |
| A.5 | Secure phonebook | 33 |
| A.6 | Push notifications | 33 |
| B | Errors messages | 33 |

Version

This guide applies for:

- Dencrypt ConnexR v. 6.2 for iOS devices.

The version number can be verified from the *Settings* menu by tapping the clog-wheel in the upper-left corner of the screen. See Figure 27a.

Support

Contact your local support for assistance and in case of security incidents.

| Dencrypt support | |
|------------------|--|
| Phone | +45 72 11 79 11 |
| Email | support@dencrypt.dk |

1 Introduction

Dencrypt ConnexR is an application for making encrypted voice calls, video calls, and for exchange of encrypted instant messages from iOS devices . It uses the patented Dynamic Encryption technology to apply state-of-the-art, end-to-end encryption between devices.

This guide is intended for end-users of the Dencrypt ConnexR application and provides instructions to operate and use the application in a secure way.

The end-users of the Dencrypt ConnexR application shall have familiarized themselves with this document and received instructions from the system administrator prior to taking the product into use.

| | | |
|------------|---------------------------------|------------------|
| Section 2 | Security instructions | Essential |
| Section 3 | Getting started | |
| Section 4 | Using Dencrypt ConnexR | User guidance |
| Section 5 | Making a secure call | |
| Section 6 | Sending a secure message | |
| Section 7 | Settings | |
| Appendix A | Dencrypt Communication Solution | For reference |
| Appendix B | Errors messages | |

Table 1: Reading Guide

2 Security instructions

These security instructions shall be read and understood before taking the Dencrypt ConnexR application into use.

2.1 General security measures

Some precautions must be observed to use the application in a secure way and to avoid disclosure of confidential information. Please observe the following before taking the application into use.

Organizational security policies Before taking the app into use, the security policies and instructions for secure usage shall have been received and understood. Be aware of the classifications, which are allowed to be exchanged using the app.

Server system security The system administrator is responsible for the daily and secure operation of the Dencrypt Server System. In case of critical security incidents or unresolved vulnerabilities, the system administrator may prevent communication between specific users or may take the entire system out of operation until the issues have been resolved. In such cases, it may not be possible to establish secure communication at all or with specific users.

Secure delivery Dencrypt ConnexR shall only be received from a Mobile Device Management system.

Device security The system security depends on a correct and secure operation of the device and the operating system and that there are no critical side-effects. Therefore, the Dencrypt ConnexR application and the operating system shall always be kept updated to the latest versions. In case of critical security incidents or unresolved vulnerabilities, the system administrator may prevent calls to a certain user or make the entire system unavailable until the issue has been resolved.

Benign applications The Dencrypt ConnexR application protects information during the data transmission and when stored on the device. It does not protect against malware intercepting audio, video, or text before encryption. Therefore, only benign apps shall be installed on the device. Be aware of applications, which make use of the microphone, perform screenshots, listen to the earpiece or speaker or capture keyboard strokes. Contact your system administrator for advice.

Single user device The phonebook is personal and dedicated to a specific end-user. Therefore, the device is personal and shall not be shared.

Prevent unauthorized access Protect your device against unauthorized access by always enable a passcode or biometric login. In case of lost or stolen devices, contact your system administrator immediately.

2.2 Avoid acoustic coupling

It is not recommended to use encrypted voice or video calls in hotel rooms and like, which cannot be considered secure. Never exchange classified information through the Dencrypt ConnexR application when other unclassified telephones, radio transmitters, or similar are being used in the immediate proximity.

Locations, which are well suited to making calls may be public spaces where the caller's presence has not been pre-arranged. Using secure messaging is an alternative communication in areas where an acoustic coupling is possible.

2.3 Avoid screen exposure

Consider the surroundings when using Dencrypt ConnexR for secure video calls and messaging to ensure that the screen can not be observed by others. Be aware of the location of windows and cameras.

2.4 Other security recommendations

- **Avoid using wireless headsets** - The data connection from the device to the headset is not protected by Dencrypt ConnexR . Use wired headsets as an alternative.

- **Avoid using handsfree car systems** - The data connection from the device to the handsfree car system is not encrypted. Disable Bluetooth to avoid automatic connection and use wired headsets as an alternative.
- **Avoid using loudspeaker** - Use the Dencrypt ConnexR loudspeaker only with care and in locations, which are protected from an acoustic coupling.
- **Don't take screenshots** - Screenshots are saved unencrypted on the devices and are not deleted when the app is closed. The Dencrypt ConnexR will show a warning when taking screenshots.
- **Don't use copy/paste** - Don't use the copy/paste functionality during messaging. Copy/paste-functionality may be blocked by the system administrator.
- **Don't use voice recordings** - Voice recordings are saved unencrypted on the devices and are not deleted when the app is closed.
- **Avoid auto-correction and predictive text features** - Avoid using keyboards, which include autocorrection or predictive text features. It is recommended to disable spell-checking and predictive text from the settings menu.
- **Avoid using apps with speech recognition** - Avoid using applications, which makes use of speech recognition features, such as speech-to-text applications.

3 Getting started

A few steps are required by the end-users to get started using Dencrypt ConnexR .

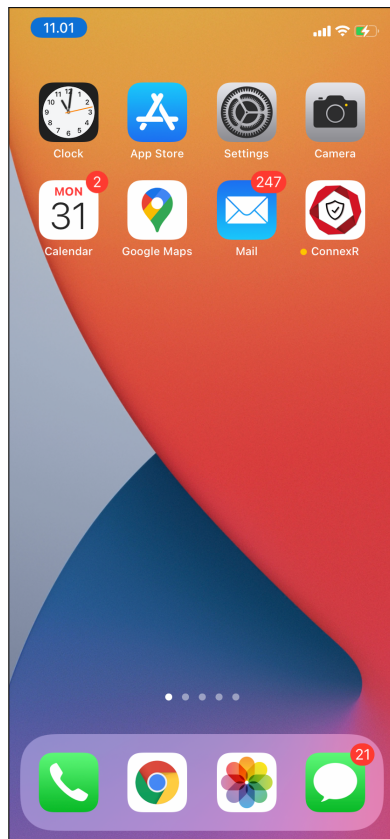
1. Installation
2. Activation
3. Set permissions

3.1 Installation

Dencrypt ConnexR is installed via:

- An Mobile Device Manager (MDM).

Once the app is installed, it is launched by tapping the Dencrypt ConnexR icon. For quick access, the icon can be dragged to the menu bar at the bottom of the screen.



(a) Dencrypt ConnexR on home screen.



(b) Dencrypt ConnexR icon in the menu bar.

Figure 1: Home screen

3.2 Activation

Once installed, the Dencrypt ConnexR is unconfigured and shall be activated before it is taken into use. The system administrator is required to create a user account on the Dencrypt Server System and provide an activation link.

The activation link is time-limited and can only be used once, and comes in the form of a weblink (URL) or a QR-code. The activation link may not be disclosed and shall be delivered in a secure way. The following options are possible:

- Email, containing a weblink, send to the device.
- Email or physical letter containing a QR-code to be scanned by the camera application.

Emails shall be encrypted or transmitted using encrypted connections.

Activating the link will start the provisioning process to configure the Dencrypt ConnexR with certificates and credentials to connect to the server system and download the phonebook. Only when the activation process has successfully completed, the Dencrypt ConnexR is ready for use.

Activation process

- Step 1: The system administrator creates a user account on the Dencrypt Server System and provides an invitation message containing the activation link to the end-user.
- Step 2: The user activates the link by tapping the weblink or by scanning the QR-code using Dencrypt ConnexR Figure 2b or the camera application. The user may be prompted to open the link in the Dencrypt ConnexR .
- Step 3: The Dencrypt ConnexR opens to configure the account. This may take 1-3 minutes. **Do not close the app during the activation.**
- Step 4: Once completed, tap *OK* to open the app.
- Step 5: The app will request permissions to the device resources for full functionality. Tap *Allow* for each permission. See [Set permissions 3.4].
- Step 6: Dencrypt ConnexR will connect to the server system to download the phonebook.
- Step 7: Dencrypt ConnexR is now ready for use.

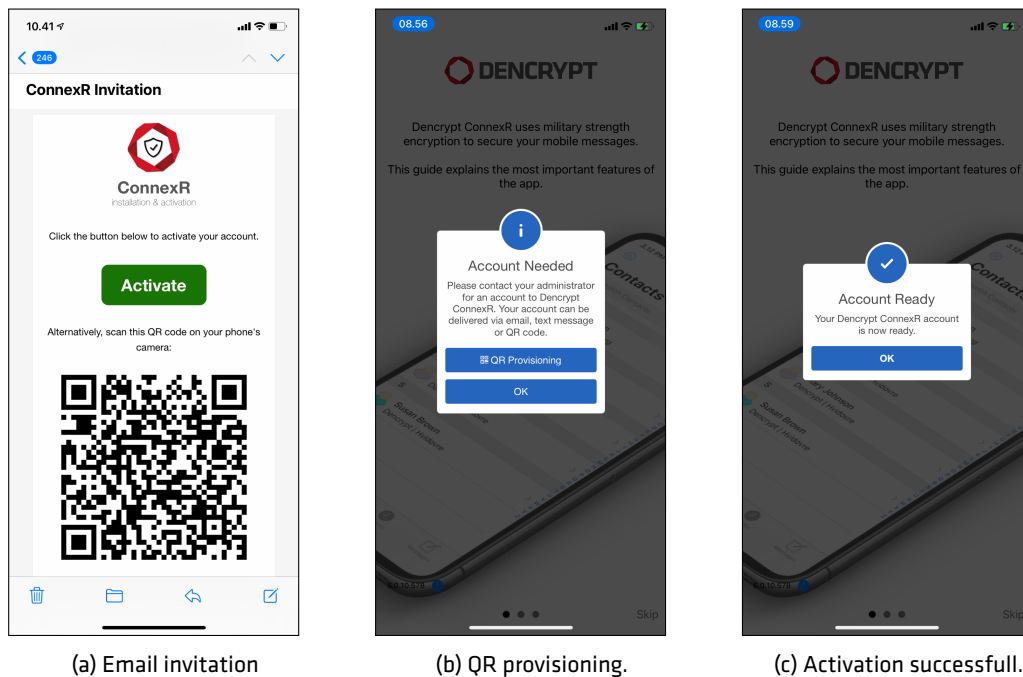


Figure 2: Invitations and activation.

3.3 Agree on Terms and Conditions

The security policies and instructions for secure usage of Dencrypt ConnexR shall have been received and understood. Before taking the app into use, these terms and conditions of the organizational security policies have to be accepted.

