



Communication Framework Application Description

Patent Pending, Patent Application No. 2009904883

Converged Communication Network Applications (CCNA) Pty Ltd

PO BOX 643

North Sydney

NSW 2059

Australia.

<http://ccna.com.au>

Technical Support:

<http://ccna.com.au/web/en/contact>

software@ccna.com.au

This guide is frequently updated to reflect changes in the product. The latest version can always be downloaded from <http://ccna.com.au> website. This guide is prepared for Communication Framework Version 10

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Contents

1.	Communication Framework Overview	3
2.	Communication Framework Requirements and Connectors	5
3.	CF Client User Interface.....	6
4.	CF Gadgets	8
5.	Features	9
6.	Features per PBX Vendor	13
7.	Operations.....	14
8.	Application & Error Messages.....	16



1. Communication Framework Overview

Communication Framework is a series of simple, versatile and cost effective Unified Communications applications which is vendor agnostic. For under US\$10, Communication Framework operates with most PC operating systems including Windows, Mac and Linux and the applications which run on the PC including email, user productivity apps, integrating with organisations databases and PBXs without the need for fork lift or major upgrades of existing infrastructure.

Communication Framework works with what you have today and is a universal connector that connects your various systems and applications together to provide your users the benefits of Unified Communication in an open standards approach.

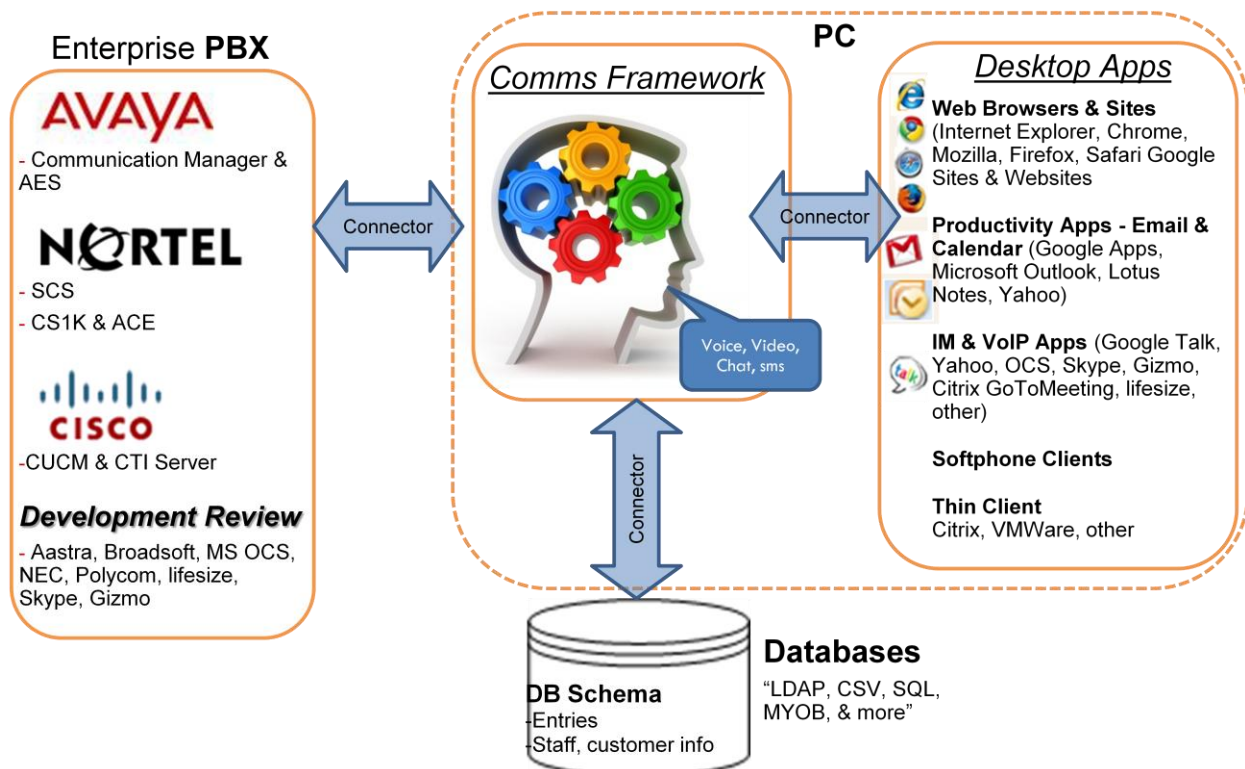


Diagram: Communication Framework Architectural Overview

The Communication Framework Suite of Applications includes:

