



COMMUNICATOR

Communicator for Android

User Guide

Release 21.5.1

Document Version 1

Table of Contents

1	About Communicator for Android.....	4
2	Get Started	5
2.1	Installation	5
2.2	Sign In	5
3	Main Tabs	6
4	Contacts	7
4.1	Contact Card	7
4.2	Add Contacts	7
4.3	Edit.....	7
4.4	Filters	7
4.5	Sort and Display Order.....	8
5	Audio Calls.....	9
5.1	Dial Pad Tab	9
5.1.1	VoIP Calling Mode.....	9
5.2	Make Audio Calls.....	10
5.3	Answer Call	10
5.4	In Call Actions	10
5.5	Missed Calls and New Messages	11
5.6	Message Waiting Indicator and Voice Mail Access.....	11
5.7	Business Line Call Back.....	11
5.8	Contact Name Lookup for Incoming Calls and Call Logs	12
5.9	N-Way Calling (Conference)	12
5.10	Call Waiting	12
5.11	New Call	12
5.12	Call Transfer.....	12
5.13	Call Pull	12
5.14	Call Park.....	13
5.15	Security Classification	13
5.16	Bluetooth Support.....	13
6	Call History	14
7	Side Navigation	15
7.1	My Status	15
7.1.1	Availability Rules.....	16
7.2	Call Settings.....	16
7.2.1	Do Not Disturb	16
7.2.2	Personal Assistant.....	16
7.2.3	Call Forwarding.....	17
7.2.4	Remote Office.....	17

7.2.5	Block My Caller ID	17
7.3	Preferences.....	17
7.3.1	Language Support.....	17
7.3.2	Device ID.....	18
7.3.3	Troubleshooting	18
7.3.4	Automatic Sign In.....	18
7.4	Call Center Agent (Queues).....	18
7.5	Test Call	18
7.6	Help Page	18
7.7	Sign Out	18
8	Search.....	19
9	Push Notifications for Calls	20
10	Multi-Device Support	21
11	Acronyms and Abbreviations	22
12	Appendix A: Third-Party Software and Copyright.....	24

1 About Communicator for Android

Communicator for Android provides the following communication features:

- Voice Calling (VoIP)
- Voice Calling (Circuit Switched)
- BroadWorks Call Settings

2 Get Started

This section contains the essential information for getting started with Communicator.

2.1 Installation

Android clients can be downloaded from Google Play.

2.2 Sign In

When you first launch the application, you are prompted to sign in.

- 1) If displayed, enter the device configuration address (Uniform Resource Identifier [URI]) provided by your service provider.
- 2) Enter your BroadWorks user name and password.
- 3) Select whether you would like Communicator to remember your password.
- 4) Select whether you would like Communicator to sign you in automatically on subsequent launches.
- 5) Tap **Sign In**.

NOTE: If you choose automatic sign in, you are automatically signed in and taken to the *Contacts* list upon subsequent Communicator launches. Otherwise, you are presented with the *Sign In* screen.

A pop-up dialog about emergency calls may appear on the *Sign In* screen.

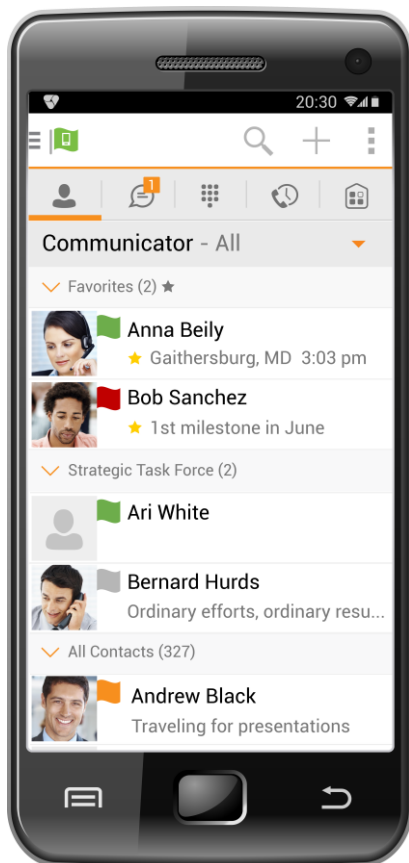
With basic sign-in, there are options on the emergency call pop-up:




- **Ok** – Sign-in completes and the user can use the client.
- **Cancel** – Sign-in is canceled and the user is returned in the *Sign In* screen.