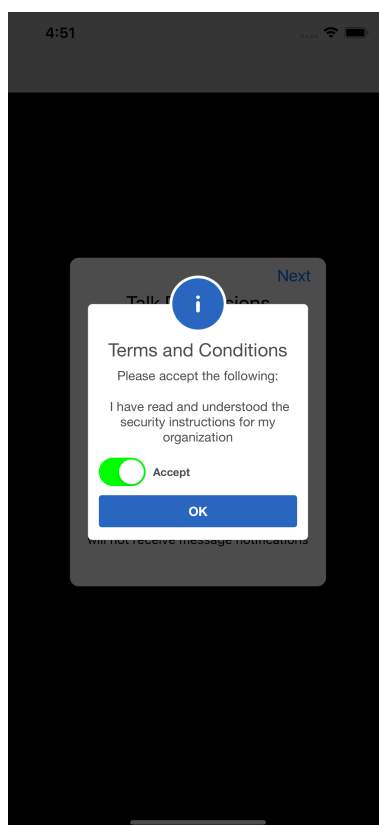


Figure 3: Terms and conditions acceptance.

3.4 Set permissions

Dencrypt ConnexR requests access to some of the device resources. Permission to the microphone and notifications shall be granted to perform secure voice calls. For messaging, the requested permissions are optional but will limit the functionality if not granted.

During the account setup Dencrypt ConnexR will ask for permission to the following resources:

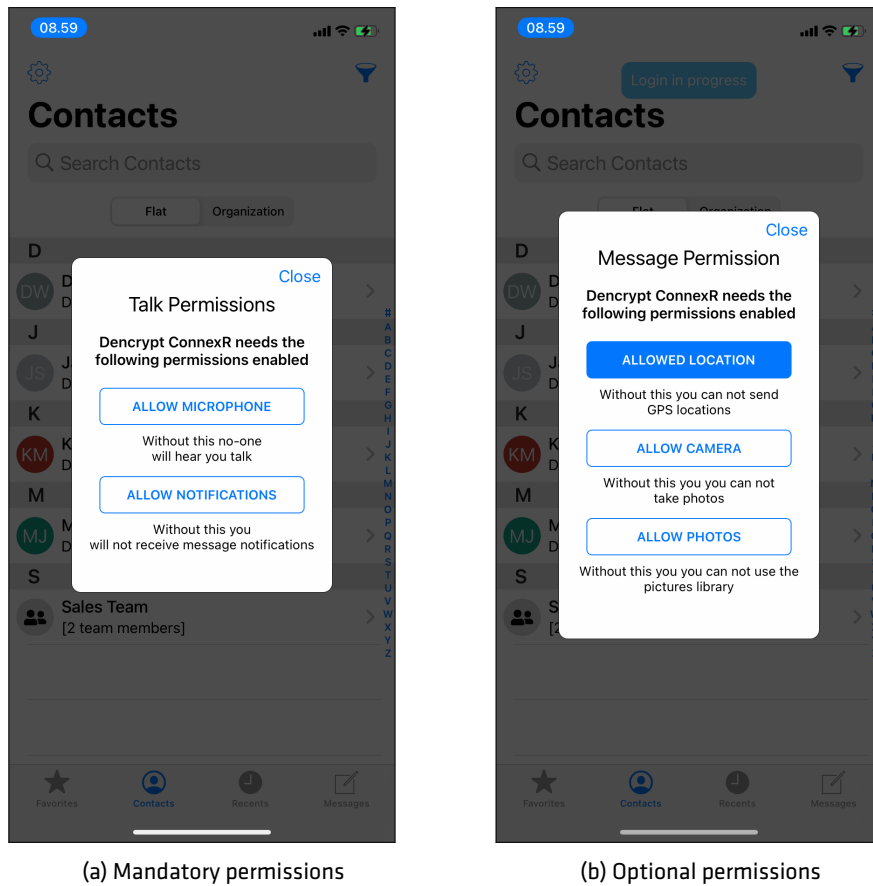


Figure 4: Permissions.

| Permission | Reason | Permission | Reason |
|---------------------------|--|--------------------------|---|
| Microphone | Required for voice calls. | Location | Required to include GPS locations in messages. |
| Notifications | Required to alert for incoming calls and messages. | Camera | Required to capture images to attach to messages. |
| (a) Mandatory permissions | | Photo | Required to attach images from library. |
| | | (b) Optional permissions | |

Table 2: Permission usage.

4 Using Dencrypt ConnexR

Dencrypt ConnexR offers two main functionalities:

- Secure voice communication
- Secure instant messaging of text and content (attachments).

The functionalities are accessible from the main screen. The icons in the menu bar at the bottom provides a quick access to the following screens.

- *Favourites*: For quick access to selected contacts.
- *Contacts*: For accessing the entire phone book.
- *Recents*: For accessing the call history.
- *Messages*: For accessing the message inbox.

Settings are accessed from the "cogwheel"-icon in top-left corner.

Dencrypt ConnexR launches per default with the *Contacts* screen. The launch screen can be set by the *Launch screen* in the *Account Settings* [Settings 7].

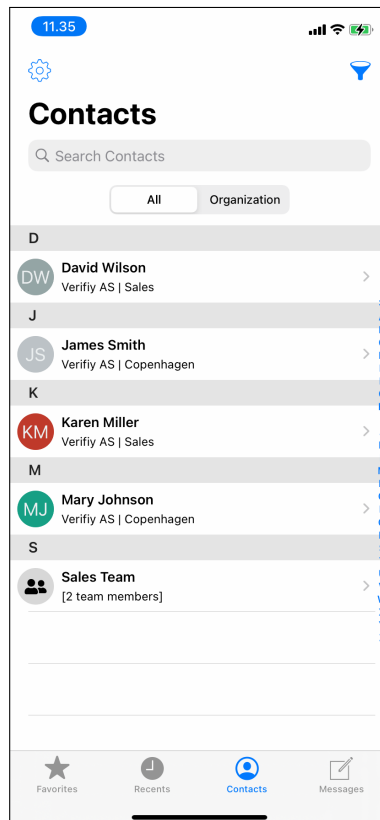


Figure 5: Contacts screen

4.1 Favourites

The *Favourites* screen shows a contact shortlist created by the user. Initially, the *Favorite* screen is empty. Contacts can be added to the *Favourites* screen by tapping the star icon found in the *Contact Details*. The ★-icon is filled for favorite contacts.

A contact can be removed from *Favorites* by either tapping the ★-icon again or by swiping left on a favorite and selecting "Remove from Favorites".

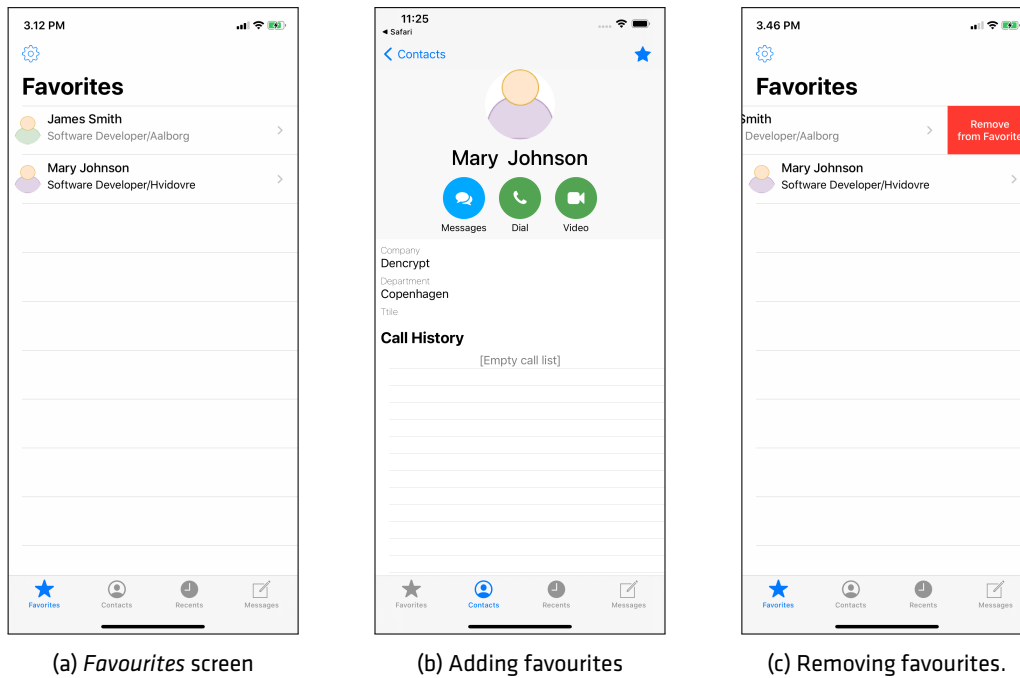


Figure 6: Favourites.

4.2 Contacts

The *Contacts* screen shows the entire phone book consisting of individual contacts and teamrooms. The content of the phone book is centrally managed from the Dencrypt Control Center and is not editable from within the app.

Contacts are listed in alphabetic order sorted by firstname per default ¹. To locate contacts:

- Skip to a specific letter using the index on the right hand side of the screen, or
- Search for contacts via the search menu, or
- Use the filter option in top-right corner [Filtering the phonebook 4.2.2].
- Structure the contacts by selecting the view option above the list [Phonebook views 4.2.1]

Selecting a contact will open the *Contact details* and allow the user to start a secure call or send a secure message. The *Contact details* screen also displays the recent call list.

Selecting a team room will open the *Teamroom details* to list the members and allow to the exchange messages with the team.

A contact can be added/removed as a *Favorite* by tapping the star icon.