- 2 Communication Framework Interfaces
 1. **CF Client** for general users
 2. **CF Console** for the operator
- CF Client Gadgets are shortcuts to customer or prebuilt business and communication functions
- CF Companion Tools are a series of business software tools to enhance the CF experience

* CF - Communication Framework

The functionality of Communication Framework "CF Client" is diverse and unique. Communication Framework performs the following 5 functions:



- Perform User Search
 - ▶ Users can search local or corporate directories for users and if they are found within the databases their details are displayed for outbound communications, inbound communications, application sequencing and application linkage

- Outbound Communications
 - ▶ Click to Communicate (call, video, SMS) via any PC application
 - ▶ Conference, transfer, hang-up
 - ▶ Hyperlink calling (Click to dial enable email signatures, calendar invites, Corporate web directories)

- Inbound Communications
 - ▶ Caller Notification – Notifies user of who is calling. Resolves the phone number to the caller name
 - ▶ Caller Intelligence – Displays previous email correspondence from a caller prior to answering the call, via a desktop search engine such as Google Desktop

- Application Sequencing
 - ▶ Launch subsequent applications after the initial call. E.g. Launch a Skype Video call with the audio call

- Application Linkage
 - ▶ Pulls applications services into Communication Framework. E.g. Presence status when you perform a user search on a corporate directory
 - ▶ Connect into applications menu bars
 - ▶ Pass user information (name, number, email address other) to other applications such as a CRM application
 - ▶ Connect into application Menu Toolbars

The other components that complement Communication Framework are:

1. CF Gadgets are shortcuts to customer, vendor or CCNA built business and communication functions such as:
 - a. Communication Tools
 - b. Websites Shortcuts
 - c. Application Executables
2. CF Companion Tools are software tools that either complement
 - a. Communication Framework's function (e.g. Outbound Dialer Application) or
 - b. The communication environment (e.g. PBX to LDAP synchronisation)

This document shall explain the operation of the 5 functional components of Communication Framework, their technical design and CF Client Gadgets.



2. Communication Framework Requirements and Connectors

Communication framework is a Java application with various connectors to PBXs, Databases and Applications.

1. PC Requirements

For Communication Framework to operate on Windows, Mac's and Linux operating systems, these systems MUST be running a minimum version of Java 1.6 runtime application.

2. PBX Interfaces

Communication Framework operates with a number of PBX vendors. To function with the various PBX's, these PBX require the appropriate version, licensing and CTI server where required.

- Avaya
 - ▶ Communication Manager (TSAPI and/or CMAPI Licensing via AES ver3+)
 - ▶ IP Office - TBA
- Cisco
 - ▶ Unified Communication Manager (CUCM Web Dialler interface or via the Cisco CTI Server and licensing)
- Nortel (Avaya)
 - ▶ SCS via SIP Services
 - ▶ CS1K via (SIP CCI (AST), TR87 & AST licensing, CCT CTI Server with approach licensing or ACE)
- Ericsson/Aastra
 - ▶ MX - TBA

3. Database Interfaces

Communication Framework can connect to local and remote databases for the user look up for name, email, phone number or other unique user identified which is used within Communication Framework for inbound & outbound communications, application sequencing and linkage.

Locally, Communication Framework synchronises your local email application contacts.

Remotely, Communication Framework connects to your organisations directory database for corporate wide look ups. Databases include; LDAP, AD, SQL, Access, Excel spreadsheet and more...

4. PC Applications

Communication has connectors for various PC applications. Communication Framework can connect to various applications via:

- Embedding dialing functionality into applications menu. Applications include; MS OCS, Internet Explorer and more...
- Communication Framework "Hyperlink calling API" can be embedded into all applications for automated or automatic dialing.



3. CF Client User Interface

Communication Framework CF Client has 2 User Interfaces based on the function of the user and the level of integration with the PBX. The 2 User Interfaces are:

- ▶ General
- ▶ Console - TBA

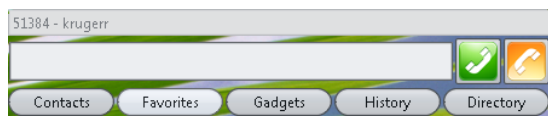


Diagram 3.1 CF Active Mode

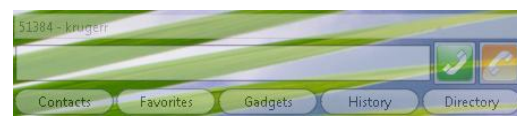


Diagram 3.2 CF Inactive Mode

The CF Client User interface has 2 modes of integration with a PBX.