Depending on your service provider settings, the client may have a link for *Forgot Password* on the login dialog box allowing retrieval of forgotten password. The functionality for retrieving the password is provided by the service provider.

3 Main Tabs

When you start Communicator for the first time, your *Contacts* list is empty. You use the *search* field to find people and add them to your *Contacts* list. Contacts can also be added manually by tapping the **Add** button.



Icon	Description
	Contacts – View your contacts from a <i>Buddies</i> list, or a local or company directory.
	History – View incoming, outgoing, and missed calls.
	Dial Pad – Make calls.

The main view contains a number of tabs that present information about the contacts and communications options located on the top bar:

- *Contacts*
- *Dial Pad*
- *History*

4 Contacts

The *Contacts* tab contains the following:

- UC-One Contacts
 - All
 - Online
- Contact Directories
 - Local Address Book
 - Directory

Directory provides the company directory contacts. The *Local* contact list provides the contacts from the local phone book.

4.1 Contact Card

The contact card displays information about a contact based on the contact type. This includes Communicator contacts, Local address book contacts, and contacts from directory search results.

The user can initiate a call directly from the contact card.

4.2 Add Contacts

When you sign in for the first time, there are no contacts on your *Contacts* list. Add a new contact at any time by selecting the option *Add Contact* from the plus icon in the left bottom bar. Another way to add new contacts is to use the directory search option from the *Contacts* tab.

In the *Add Contact* screen, enter the contact's information and then select **OK**.

Add a local contact by selecting the *Add Local Contact* option using the plus icon in the left bottom bar. The *Add Local Contact* option opens the native Address Book for adding a new contact in the local phone book.

4.3 Edit

Tap a contact from the *Contacts* list to open a contact card.

- Select *Edit* from action overflow button to open the *Contact Information* dialog box where you can edit information.
- Select *Remove* from action overflow button to remove the contact from your *Contacts* list.

4.4 Filters

There are four contact filters available from the *Contacts* tab:

- *All* – Shows all contacts.
- *Online* – Shows only contacts that are currently online.
- *Local Address Book* – Shows the contacts from your local phone book.
- *Directory* – Shows the contacts from a company directory (which requires a search).

4.5 Sort and Display Order

The following options in *Preferences* control how contacts are displayed:

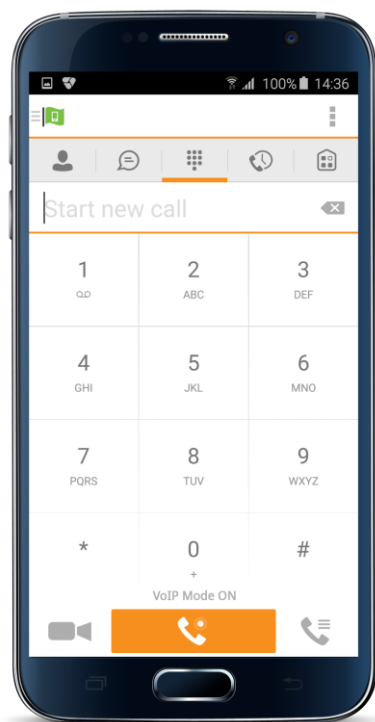
- *Display by* – display First name or Last name first.
- *Sort by* – sort by First name or Last name.

NOTE: Asian names – Chinese, Japanese, and Korean (CJK)

On Android, Asian names (CJK) are not dependent on the preceding settings. Asian names are always sorted by Last name and displayed with the Last name first. For Asian names, the short name format is always the full name.

5 Audio Calls

5.1 Dial Pad Tab



The *Dial Pad* tab displays a dial pad and a text field used to enter numbers. The dial pad is one of the options used to make audio calls. There are buttons below the dial pad: Call and Dial pad menu that are configurable by the service provider. The top text field also has a delete button that, when pressed, deletes one character at a time.