¹Change sorting from the *Settings* menu

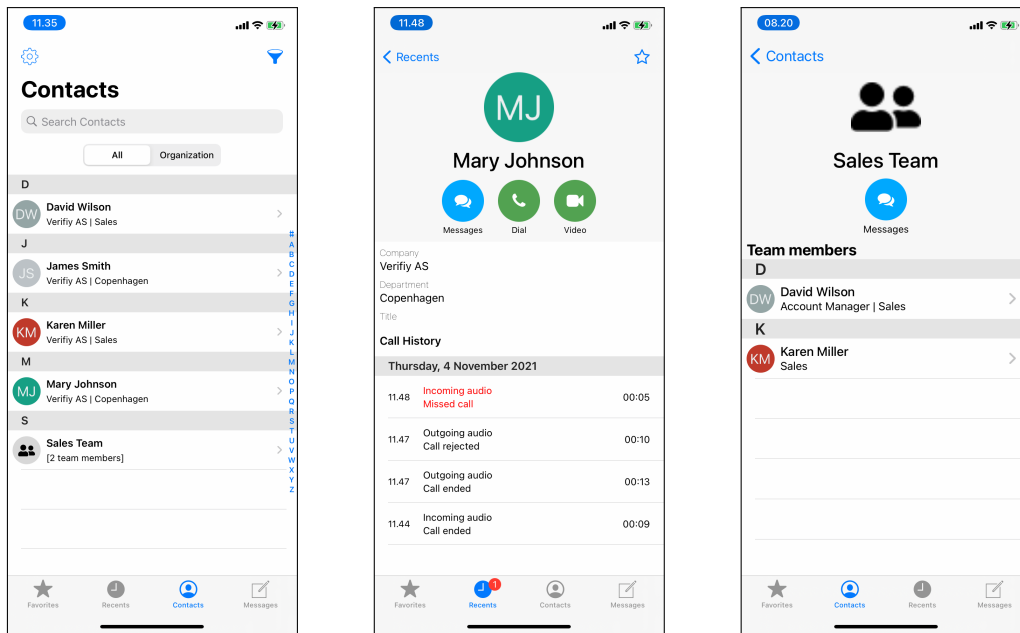
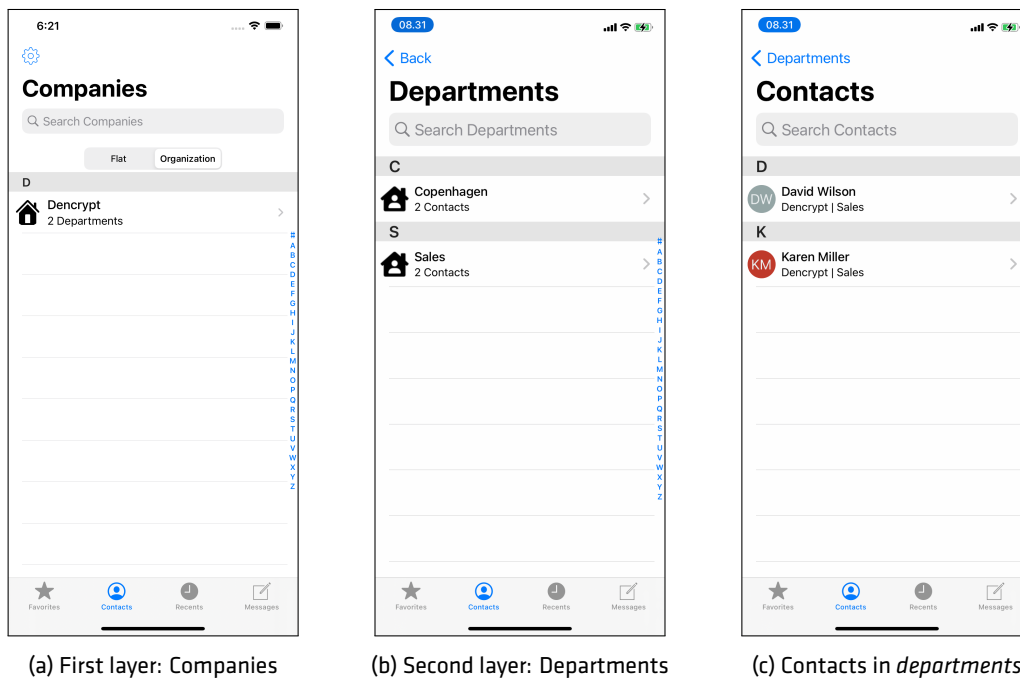


Figure 7: Contacts.

4.2.1 Phonebook views

Different views are offered based on the organization the contacts are part of.

The *Organization* view structures the contacts by two levels: By organization and department. The *All* view shows all contacts in a flat alphabetically ordered list.

Figure 8: Contacts in *organization* view.

4.2.2 Filtering the phonebook

By default, the entire phonebook is shown. The phonebook can be filtered to show a subset of the contacts by tapping the filter icon. This will open the *Quick Select* screen where contacts can be filtered per company and per department. Tapping *Show Teams* will show team rooms only.

The *Quick Select* screen shows the companies, which can be expanded, to also show departments via the "arrow" on the left of the screen. Tapping on either a company or a department will close the Quick Select screen and filter the phone book accordingly.

The search field in the *Contacts* screen will indicate when a filter is active. Only one filter can be active at a time. A filtered phone book can also be searched via the search field.

A filter can be deleted by opening the Quick Select screen and tap "Show All" or by tapping the search field and delete the filter.

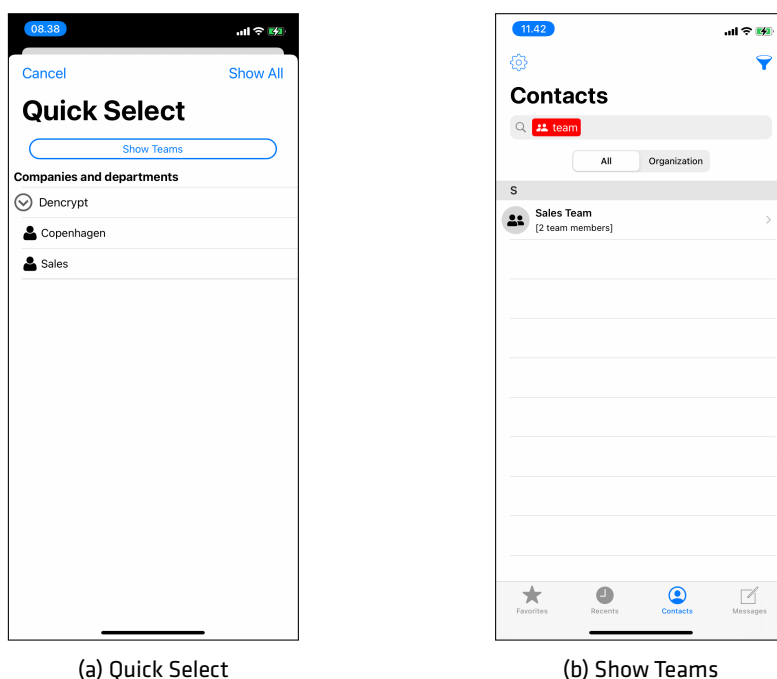


Figure 9: Filtering contacts

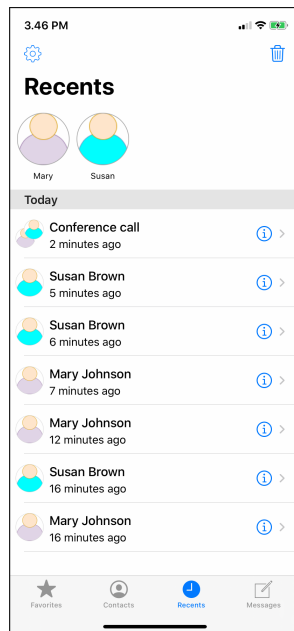
4.3 Recents

The *Recent* screen is divided into two parts. The top row shows the avatar of the most frequently used contacts., while the table below shows the call history in chronological order.

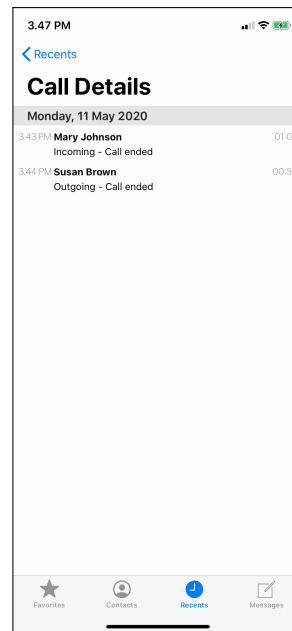
The call history can be deleted by tapping the "trash can" icon in the top-right corner.

The top row contains the most recently used contacts and can be considered an automatically-generated list of favorites. Tapping a contact will slide out a set of buttons allowing the user to start a new call or send a chat message. Tapping the contact again will collapse the buttons.

In the chronological call list, additional call details can be found by tapping the **i**-button on the right of the screen. This will open the *Call Details* screen, which contains the call history for that contact.



(a) Recents screen




(b) Recent call detail

Figure 10: Recents

4.4 Messages

The *Message* screen is used for sending and receiving text messages and attachments (photos, video/audio clips, file sharing and GPS location). It also allows the user to send predefined standard messages.

The initial *Messages* screen shows a list of chat rooms containing the ongoing conversations. Initially, the message inbox will be empty and shows only a placeholder text.

Tapping an entry (chat room) will open up the messages in the conversation. Tapping the -icon opens a menu for showing a list of participants and for changing the chat room title.

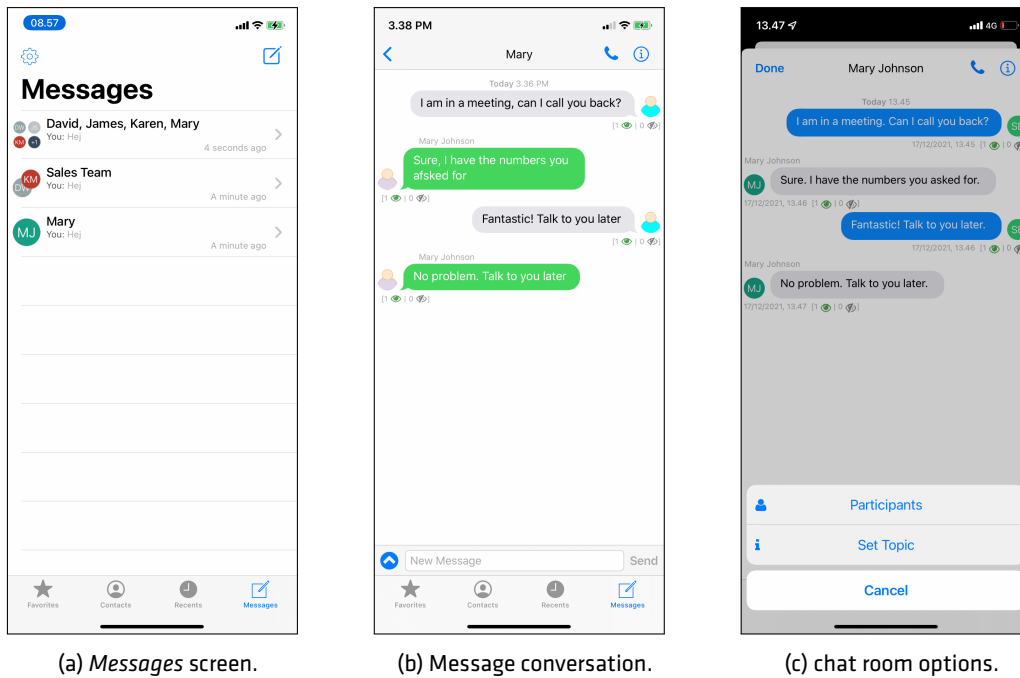



Figure 11: Messages

Participants can be added or removed from a chat room.

Add/remove participants

- Step 1: Open a chat room and tap -iconAndroidDevice.
- Step 2: Tap *Participants* to display a list of chat room members.
- Step 3: Tap *Edit* to select or de-select participant.
- Step 4: Tap *Done*. The participants of chat room will be notified about the change.

Chatroom can be deleted or marked as favorite. In the chatroom list swipe left on the chat room title to reveal a hidden menu for deleting or mark as favorites. Favorite chatroom are always shown in the top of the list.