1. A standard web service integration for outbound only communications
2. CTI integration for full call control and visibility of the call states (on-hook, off-hook, duration on hook and more...) for inbound and outbound communications

The Web Service Integration to the PBX is normally free, where the CTI integration requires additional PBX or CTI licensing.

The standard web service integration performs all the searching, outbound and application sequencing, whilst the CTI integration includes the inbound communication and application linkage functionality.

An Operator Console named "CF Console" shall be available which uses the CTI connector for full call control and visibility of the call states. The operator console has advanced searching capabilities which the General and Advance User Interface do not have.

The CF Client User Interface has 2 modes of operation:

1. Active Mode – Used when accessing any of the functions of Communication Framework
2. Inactive Mode – Communication Framework moves to the background and becomes transparent when not in use.

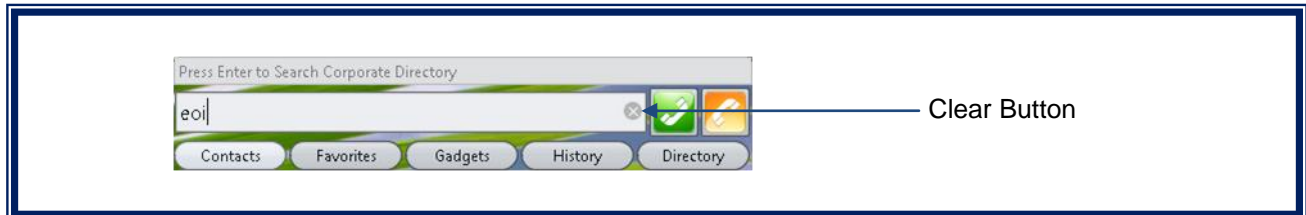
The level of transparency is user adjustable from the Communication Framework Toolbar Icon.

The diagram below outlines the design layout of then General User Interface of Communication Framework





- Information Window – Provides information and error messages for the user. This includes; user login details and extension number, action initiated by the user i.e calling <phone number>, error messages relating to calling and connectivity to PBX, database and other connected systems
- Input Window – Users can enter or copy information (Cntl C) into the input window for calling or to perform a user search. You can clear the information from the input window by pressing the (x) button in the input window



- User Tabs – There are 5 tabs
 - ▶ Contacts – Imports your email application contacts to Communication Framework
 - ▶ Favourites – You can add contacts who are not within your email application or save regularly called users
 - ▶ History – Lists all outbound calls
 - ▶ Gadgets – Shortcuts to complementary business and communication tools
 - ▶ Directory – Access your organisations corporate directory for calling and to perform user search
 - ▶ Each user tab has hidden functions that are accessible by right mousing clicking on the tab. The functions include, add, edit and delete a user, synchronise email contacts, clear all users
- Call & Hang-up Buttons
- Search Results Window – This pop up window allows you to search your local contacts and favourites, view your history. You can narrow down your search by typing the users details into the Input Window.

Within the Search Result Window, there are a number of hidden actions accessible by right mouse clicking on a users details including; call, transfer, conference as well as edit and delete a user/s.



Diagram 3.3 Right mouse click action on users details



4. CF Gadgets

CF “Client” Gadgets are shortcuts to customer, vendor or CCNA built business and communication functions. They provide the user “Clickable” access via the drop down Gadgets toolbar.

A CF Gadget consists of:

- Gadget Name
- Gadget Icon
- Gadget function (CCNA Examples)
 - Communication
 - Phone number
 - Keypad Tones
 - Feature Access Code (Enable and Disable Call Forward and Configure phone number)
 - Caller Treatment (Create individual caller communication rules for inbound calls. Send a specific user to voicemail, to a specific phone number, other)
 - Website Access
 - General Website launching
 - Pass specific searched information to an application frontend to increase productivity
 - Executable
 - Video (e.g. Skype, Tandberg Movi, Lifesize desktop client)
 - Conferencing (Web, audio, video)
 - Call Record



Diagram 4.1: CF Gadgets Toolbar

CF Gadgets are configurable via the Gadget Manager application which is accessed via right mouse clicking on the Gadget button. Gadget may be locked by the administrator so users can not delete specific Gadgets.