A badge notification appears on the *Dial Pad* tab when there are messages in the voice mail box. The voice mail icon under digit one becomes orange when there are voice mail messages. A long press on digit one connects you with your voice mail box. When there are no voice mail messages in your voice mail box, the icon is grey.

The *Dial pad* menu can contain three options: VoIP Mode, Pull Call, and Retrieve Call.

5.1.1 VoIP Calling Mode

Communicator Mobile supports an option that allows a user to switch easily between VoIP and Mobile calling modes.

- VoIP calls use WiFi or the carrier data network.
- Mobile calls use the carrier circuit-switched network.

Users can switch between VoIP and Mobile through the *Dial pad* menu. An indication of the currently selected mode is displayed on the Dial pad.


- VoIP Mode On:
 - Outgoing and incoming calls use VoIP over WiFi or data network.
- VoIP Mode Off:
 - Outgoing and incoming calls use the mobile circuit-switched network.

VoIP calls over the carrier data network are dependent on the quality of the network and may incur additional charges. As such, there are options for an operator or end user to disable VoIP calls over the carrier data network (3G, 4G, or LTE) if needed. Users can control this behavior in *Call Settings* → *VoIP Calls*. There are two options:

- WiFi only: VoIP calls are allowed only on WiFi.
- All Networks: VoIP calls are allowed only on any data network.

5.2 Make Audio Calls

You can make an audio call using one of the following methods:

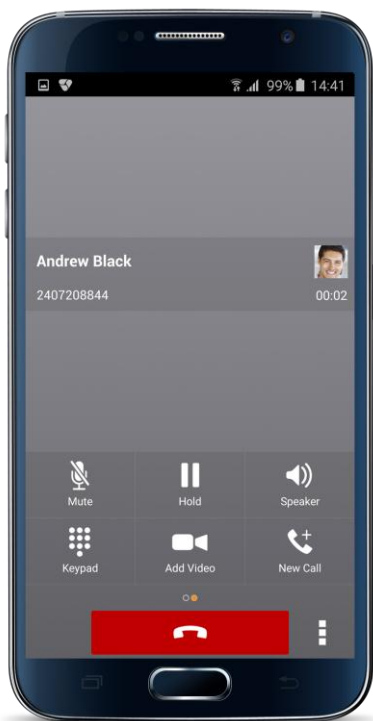
- Tap a contact from the *Contacts* list to open a contact card. From the contact card, choose the headset icon  to make an audio call.
- From the options provided, after long press on a contact.
- From the search results, tap a contact to open a contact card and choose the audio icon or by using the long press options.
- Open the dial pad, enter a phone number, and tap the Call button.
- On the *Call History* list, tap a call entry.

5.3 Answer Call

An incoming call is indicated with a ringtone. There are two options on the incoming call screen: *Accept* and *Decline*. If you decline the call, it causes the line to sound busy at the caller's end and they know that you rejected the call.

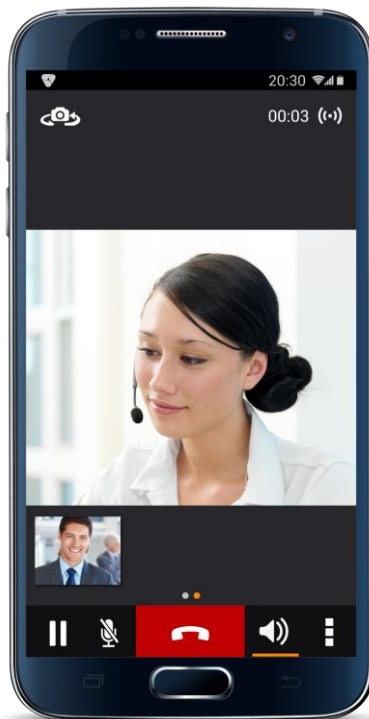
If a user is in the middle of a VoIP call and receives an incoming cellular call, the VoIP call continues while the phone is alerting. Once the cellular call is answered, the VoIP call is put on hold.