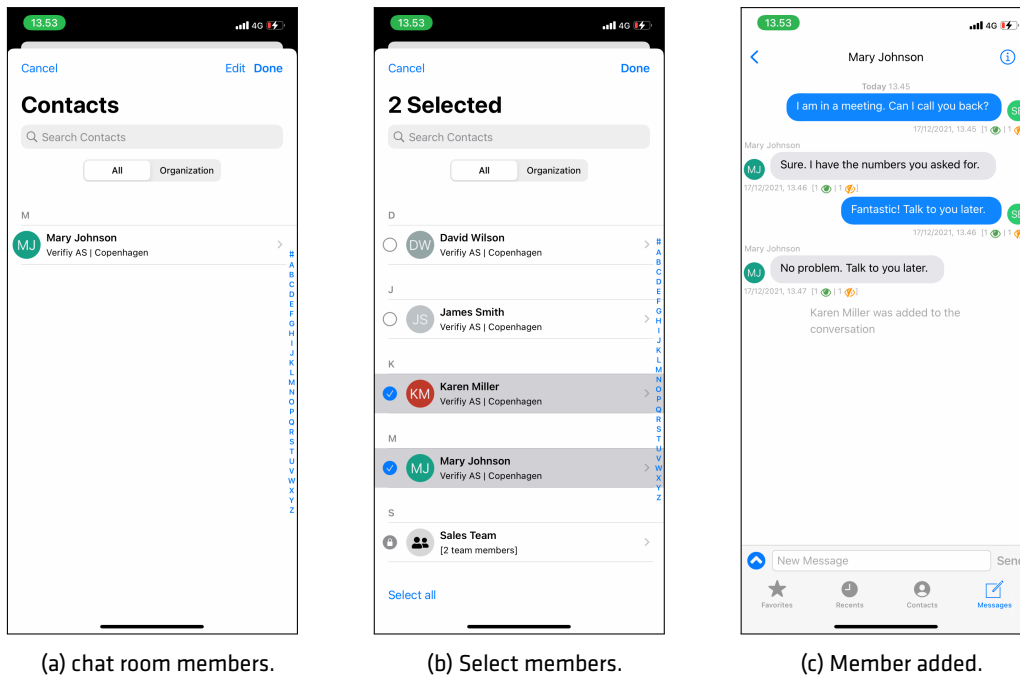


Figure 12: Add/remove participants.

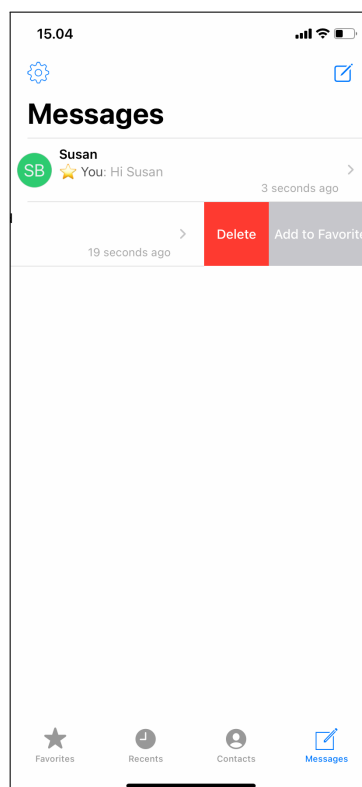


Figure 13: Deleting a chatroom.

5 Making a secure call

Be aware of the security instructions and the surrounding before making a secure call. Refer to [Security instructions 2] for instructions.

A secure call is initiated from the *Contacts* screen, *Favourites*, or the call history on the *Recents* screen, or from inside a message conversation.

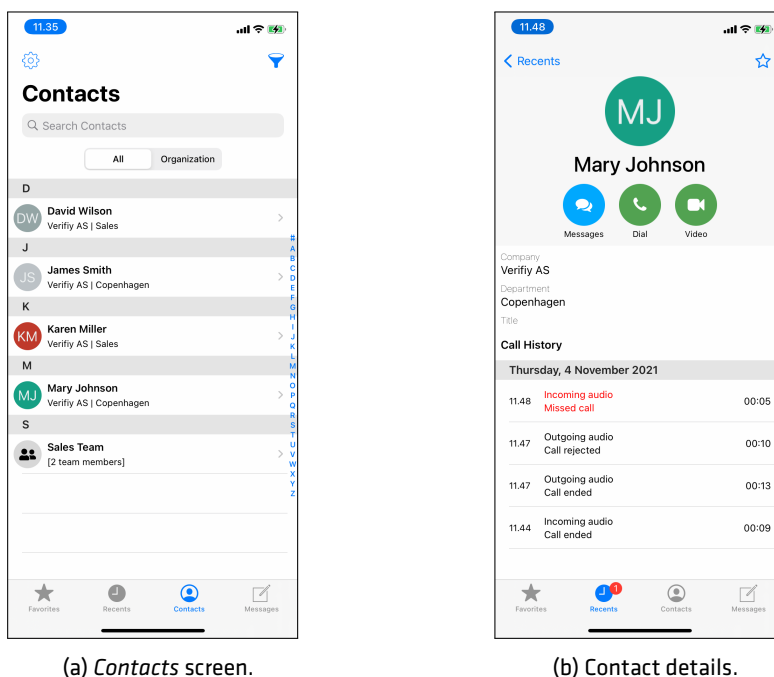


Figure 14: Making calls from *Contacts*

A secure call can only be made when Dencrypt ConnexR has a working internet connection. Secure calls are not possible during flight mode and with a poor data connection. A secure audio call is initiated by tapping the *Dial* button, which opens the *Call* screen. A secure video call is started by tapping the *Video* button.

During the call setup, a status message will show the progress of the call setup. The call setup process is active until the call is answered, the call is timed out, or the receiving party rejects the call.

Once the call is answered, Dencrypt ConnexR authorizes the calling parties, exchanges encryption keys, and establishes a secure connection. When a secure connection is established, an audible notification is played, and the screen will display "AUTHENTICATED", as shown in figure Figure 15. Audio is only transmitted when the connection is secured.

The usual call functionalities are available during a secure call, such as microphone muting, enabling speaker mode, and pausing call. During a secure video call, switching between the front- and the backside camera and disabling the camera is possible.

If a Bluetooth device is connected to the device, the speaker button will show a Bluetooth icon. Tapping it will bring up a menu where the audio output can be selected. Be aware of the security risks by applying wireless headsets [Other security recommendations 2.4].

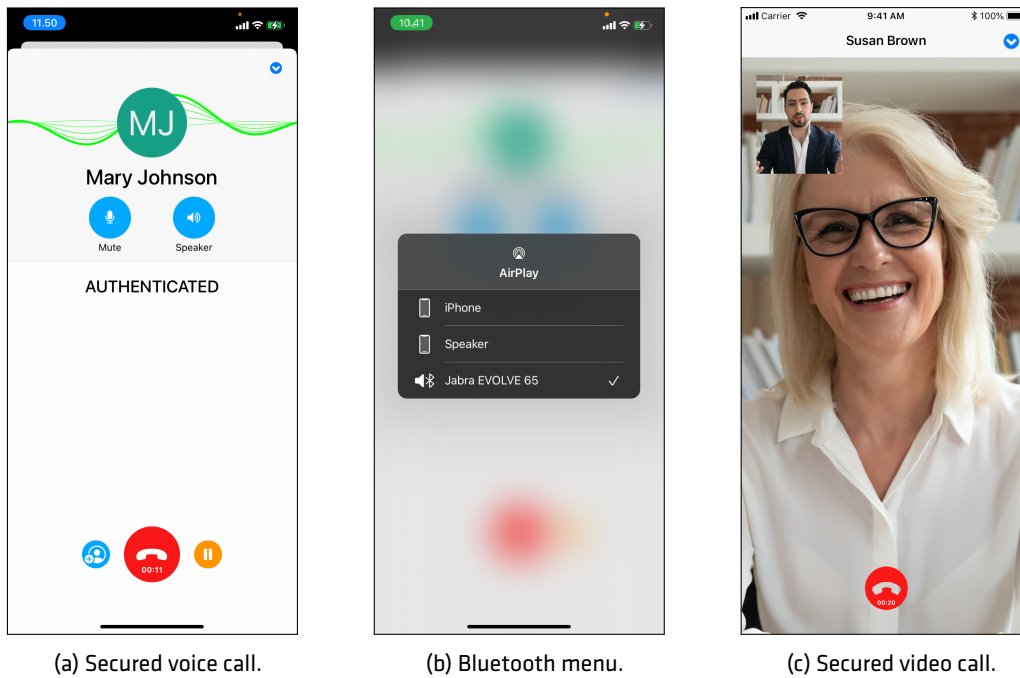


Figure 15: In call screens.

A voice call is put on hold by tapping the *Pause* button. The receiving party will hear a pause tone. Tap *Resume* to resume the call.

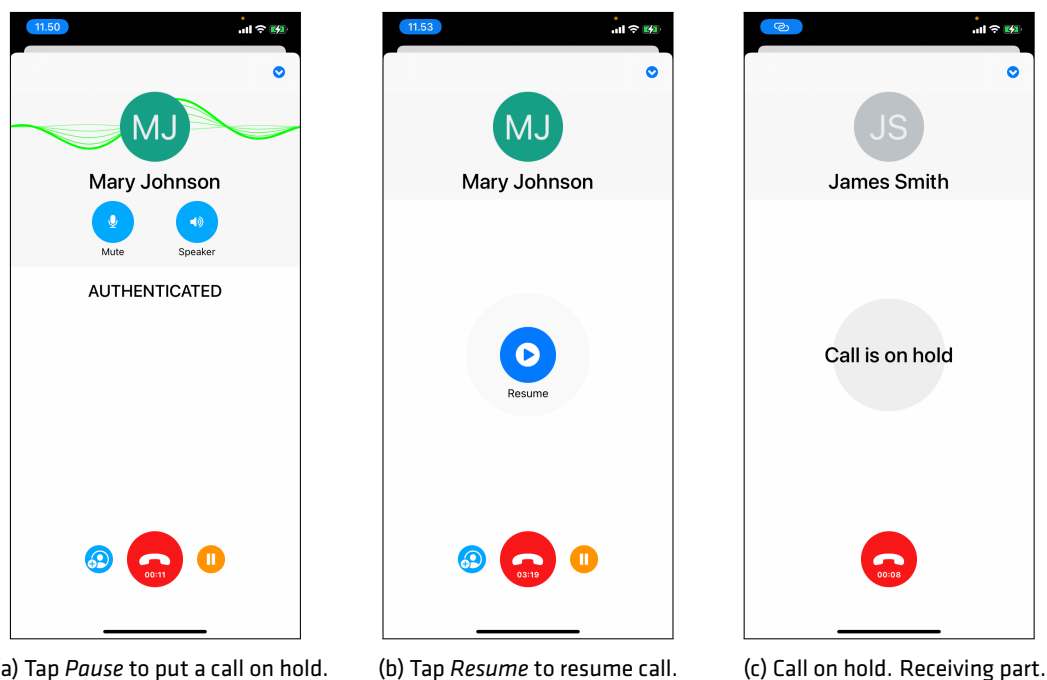


Figure 16: Call hold

5.1 Voice quality

The top part of the screen displays the call quality. The call quality depends on the network conditions, such as available bandwidth and latency. Buildings, natural obstructions, and travel speed may impact the data

connection and hence the voice quality. Poor voice quality may be improved by:

Steps for improving a poor voice quality

Step 1: Switch the network from wifi to mobile internet or vice-versa. Network switching is possible without interrupting the call.