Users can create their own specific Gadgets which shall then be accessible via the CF Gadget Toolbar.



5. Features

Communication Framework has 5 core functions. Depending on the PBX integration either Standard Web Service or Advanced CTI determines the functionality per system.

CTI Connect provides complete functional delivery to each user and you have full call control of each call. The operator console requires this level of connectivity.

Standard functionality utilises the free web service of each system. The web service provides most of the functions, however does not have the ability of full call control which is only required for operators and Personal Assistants.

The functions of Communication Framework are:

1. User Search

Users can search local or corporate directories for users and if they are found within the databases their details are displayed for outbound communications, inbound communications, application sequencing and application linkage

Any partial or complete unique user information can be used to perform a search. This includes users; name, email address, employee id, phone numbers and more.

Communication Framework examines and classifies the information which is used in conjunction with the search on the local or corporate directory database.

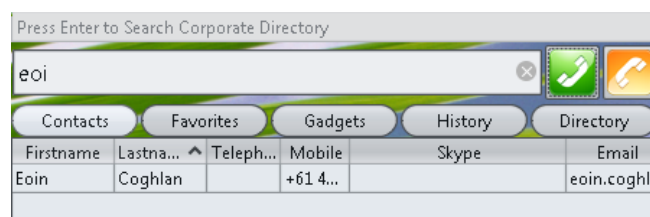
Both local and corporate directory user search results can be narrowed down.

A local user search can be performed by typing in the users details and selecting a tab such as the contact tab.

A dynamic search can be performed by selecting a tab such as the contact tab and the start typing in the details of the user. This includes either there, first or last name, full name, email address or other information that associates a user to the search criteria



To perform a corporate directory user search, the user information must be copied or input into the input window of Communication Framework, and then you must hit the enter button. You can then further narrow down the user by adding additional information of the user.



By pressing the user field in the search results window, you can sort the results by a-z, z-a, 0-9 and 9-0 depending on field you are sorting on



Firstname	Lastna...	Telep...	Mobile	Skype	En
Brett	Jones	+61 2 ...	+61 4...		brettj
Steve	Jones				sjone
Ajay	Kapoor				akkap
NG	Kay Tick		+6596...		ktng@
Harish	Khanna				harish
Ai Ping Na...	Khoo		+65 8...		nkhoc
vivek	khuller		+1650...		vivek

Diagram: Surname Sort

Firstname...	Lastname	Telep...	Mobile	Skype	En
doug	peris		+6594...		doug
Doug	Richards		+6141...		
Douglas	Davis				dadav
Duncan	McGregor		+6421...		
Eclipse	furnitur		02692...		
Eoin	Coghlan		+61 4...		eoin.c
Erwin	chvojan		04006...		

Diagram: First name sort

2. Outbound Communications

Calling, video, sms communications can be initiated via any PC application with Communication Framework.

This can be performed via;

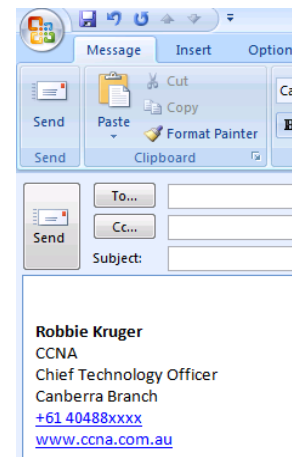
- Copying a users email address from your email application. Right mouse click on email address and copy
 - After you perform the copy "Cntl C" and Communication Framework determines the copied information is user specific like details, Communication Framework shall come to foreground to allow you to narrow down the user from your local or corporate directory or if found immediately the users details are displayed and you can dial the user via any numbers available.
- Copying other details of a user to Communication Framework and then performing a search to resolve the details to a phone number.
- Copying a phone number will bring Communication Framework to the foreground for the user to launch the call. Applications such as Internet explorer has Communication Framework dial function built into the application menu.

Conference, transfer, hang-up and other communication operations are available and are invoked either by

- Performing a search for a user and right click their details to initiate the conference, transfer or other communication operation
- During a call, right mouse clicking on the main menu to invoke the communication operations

Hyperlink calling is the ability to embedded Communication Framework dialing capabilities within a hyperlink. The format of the hyperlink calling is [CFCall://<phone number>](#)

- Hyperlink dialing can be embedded into any application that accepts hyperlinks. Examples of Communication Framework dialing enablement include:
 - Your email signature. Click your name or number and Communication Framework initiates the call between your extension and the clicked upon number. The phone number in the example is Hyperlink enabled.
 - An email calendar invite for a conference
 - A corporate web site directory
 - Any other application which is required to initiate a call between yourself and another party



3. Inbound Communications

The Inbound Communication capabilities of Communication Framework, is to notify the user of whom and why a caller is calling them. This capability is available only when Communication Framework is connected to the



PBX via a CTI connection for full call state control and call details.