5.4 In Call Actions



From the *In Call* screen, following actions:

- End a call
- Mute the microphone
- Place a call on hold



you can perform the

- Adjust the volume
- Open the dial pad
- Make a new call
- Transfer a call – Attended
- Transfer a call – Unattended
- Make a conference
- Park a call
- Transfer a call to circuit-switched call
- Add more participants (in conference call only)
- Merge two separate calls
- Swap two separate calls
- View participants (on a conference call)

In addition, the user can use the Android back button to leave the *In Call* screen and navigate through the other application screens. Returning to the *In Call* screen is possible through the active call toolbar in Communicator or the active call notification entry in the Android notification center.

5.5 Missed Calls and New Messages

When you miss a call, the notification bar on the Android device shows a note. By tapping the missed call, you go to the *History* screen. Notifications, for example, missed calls or new messages, are also shown as badges on the tab icons.

5.6 Message Waiting Indicator and Voice Mail Access

If you have pending voice mail messages, then the notification bar on the Android device displays an icon and the message, “You have XX pending voice mail messages”. By tapping the voice mail notification, the application dials the voice mail access number directly and you can listen to the voice mail messages.

Voice mail is also accessible with a long press of the dial pad “1” key (similar to how it is on a regular mobile dial pad). If voice mail messages are available, then the “1” key changes color. In addition, a voice mail notification is displayed as a badge on the *Call* tab icon.

The number for new voice mails changes depending on how many are open or are new. The voice mail icon in the notification area has an associated badge that shows the number of new messages.

5.7 Business Line Call Back

Communicator allows you to originate a circuit-switched call using your business line identity. This is done using the basic Call Back functionality on BroadWork..

Call Back is available if you have Remote Office assigned. The application checks to see whether one of these services is provisioned with a phone number that matches the mobile number. If it is provisioned this way, it provides the option to make calls using the Call Back feature.

5.8 Contact Name Lookup for Incoming Calls and Call Logs

When receiving a call, Communicator searches for the name in the following sources and in the following order: Enterprise directories, Local Contact, *P-Identifier* header (SIP), and *From* header (SIP). If the number matches one of the contacts, the name is shown on the incoming call screen.

5.9 N-Way Calling (Conference)

Communicator Mobile supports network SIP-based conference calls. While on a two-way audio call, you can add more participants by using the **Conference** button. It opens the Address Book on the device to search for and select the new participant. Once the conference is established, the participants are shown on the *Device* screen.

The other way to create *Conference* call or to add participants in an existing *Conference* is to make a *new* second call and select the *merge* option.

5.10 Call Waiting

You can have one active call at any one time if you receive a new incoming call and accept it. The existing call is put on hold and you can change between these two calls by using the **Hold** and **Unhold** buttons.

5.11 New Call

The client supports starting a new call while in an ongoing call. The steps are as follows:

- 1) Establish call with remote party.
- 2) Initiate second call using the new call button.
- 3) Select a contact then choose a number. After the new call is established, the first call is put on hold. You can swap the two calls or to merge it in conference.

5.12 Call Transfer

The client supports transferring VoIP calls to another party. Two modes of transfer are supported:

- **Attended Transfer** – Establish a call with remote party. Select a contact then choose a number. Select the *call first* option. If the call is successfully established, you can talk with the third party privately before completing the transfer by pressing the **Complete** button.
- **Unattended Transfer** – Establish a call with remote party. Select a contact then choose a number. Select the *Transfer* option and the transfer is completed.

5.13 Call Pull

Call Pull can be used in scenarios where a user has two endpoints, for example, a VoIP desk phone and a mobile phone with Communicator. If the user has an active call on the desk phone, this call can be transferred seamlessly to the mobile phone via the Call Pull button. Depending on the application, dialing settings, and service configuration, the call can be pulled as a VoIP or circuit-switched call to the mobile phone. There is no interruption to the voice call.

Call Pull button pulls audio only.

5.14 Call Park

The Call Park service allows a “parking” user to park a call against a “parked against” extension. The “parked” user is placed on hold until a user retrieves the parked call. If the call is not retrieved within the provisioned recall time, then the parked call is reverted and presented to the “recall” user.