Step 2: Move to another location.

Step 3: Hang-up and try calling again.

A call will automatically terminate when no audio data has been received for 30 seconds.

| Quality | Reason |
|---------|--|
| Green | Good network conditions → Voice quality is high. |
| Yellow | Some audio artifacts may be heard, but the voice quality should still be understandable. |
| Orange | Severe audio artifacts and dropouts. Voice quality may be hard to understand. |
| Red | Data connection is poor → Voice is interrupted. |

Table 3: Voice quality indicators

5.2 In-call actions menu

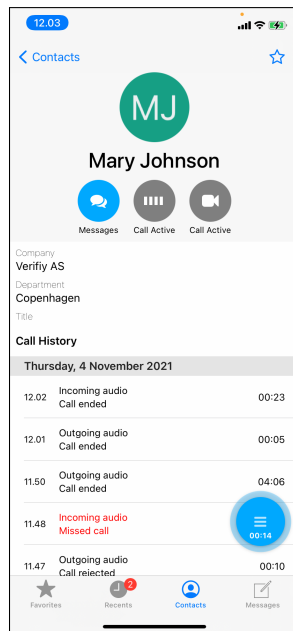
An *In-call action menu* is displayed when a user navigates away from the *Call* screen during a call.

The blue *In-call action menu* button will be shown on the screen while the call is active. Tapping the *In-call action menu* will bring up a menu showing the additional functionality available during the call.

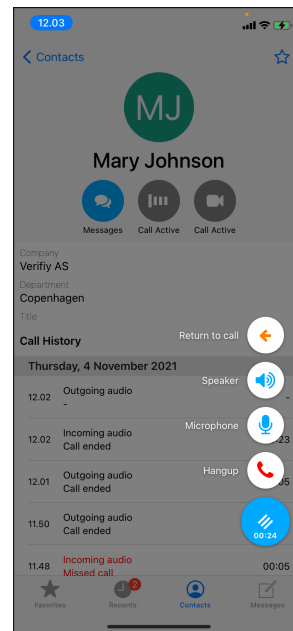
| Menu | Action |
|----------------|-------------------------------|
| Return to call | Opens the in-call screen. |
| Speaker | Toggles the speaker on/off |
| Microphone | Toggle the microphone on/off. |
| Hangup | Terminates the call. |

Table 4: in-call actions

Tapping anywhere outside the in-call actions will close the *In-call action menu*.



(a) Floating menu.



(b) Actions from floating menu.

Figure 17: *In-call action menu* screen

5.3 Group calls

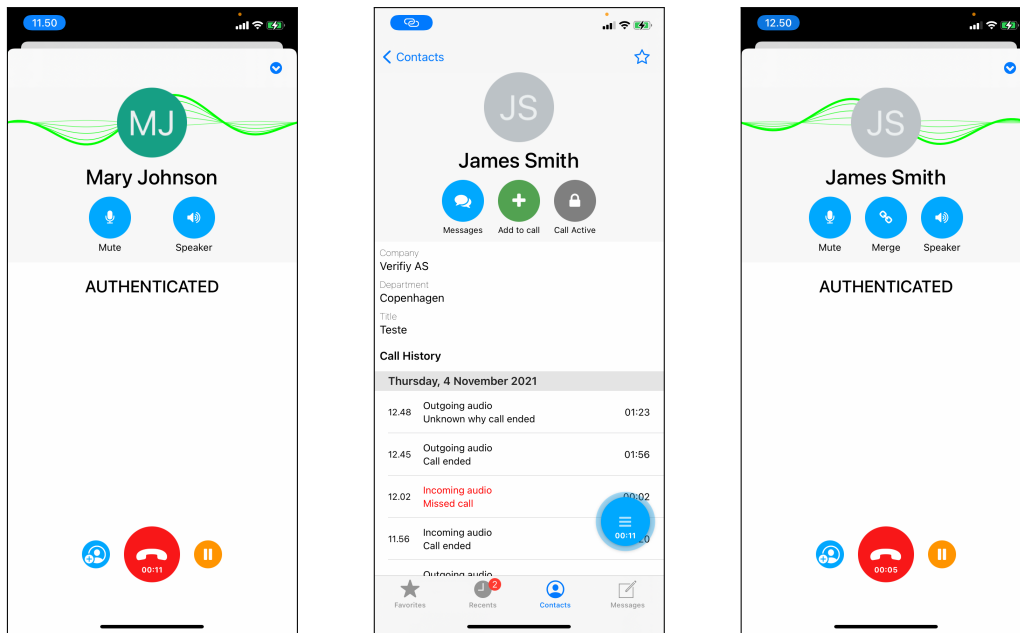
Once a secure call has been established, additional contacts can be added to the conversation.

Add participants to a secure call.

- Step 1: Establish a secure call [Making a secure call 5].
- Step 2: Tap the blue "+ contact" icon open the phonebook.
- Step 3: Locate a contact in the phonebook and tap *Add to call* . This will pause the ongoing call and establish a new secure call.
- Step 4: Combine the two conversations by tapping *Merge*. The first call is resumed and merged with second.
- Step 5: The *In-call screen* displays a list of participants.
- Step 6: Repeat step 2 - 4 to add more participants.
- Step 7: Swipe left to put participant on hold or hang-up.

The practical number of participants in a group call is limited by the available bandwidth. Under normal conditions, at least 5-10 contacts should be able to participate in a group call. The user who made the first call becomes the group call host and can add additional participants.

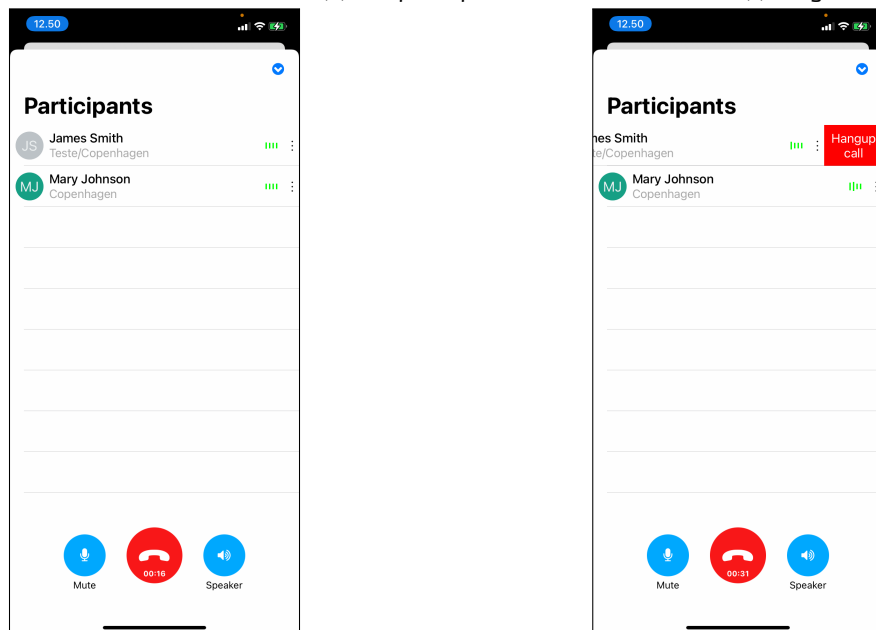
Video group calls are not supported.



(a) Tap blue Add contact icon.

(b) Add participant to call.

(c) Merge calls.



(d) Group call established.

(e) Swipe left to put participant on hold or hang-up.

Figure 18: Group calls

5.4 Incoming normal calls during a secure call

Secure voice calls have the same priority as normal mobile calls. A secure call is not interrupted by an incoming normal mobile call and the user has the usual options for handling incoming calls:

| Menu | Action |
|-----------------|---|
| End and Accept | Terminate the current secure call and accept the incoming call. |
| Decline | Reject the incoming call. |
| Hold and Accept | Pause the active secure call. The secure call is resumed by tapping the <i>Pause</i> button. (Require <i>Call waiting</i> is enabled for the device.) |

Table 5: Actions for incoming calls during a secure call.

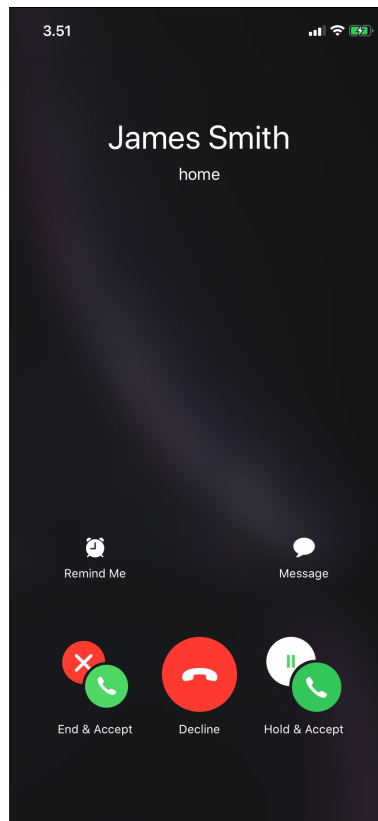


Figure 19: Incoming call during a secure call

5.5 Incoming secure calls

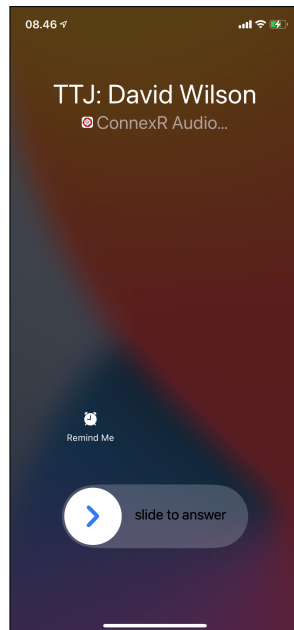
Incoming secure voice calls are alerted using VoIP push notifications, which launch the native iOS call screen. When receiving a secure call, the incoming call screen is displayed, where the name of the caller is shown in large letters followed by *Connex Audio* indicating a secure call.

When answering the call, the Dencrypt ConnexR authorizes the calling parties, exchanges encryption keys, and establishes a secure connection. A waiting tone is played during the setup process, indicating that the secure channel is being established. Audio feedback is played when the channel is secured and available. Voice data is only transmitted when the secure channel is established.