There are 3 functions that occur on inbound calls.

1. Caller Notification – A pop up Notification of the callings parties' phone number is displayed on the user's PC screen. Communication Framework shall attempt to resolve the phone number of the calling party to the caller's name and if a name is resolved from the phone number this is popped in the initial window along with the phone number
2. Caller Intelligence – If the phone number is resolved to a name and or email address, Communication Framework shall pass this information to a desktop search engine such as Google Desktop, which shall launch and display previous correspondence with the calling party. The user is able to view the previous correspondence with the caller prior to answering the call
3. The resolved name and other user details (name, location and more...) can be passed to other applications. Examples include:
 - Passing the information to a CRM application for call centre functionality
 - Google maps to display where the caller is calling from
 - Information on the weather of where the calling is from



4. Application Sequencing

Communication Framework can launch subsequent applications after or in conjunction with the initial call. E.g. Launch a Skype Video call with the audio call. The sequenced application details and identification of the user to launch the subsequent application must be available in the local or corporate database.

Communication Framework when it launches the call retrieves all details of the user in the event you wish to communicate or share information with the called party in any other manner via any other application.

In the example below, the searched user has a Skype id. To initiate a Skype call after the audio call to the user, you require pressing the Skype Gadget button. This shall initiate a Video ONLY Skype call to the searched user.

Any sequenced application can be initiated in conjunction or after the Audio call to the user. This could be another communication service or business related application for example an employee rostering application or billing application for a law firm.

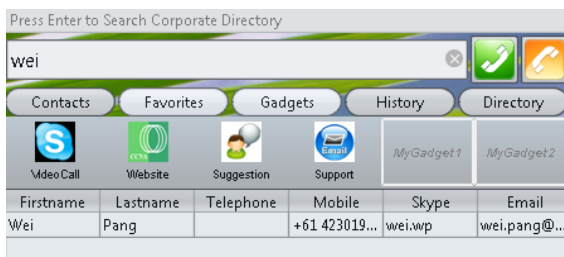


Diagram: Skype Gadget and Search Results

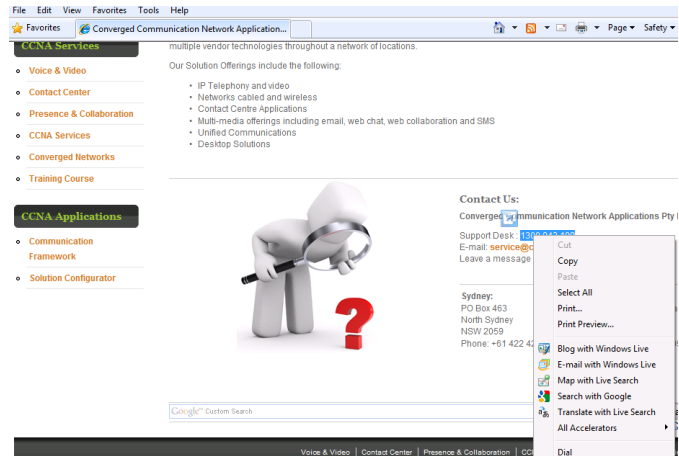
5. Application Linkage

Communication Framework has the functionality to

- Retrieve information from other applications regarding a user such as a users presence status which can be appended to the search result of a user within the Search window of Communication Framework



- Embed dialing\calling functionality into applications via hyperlink calling
- Embed dialing\calling functionality into menu bars of applications. See the internet explorer example to the right with the dial action embedded into the menu
- Pass user information (name, number, email address other) to another application such as a CRM application for a call centre