5.15 Security Classification

The Communicator Mobile client provides the ability to specify the security classification of a call. The security classification of a call party is determined by the security classification set at the BroadWorks enterprise level; all users within the organization inherit that security classification. Security levels are configurable on the server side, but there is always at least one security level, that is, *Unclassified*.

In addition, each user can change the security classification for the duration of the call via their handset. The user can change the security classification to a level less than or equal to their configured security classification.

For calls, the security classification can be changed during a call by a user and it works with supplementary services such as Call Transfer and Conference.

5.16 Bluetooth Support

You can control incoming and ongoing calls from a compatible Bluetooth headset.

The System requirements section in the *Communicator for Desktop and Mobile Product Guide* lists the headsets that have been tested, although other Bluetooth devices should also work.

Communicator Mobile Android supports mute and volume control from the Bluetooth headset; however, answer and hang up are supported only from the application.

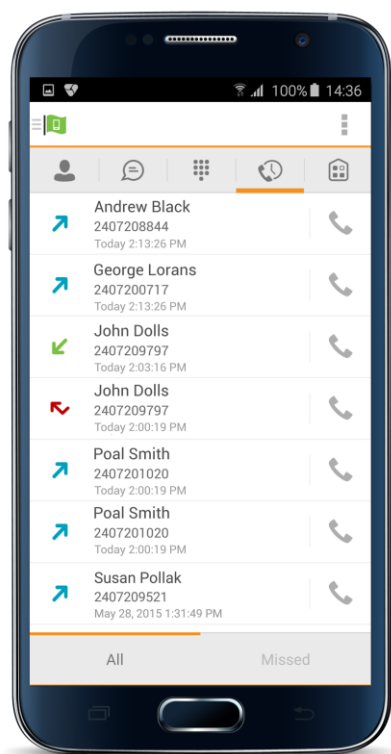
6 Call History

Call history can be accessed from the *History* tab. Communicator saves a call history for all and missed calls.

On the list of calls, there are icons indicating whether a call was incoming, outgoing, or missed.

The list of the call items consists of an icon showing what kind of call it was (a green arrow means incoming, a blue arrow means outgoing, and a red arrow means missed). It also shows the name, number, *Unavailable* status for the caller, and below the name, it shows the number, if available. To the right, is the date of the call and the time the call was initiated.

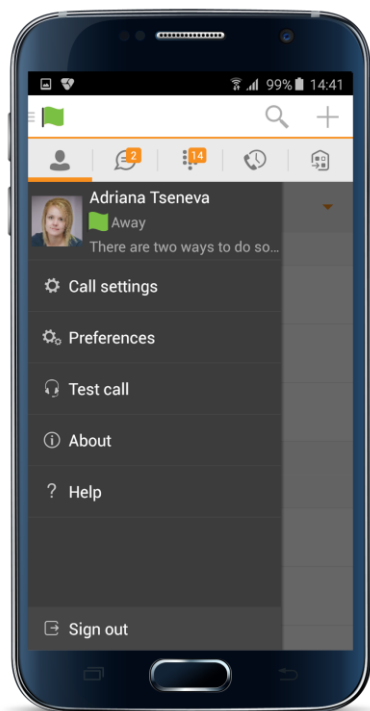
Call history makes it easy for you to redial and call back when you miss a call or when you want to dial a contact with whom you have recently spoken.



7 Side Navigation

The *Side Navigation* contains the following items:

- My status
- Call settings
- Preferences
- Queues
- Test call
- About
- Help
- Sign out



7.1 My Status

You can set your own availability by tapping on your personal status from the side navigation. It opens the *My status* screen where you can change your avatar, personal message, and presence status.

NOTE: *Availability* can also be referred to as *presence status*, which was the term used in previous releases of Communicator.

NOTE: In order to set an avatar when Communicator is working inside an Android for Work profile, a Camera application inside the Work profile should be installed on the device. The system administrator should provision such an application for the given Work profile and the user should install it prior to initiating an avatar change action.

You can enter a status message into the area next to the avatar. This status text is shown in your friends' *Contacts* lists.

7.1.1 Availability Rules

Availability Rules allows a user to configure calling rules associated with each of the presence states. When the state is triggered, the associated rule is applied.