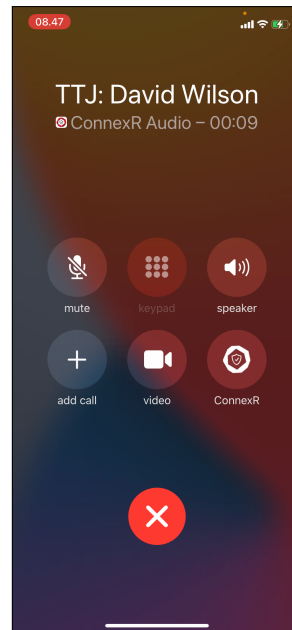
From the native call screen, the usual call actions are available.

| Menu | Action |
|------------------|-------------------------------------|
| Mute | microphone on/off. |
| Speaker | Toggles the speaker on/off. |
| Dencrypt ConnexR | Opens Dencrypt ConnexR application. |
| Add call | Functionality is not available. |
| Facetime | Functionality is not available. |

Table 6: in-call actions from native call screen



(a) Incoming secure call.




(b) Ongoing secure call.

Figure 20: Incoming secure call.

6 Sending a secure message

The *Messages* screen shows all the ongoing conversations (chat rooms). Initially, the message inbox is empty and shows only a placeholder text.

Creating a conversation

- Step 1: Tap the -icon in the top-right corner. This opens the *New Message* screen.
- Step 2: Add recipients by typing their names (suggestions are shown while typing) or select + to select from the phonebook. Tap a contact name or team room to add them to a conversation.

Sending a secure message

- Step 1: Select an existing *Conversation* or tap *Compose* icon to create a new.
- Step 2: Enter text and tap *Send*. See Figure 21.

The message is encrypted and transmitted immediately, when an active data connection exist. A successful transmission is indicated by displaying the avatar/logo next to the message.

A message pending transmission is indicated by a "spinner" icon next to it. The message is stored encrypted, and automatic retransmission will be attempted while the app is open. A notification is received if the app is closed while having pending transmission. Once opened again, the app will attempt to re-send the message.

Notice that sending large attachments will take longer to encrypt and transmit.

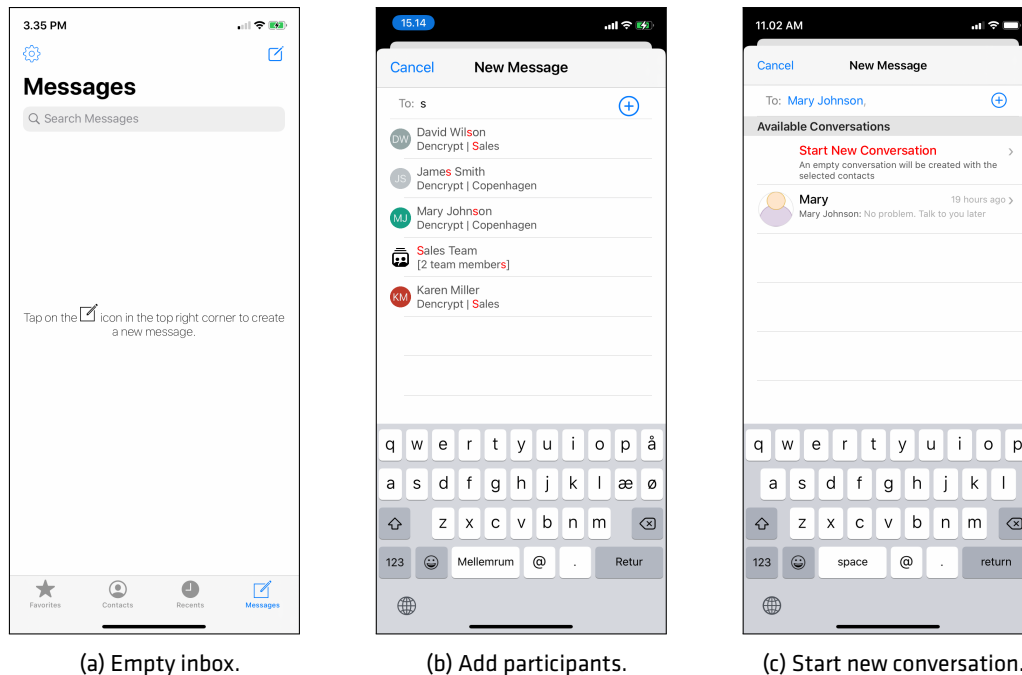


Figure 21: Sending a secure message.

6.1 Message delivery status

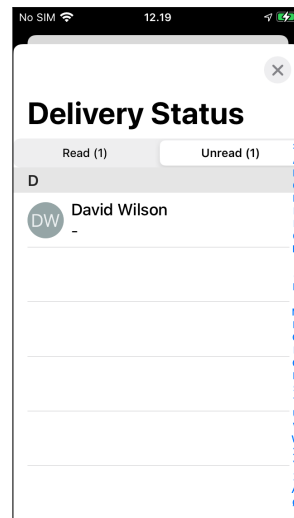
A delivery status for sent messages is displayed under each message in the conversation screen:

- The green 👁-icon indicates the number of participants who have opened the message.
- The 📄-icon show the number of participants who have not yet opened the message.

Figure 22 gives a conversation example with all color codes. Detailed delivery status is shown when tapping the delivery status.



(a) Conversation screen.




(b) Delivery status details.

Figure 22: Message delivery status

6.2 Sending attachments

Sending attachments

Step 1: Open the *Attachment menu* by tapping the -icon the lower-left corner.

Step 2: Select the source for attachments.

The available options may differ as the supported attachment are defined by the system administrator.

Camera roll Display the latest pictures and videos from the camera roll for quick selection. Multiple attachments can be selected. Once an attachment has been selected, the "Open Library" menu changes to "Attach X file(s)". Tapping this will insert the selected attachments

Open Library Open the photo albums. Multiple attachments can be selected and attached to a message.


Open Camera Open the camera capturing images or videos. Photos and videos taken from the Dencrypt ConnexR will not be stored outside the app and will not appear in photo libraries.

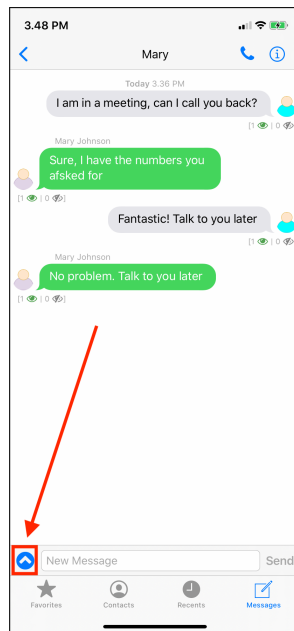
Record Audio Opens the audio recorder. Audio clips will not be stored outside the app and will not appear in any libraries.

Share Location Opens a map showing the current location. The initial pin location is the current position. The pin can be placed at a new location either by dragging it or by "long-press" anywhere on the map.

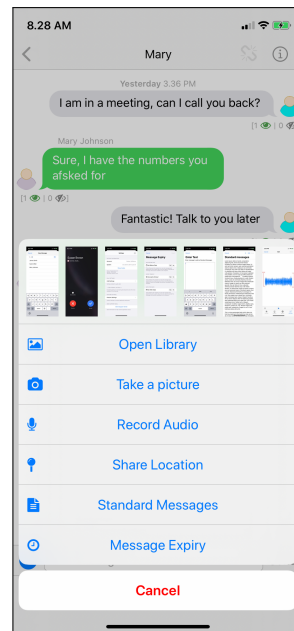
Standard Messages This will opens a list of pre-defined messages.

Message Expiry Use *Message expiry* to set time constraints on a message availability.

Attachments will be added to the *Attachment browser* located above the compose text field. Attachments can be removed from the message by tapping the -icon on the top-right corner of each attachment. Photos, videos, audio clips, and shared locations generated from within Dencrypt ConnexR will permanently disappear and cannot be recovered when removed from the attachment browser.



(a) Open attachment menu.



(b) Select attachment type.

Figure 23: Sending attachments.

6.3 Standard messages

Standard messages are a list of pre-defined messages defined by the system administrator or locally by the user.

Insert a standard message

Step 1: Tap *Standard Message* to open a list of pre-defined messages.

Step 2: Tap a message to insert the content.

Step 3: Rearrange message by tapping *Edit* and drag messages.

Step 4: Create new standard messages by tapping the "+" icon. Enter text and tap *Done*.

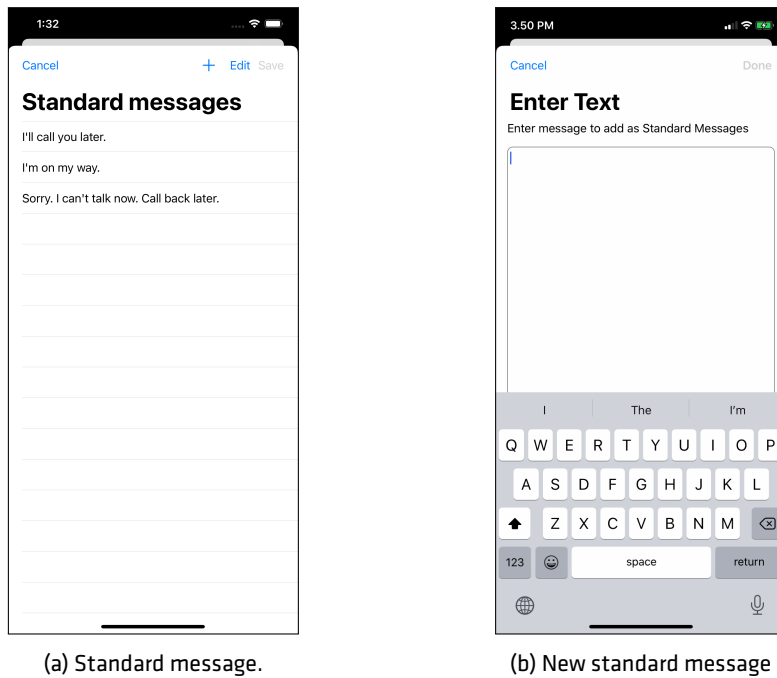


Figure 24: Standard messages

6.4 Message expiry timer

Message expiry is used to set time constraints on a message making it available in defined time periods only.

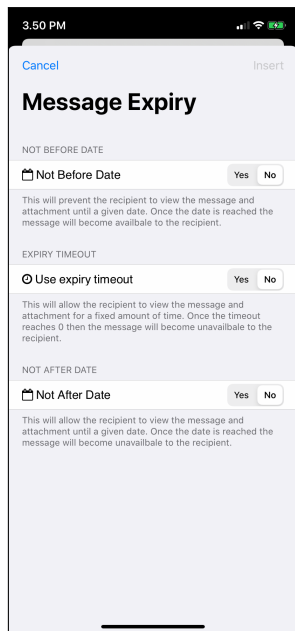
Set time constraints on messages

- Step 1: Tap *Message Expiry* to open the configuration screen.
- Step 2: Toggle "Yes/No" on the time constraint options.
- Step 3: Enter date or duration.
- Step 4: Tap *Insert*
- Step 5: The attachment icon will show the selected values on 3 separate lines:
 - (a) Not Before date.
 - (b) Expiry time.
 - (c) Not After date.