Each availability rule can be configured with one of the following options:

- No Rules
- Forward to Number
- Silent Alerting

7.2 Call Settings

The client supports the following BroadWorks service management features, allowing BroadWorks supplementary services to be turned on or off using the native client *Preferences* window:

- Do Not Disturb
- Personal Assistant
- Always forward
- Forward when busy
- Forward when no answer
- Forward when not reachable
- Remote Office
- Block my caller ID
- Dialing Service
- VoIP Calls
- Simultaneous Ring
- Call Waiting
- This phone number

7.2.1 Do Not Disturb

When you activate this service, all calls are typically blocked by the server and sent to voice mail.

7.2.2 Personal Assistant

Personal Assistant allows configuring an announcement to be played to callers when the called party is not available. The announcement notifies the caller of the reason the called party is not available, optionally providing information on when the called party will return and whether there is an attendant to attend the call. Based on that information, the caller can make a better decision on calling back, transferring to an attendant, or leaving a voice message.

Personal Assistant options can be configured in *Call Settings*. The following options are available:

- Presence different than None

- Until
- Transfer number
- Ring Splash

Select “None” for Presence to disable Personal Assistant.

7.2.3 Call Forwarding

By tapping on a different *Call Forward* option, you can enter a number to forward your calls as follows: Call Forward Always, Busy, or When Unreachable.

7.2.4 Remote Office

This service allows the use of any phone as the office phone from a charging and numbering perspective. For instance, a hotel room phone can be used as the office phone.

Enable Remote Office and specify a phone number to be used as the Remote Office number.

7.2.5 Block My Caller ID

You can hide or display your number when calling or communicating with other parties or contacts. To hide your number, set to “Enable”. To show your number, set to “Disable”.

7.3 Preferences

The client supports the following preferences:

- Language Support
- Sign in automatically
- Troubleshooting

7.3.1 Language Support

The client is prepared for localization and can be delivered in any language. Currently, the client is available in:

- U.S. English
- French
- French (Canadian)
- German
- Italian
- Spanish (European)
- Spanish (Latin America)
- Korean
- Japanese
- Chinese

Additional languages are available upon request as part of a customization project.

7.3.2 Device ID

Communicator has the ability to lock the user to a single desktop or mobile device so that the software cannot be used on other hardware. The Android user can copy the Device ID from *Preferences* before signing into the application and provide it to the company administrator. The administrator locks Communicator to the reported device and the user can sign in only from this device.

7.3.3 Troubleshooting

The troubleshooting function can be used if there are issues encountered with the application. It collects and sends diagnostic information to a predefined support email address that is configurable via the branding process. This helps support personnel to identify the issues. The information sent consists of the application and media engine diagnostic logs.

Troubleshooting is managed by a menu entry in *Settings*. It can be accessed from two places in the client:

- From the Settings button on the *Sign In* screen – This opens the screen that contains the help and troubleshooting-related entries. This can be used before the user has signed in, which is most often for cases when a user has issues with signing in or with connectivity.
- From the *Preferences* screen, accessible from the side navigation. These are available while the user is logged in.

7.3.4 Automatic Sign In

The user can choose to sign in automatically with Communicator Mobile with a default account when the client is started. Together with the functionality to start Communicator automatically at system startup, this makes it easier for users to remember to sign in and be available for communication.

7.4 Call Center Agent (Queues)

Communicator allows a user to join and leave Call Center Queues and set their Automatic Call Distribution (ACD) status. This functionality is available based on the configuration and services assigned to the user.

To view the currently assigned queues, join and leave queues and change state, use the Queues entry in the side navigation menu.

7.5 Test Call

The client provides the ability to perform an Audio

test call to an echo number. Note that the echo service is provided and enabled by the service provider.

A common example of using an echo service is:

- Press **Test Call** to initiate a call to the echo service, then follow the operator's instructions until you hear back your recorded message.

7.6 Help Page

The client provides web-based help that can be launched from the *Settings* view.

7.7 Sign Out

You can sign out at the bottom of the left-side navigation drawer.

8 Search

Communicator supports search in Communicator Contacts and Contact Directories. The search is performed in a separate input field in the *Contacts* tab. Depending on the selected filter (All, Online, Local Address Book, or Directories), search results display contacts only from the current selected category.