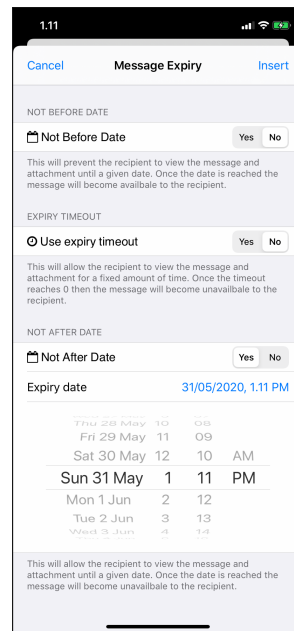
Not Before The message will not be available for the recipients before this date. The receiver will get a notification when the message becomes available. The message will appear in the chat timeline at the Not Before date and not when it was originally sent.

Timeout The message will only be available for the receivers for a limited time period. A timer will start count-down once the message is opened and the message becomes unavailable at timeout.

Not After The message will not be available for the recipients after this date.

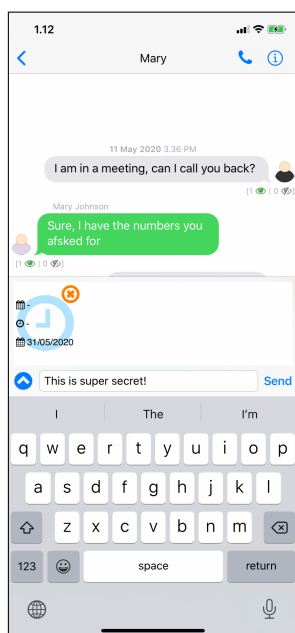


(a) Message expiry options.

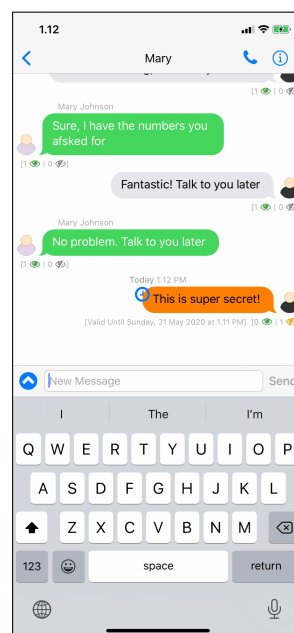


(b) Message with time constraints.

Figure 25: Message expiry



(a) When typing.



(b) Constrained message in chat.

Figure 26: Message expiry

7 Settings

Dencrypt ConnexR settings are opened by tapping the "cogwheel"-icon in the top left corner of the screen. Most of the configuration of Dencrypt ConnexR is performed centrally by the system administrator. The *Settings* menu provides the following information/options:

Account Displays the user's name.

Show System Info Displays the following information in a new window. For error investigation, this information can be exported.

- The account name, account id and system name.
- The app name, app version. SDK version and client ID.
- The root cert version.
- The client certificate expiry date.
- The common name (CN) of the MDM pushed provisioning client (if applicable).
- App bundle id
- OS version, Device name and Device type.
- A timestamp for information.

Show Guide Opens a quick guide to Dencrypt ConnexR .

Status Server connection status.

App version Dencrypt ConnexR version number

App version Version number of Dencrypt ConnexR .

Phonebook Settings From the phonebook settings, the user can change the default settings for launch page, phonebook sorting and display.

Call Settings From the call settings menu, the user can change the default settings for:

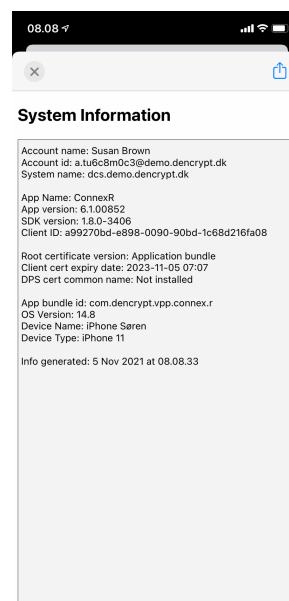
- Customize ringing tone
- Toggle if screen shall be off during calls or controlled by proximity sensor.
- Toggle Tunnel mode. Used in VoIP blocking regions (Default: Off).

Account Settings From the account settings menu, the user can change default settings for the badge icon, the launch screen, and delete the account.

Permission Settings Checks app permissions.

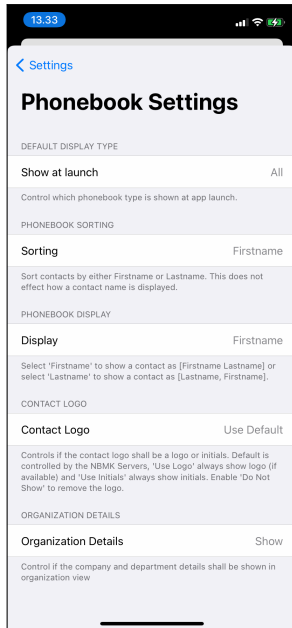


(a) Settings menu.

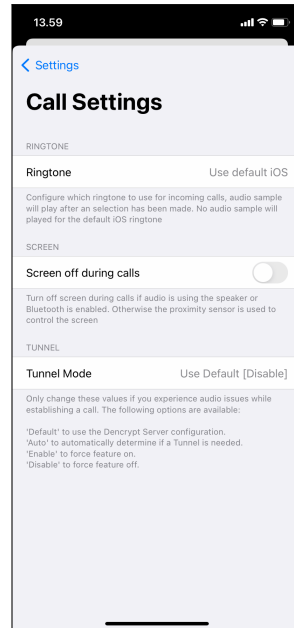


(b) App Information.

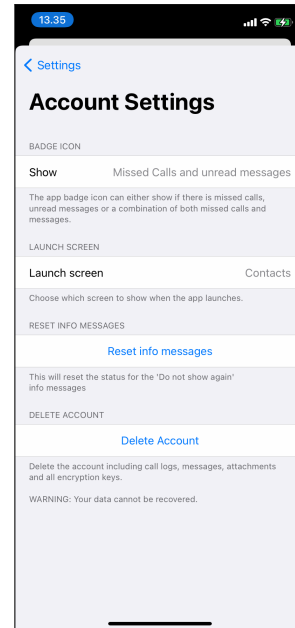
Figure 27: Settings and app information.



(a) Phonebook settings.



(b) Call settings.



(c) Account settings.

Figure 28: Phonebook, call and account settings.

Appendices

A Dencrypt Communication Solution

The Dencrypt Communication Solution is an encrypted Voice-over-IP-based communication system, which offers encrypted mobile voice communication and instant messaging within closed user groups. Once Dencrypt ConnexR is installed and provisioned, it allows for two or more persons to talk securely or exchange instant messages securely.

The solution consists of Dencrypt ConnexR, a smartphone application (app) installed to the end-users smartphone, and a Dencrypt Server System as illustrated in Figure 29. The Dencrypt Server System is responsible for setting up the encrypted calls, for routing messages, and for distributing an individual phonebook to each device defining to whom calls can be made. The server system is also responsible for initiating the provisioning process for the first-time activation.

The server system only facilitates call setup and message routing. It is not capable of decrypting voice calls or messages as these are end-to-end encrypted between devices.

The Dencrypt ConnexR application is installed by a Mobile-Device-Management (MDM) system. The Dencrypt Server System is managed by a system administrator.

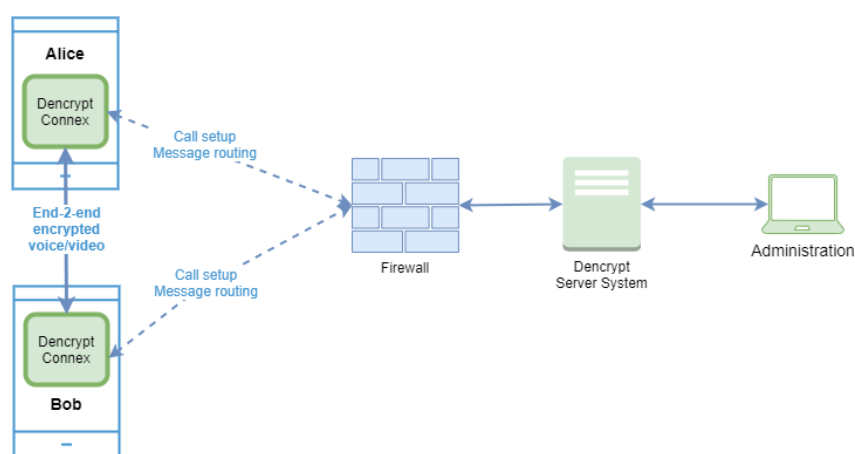


Figure 29: Dencrypt Communication Solution.

A.1 End-2-end encrypted VoIP calls

For secure voice and video calls, an end-to-end encrypted connection between the devices is established using the mobile internet or wifi-networks. Only the data transmission between the devices is protected. The audio/video connection between the user and the device through the microphone, speaker, headset, or screen is not protected as illustrated in Figure 30

Once a connection is established, the exchange of encryption keys happens automatically and directly between the two devices. The key exchange is initiated when a call is answered and a data connection is established. At call termination, encryption keys are permanently removed from the device and cannot be recovered.

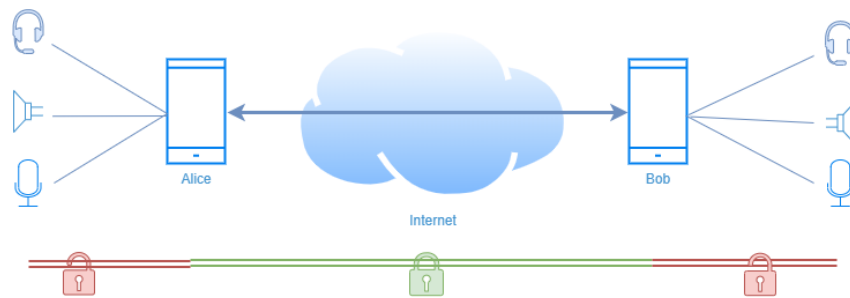


Figure 30: Area of protection for voice/video calls.

A.2 End-2-end encrypted instant messaging

Also, instant messaging is encrypted end-2-end between devices and transmitted, via the Dencrypt Server System, over the mobile internet or wifi-networks. Both the message exchange and the storage on the device (chat history) are protected, whereas the connections to external keyboards or screens are not protected as shown in Figure 31.

The key exchange happens directly between the communicating devices but is facilitated by the Dencrypt Server System, which also queues the encrypted messages for delivery.

The message history is stored encrypted on the device and requires two keys for decryption: 1) A local key protected by the trusted platform module on the device, and 2) a remote key stored on the server system. Hence, the chat history is only accessible when a data connection to the server has been established. The remote key is destroyed when the app is closed.

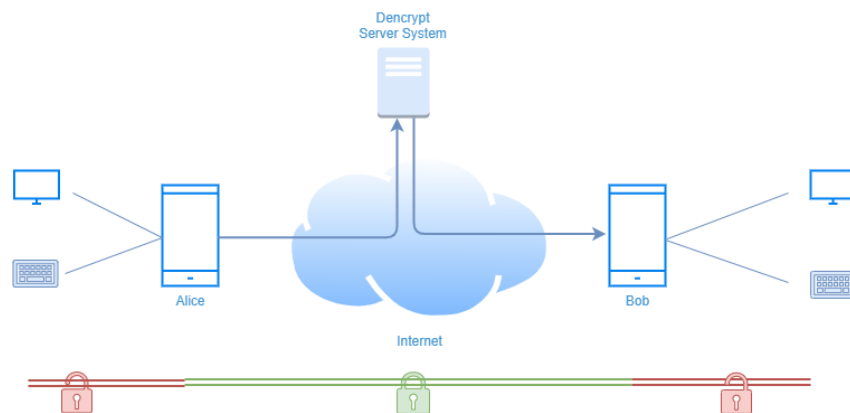


Figure 31: Area of protection for instant messaging

A.3 Authenticated connections

All communication between the Dencrypt ConnexR and the Dencrypt Server System takes place over mutually authenticated connections. Hence, the server system will only accept connections from authenticated users, and the app will only connect to authorized server systems. The authentication is automatic and does not require user actions besides the initial provisioning.

A.4 Encryption keys

All encryption keys for both voice/video calls and for instant messaging are generated automatically when a new conversation is initiated and does not require user actions. Encryption keys are overwritten in memory when a call is terminated or when the app is closed or put in the background.

A.5 Secure phonebook

To ensure that only authorized persons can communicate, the Dencrypt Communication Solution applies a centrally managed and individual phonebook. The phonebook defines with whom a user can communicate. The phonebooks are generated by the system administrator, and updates are pushed to the apps when they connect to the server system. Hence, the phonebook is always up-to-date without any user actions required. The phonebook is stored encrypted on the device using the same key management as for the chat history.

The phonebook concept supports two-way and one-way conversations. Hence, it is possible to receive calls from persons not listed in the phonebook and without being able to call back.

A.6 Push notifications

Push notification services from Apple are used for alerting on incoming secure calls and messages. The push messages are either with empty content or with encrypted content.

B Errors messages

Terms and Conditions - Please accept the following: I have read and understood the security instructions for my organization

- **Type:**
- **Description:** The user needs to indicate that the security instructions have been read
- **Actions:**

Please Restart App - A push token is not received from Apple, it's not possible to receive VoIP calls without it. Please restart app.

- **Type:**
- **Description:** The application did not receive a push token from Apple. The token is needed to receive calls and messages.
- **Actions:**

Token Error - Your token is invalid, please restart the application.If this issue persists then please contact support.

- **Type:** ERROR

- **Description:** The push token received from Apple was in an unknown format. Without a valid push token then the user will not be able to receive calls.
- **Actions:** Restart the application. If the issue persists then Dencrypt Support shall be contacted.

Please Restart - Your push token has been invalidated, please restart the application. If the this issue persists then please contact support.

- **Type:** ERROR
- **Description:** Apple has invalidated the push token. Without a valid push token then the user will not be able to receive calls.
- **Actions:** Restart the application. If the issue persists then Dencrypt Support shall be contacted.

Application Starting - Please wait while application is starting

- **Type:** INFO
- **Description:** The application is starting
- **Actions:**

Screenshot Detected - A screenshot was taken.

- **Type:** INFO
- **Description:** The user took a screenshot of the application
- **Actions:**

Recording Detected - Screen recording active.

- **Type:** INFO
- **Description:** The user has screen recording active
- **Actions:**

Live Chat Received - A Live Chat from was received. This feature is not supported, please inform the sender.

- **Type:** INFO
- **Description:** The user has received an unsupported live chat from Talk
- **Actions:**

A unrecoverable error has been detected. Please contact the system administrator. -

- **Type:** ERROR
- **Description:** A fatal error has been detected
- **Actions:**

A security incident was detected and your call has been terminated. Please contact your system administrator. -

- **Type:** INFO
- **Description:** A security issue was detected
- **Actions:**

Your device has been revoked and no longer has access. Please contact your system administrator. -

- **Type:** INFO
- **Description:** A security issue was detected
- **Actions:**

Network Issue - Server connection refused

- **Type:** ERROR
- **Description:** There was an issue connecting to the internet
- **Actions:**

Call is authenticated, a secure channel is established. -

- **Type:** INFO
- **Description:** Shown when a secure channel is established when receiving a call while the application is running in the background
- **Actions:**

Account Needed - Please contact your administrator for an account to Dencrypt ConnexR . Your account can be delivered via email, text message or QR code.

- **Type:** INFO
- **Description:** The application has no account
- **Actions:** An account invitation shall be generated by the company administrator. The invitation can either be received via sms, email or a QR code. The user cannot make call nor send messages without an account.

App Information - The app information has been copied to the clipboard

- **Type:** INFO
- **Description:** App information has been copied to the clipboard
- **Actions:** Information can be shared

App information - The application is locked until the user is authenticated

- **Type:** INFO
- **Description:** The application is locked until the user is authenticated.
- **Actions:**

Database Locked - Please wait while the database is decrypting

- **Type:** INFO
- **Description:** The application database is encrypted and locked until the decryption key has been downloaded from the Dencrypt Servers.
- **Actions:**

System Maintenance - Please wait while the system is in maintenance

- **Type:** INFO
- **Description:** The Dencrypt servers are in maintenance.
- **Actions:**

Remove contact - Do you want to be removed from this conversation?

- **Type:** INFO
- **Description:** Shown when the user wants to remove a contact from a conversation
- **Actions:**

- An account already exists, provisioning stopped.

- **Type:** INFO
- **Description:** The user used an invitation on an application which already have an account.
- **Actions:**

- There was an issue with the invitation, please contact your administrator.

- **Type:** INFO
- **Description:** There was an error with the invitation.
- **Actions:**

- The Dencrypt servers could not be contacted, please verify that the internet connection is working and try again.

- **Type:** INFO
- **Description:** There was no connection to the server.
- **Actions:**

- Dencrypt ConnexR did not have a valid account, please contact your administrator to get a Dencrypt ConnexR account.

- **Type:** INFO
- **Description:** The migration failed because Talk did not have an account
- **Actions:**

- The application will be updated to the latest version, this will take a few seconds.

- **Type:** INFO
- **Description:** The application is being updated to a new version
- **Actions:**

Please wait - Your account is being configured. This may take a few minutes. Do not close the app.

- **Type:** INFO
- **Description:** An account is being setup
- **Actions:**

Account Ready - Your Dencrypt ConnexR account is now ready.

- **Type:** INFO
- **Description:** The account is ready
- **Actions:**

User busy - The contact was busy

- **Type:** INFO
- **Description:** The contact was busy and rejected the call
- **Actions:**

Missed call -

- **Type:** INFO
- **Description:** The user received a call but did not answer it before the caller ended the call
- **Actions:**

Call rejected - Tap to send a message to @

- **Type:** INFO
- **Description:** The user rejected an incoming call. Tapping the notification will open the predefined standard messages and allow the user to send a message to the caller.
- **Actions:**

Unsent Messages - There are messages waiting to be sent, please open Dencrypt ConnexR to send them.

- **Type:** INFO
- **Description:** There are pending messages that didn't get sent while the application was running. This might be due to bad network conditions or large attachments.
- **Actions:** Restart the application to send the pending messages.

Not Found - The attachment download is pending, please try again later.

- **Type:** INFO
- **Description:** The selected attachment is not downloaded from the Dencrypt Servers yet.
- **Actions:**

Attachment found - Attachment is inserted at new message start.

- **Type:** INFO
- **Description:** An attachment was shared from a 3rd party application. It's placed on an internal clipboard and will be added once the user start to compose a message.
- **Actions:**

Permission Check - Permission check completed

- **Type:** INFO
- **Description:** The user started an iOS permission check which is now completed
- **Actions:**

Clear Recent - Are you sure that the Recent list shall be cleared?

- **Type:** INFO
- **Description:** Confirmation dialog asking if the user wants to clear the recent call list
- **Actions:**

Message Ready - A Message was scheduled to become available now

- **Type:** INFO
- **Description:** A message which had a not-before date is now ready to be read
- **Actions:**

App update available - There is a new version of Dencrypt ConnexR available, please update your app

- **Type:** INFO
- **Description:** There is a new version of the application available on the Apple App Store.
- **Actions:**

Subject Changed - Participant Changed

- **Type:** INFO
- **Description:** The user changed the subject
- **Actions:**

New message received -

- **Type:** INFO
- **Description:** A new message was received
- **Actions:**

Message Expired - [This message is no longer available]

- **Type:** INFO
- **Description:** The user tapped a message or attachment which no longer is available.
- **Actions:**

Loading Attachment - Please wait while decrypting attachment.

- **Type:** INFO
- **Description:** The attachment is being decrypted.
- **Actions:**

Attachment Too Large - The attachment is too large and cannot be attached to this message. Max supported size is s

- **Type:** ERROR
- **Description:** The selected attachment is too large to be sent
- **Actions:**

Offline Messages - There are messages waiting to be delivered, they will automatically be transmitted once connection to the server is established.

- **Type:** INFO
- **Description:** There is messages waiting to be send once a connection to the Dencrypt Servers has been established
- **Actions:**

Video Limit - Video recordings can maximum be d seconds. Recoding will automatically stop once this limit is reached.

- **Type:** INFO
- **Description:** There is a maximum time limit on video recordings. After the specified time the recording will automatically stop
- **Actions:**

Attachment detected - The attachment will be inserted when composing a message text starts

- **Type:** INFO
- **Description:** The user has selected an attachment which is now ready to be attached to a message
- **Actions:**

Contacts removed - The following contacts were removed since they are no longer in the phonebook:@

- **Type:** INFO
- **Description:** The user start to compose a new message when a selected contact was removed from the phonebook. The removed contact is removed from the message.
- **Actions:**

Location Disabled - Please enable location sharing in iOS Settings.

- **Type:** INFO
- **Description:** Locations cannot be shared with the application having permissions from iOS
- **Actions:**

Cannot Send Location - There is no contacts set for instant location sharing, please contact your administrator. Location has not been sent.

- **Type:** INFO
- **Description:** The user used instant location share but no contacts was configured on the Dencrypt Servers
- **Actions:**