In addition to results from the Enterprise Directory the search is also performed in several more search sources:

- User's Personal Phone List
- Group's Common Phone List
- Enterprise's Common Phone List

The enhanced search is applied for both contacts searching initiated by the user and when receiving an incoming call, at which point the application performs a search for a display name corresponding to caller's number.

9 Push Notifications for Calls

Communicator supports Push Notifications for Incoming Calls.

The feature leverages support on the BroadWorks Application Server to send Push Notifications to mobile applications over Google Cloud Messaging services.

Mobile client applications use push notifications to get alerted for incoming calls and accept the call as VoIP.

When there is new call, BroadWorks sends a push notification to the client, which is presented to the user as either OS-specific visual notification or in the user interface of the client application.

From a user experience standpoint, accepting a call works in the same way for both push-enabled clients and non-push-enabled clients. On Android, the call is presented to the user with an application-specific *Incoming Call* screen with Answer and Decline buttons.

Outgoing VoIP calls are performed with SIP registration on demand, which is transparent to the user. The SIP registration is done only when the user initiates the VoIP call.

In addition to push notifications for new calls, the solution also supports push notifications for new voice mail.

10 Multi-Device Support

Communicator provides support for users with multiple devices. This includes several features:

- Retrieving one's own presence notifications, when another client updates the user's presence. The client updates its own status based on the information it receives from the server.
- Accepting a shared presence invitation in one client is also recognized by another client, and both clients start receiving presence updates.
- A new presence subscription made in one client is recognized in another. If the contact blocks the invitation, there are presence notifications from the server to all of the user's clients indicating that the subscription was terminated, and this information is shown to the user. If the client receives two presence authorization requests from two or more devices for the same user, it only shows one request to the user.
- Removing a contact from a *Contacts* list in one device is recognized in another client, and the *Contacts* list is updated (that is, the contact is removed) in the other client as well.

11 Acronyms and Abbreviations

APN	Access Point Name
ACD	Automatic Call Distribution
CC	Country Code
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CS	Circuit Switched
DSCP	Differentiated Services Code Point
FMC	Fixed-Mobile Convergence
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure Sockets
IM&P	Instant Messaging and Presence
IMRN	IP Multimedia Routing Number
IP	Internet Protocol
NAT	Network Address Translation
PBX	Private Branch Exchange
PIN	Personal Identification Number
QoS	Quality of Service
RCS	Rich Communication Suite
RTCP	Real-Time Control Protocol
SBC	Session Border Controller
SIM	Subscriber Identity Module
SIP	Session Initiation Protocol
TN	Telephone Number
ToS	Type of Service
UC	Unified Communications
UI	User Interface
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
VM	Voice Mail
VoIP	Voice Over IP
VPN	Virtual Private Network

XR	Extended Report
Xsi	Xtended Services Interface

12 Appendix A: Third-Party Software and Copyright

This software uses Smack (<http://www.igniterealtime.org/projects/smack/>) with Open source Apache license: <http://www.igniterealtime.org/projects/smack/>.

This software uses DNSJava (<http://www.dnsjava.org/>), with Open source BSD-license: <http://www.dnsjava.org/dnsjava-current/README>

This software uses LCrypto (<http://www.bouncycastle.org/>) with Open source MIT license: <http://www.bouncycastle.org/licence.html>

This software uses libphonenumber (<https://code.google.com/p/libphonenumber/>) with Open source Apache license: <https://code.google.com/p/libphonenumber/>.

This software uses ACRA (<https://code.google.com/p/acra/>) with Open source Apache license: <https://code.google.com/p/acra/>.

This software uses OpenSSL (<http://www.openssl.org/>) with Open source Apache license and Open source BSD-license: <http://www.openssl.org/source/license.html>.

This software uses WebRTC (<http://www.webrtc.org/>) with License: <http://www.webrtc.org/license-rights/license>. Copyright (c) 2011, The WebRTC project authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- * Neither the name of Google nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This software uses OpenH264 with License <https://github.com/cisco/openh264/blob/master/LICENSE>

Copyright (c) 2013, Cisco Systems

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.