6. Features per PBX Vendor

User Interfaces / Features	Click to Communicate				Call Features					Advanced Features							User Features				
	Dial	SMS	Video	Web-link Calling	Conference	Hold / Un-hold	Release (Hang up)	Transfer	Line Appearances & Info	Login & Out	Directory Search	Advanced Directory Search	Inbound Caller Notification	Inbound Caller Intelligence	Information Sharing	Application Aggregation (e.g. Skype)	Application Linkage (e.g. Presence Status)	Single Sign On & Extension Mobility	Import Contacts	GUI Transparency	Prebuilt GUI Skin
C2 Client (Web service Integration)	X		X	X	X	X	X	X			X					X	X		X	X	X
C2 Client (CTI Integration)	X	X	X	X	X	X	X	X		X		X	X	X	X	X	X	X	X	X	X
C2 Console	X	X		X		X	X	X	X	X	X	X	X	X		X	X				X
Avaya - TSAPI	X	X	X	X	X		X	X		X	X					X	X		X	X	X
Avaya - CMAPI (CTI)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Cisco - Web Dialer	X	X	X	X			X			X	X					X	X	X	X	X	X
Cisco - CTI Server	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nortel - SCS (SIP)	X	X	X	X			X			X	X		X	X	X	X	X		X	X	X
Nortel - CS1K SIP CCI	X	X	X	X	X		X	X		X	X					X	X		X	X	X
Nortel - CS1K TR87 & AST, CTI or ACE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X

Communication Framework Features per CF User Interface and PBX Vendor

Outbound PBX Vendor Interfaces – Avaya TSAPI, Cisco Web Dialer and Nortels SIP CCI

Inbound, Outbound and Application Linkage PBX Vendor Interfaces – Avaya CMAPI, Cisco CTI and Nortels SIP and TR87 & AST / CTI and or ACE



7. Operations

Communication Framework has a number of business and user operations to enhance the delivery and usage of the application.

1. Installation

Communication Framework is installed via a web server or java standalone executable which includes the configuration file which is created via the Communication Framework Configurator your administrator creates

Once installed, Communication Framework requires user registration via the internet for operation. Registration is used to track users against purchased licenses and to provide the organisation a list of registered users if required.

Once registered, Communication framework shall request you to input your extension number or username and password.

All user information and user settings are saved.

2. Configurator Tool

Communication Framework configuration is performed by the system administrator via the Communication Framework Configurator tool. Communication Framework Configurator tool configures all system configurations including:

- Database Selection and Configuration
- PBX Selection and Configuration
- Enterprise Dialing Rules
- User Interface Colour selection
- Web Server IP address Configuration
- Presence

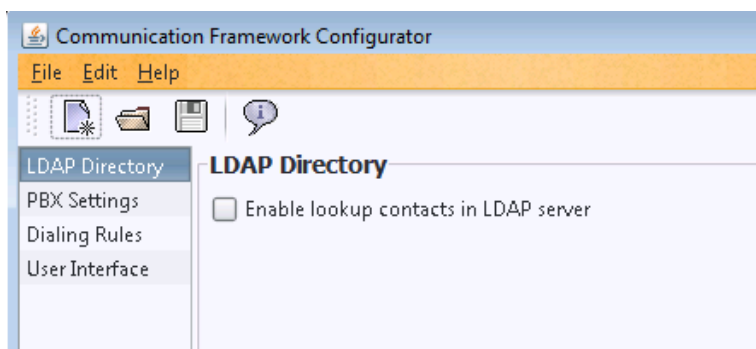


Diagram: Example of CF Configurator Tool

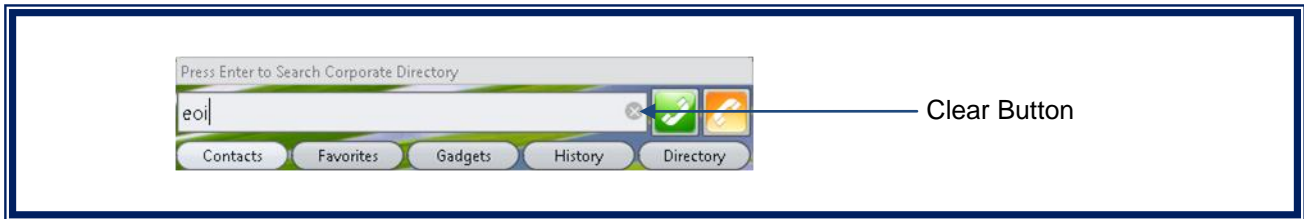
3. CF User Interface

The following operations are all accessible by the user via the toolbar icon of Communication Framework

- Transparency – Change the transparency of Communication Framework when it is inactive. Changing the transparency is via the Communication framework toolbar icon.
- Hide or show the User Interface – The user can hide the application indefinitely
- Bringing the User Interface to the foreground –
 - Communication Framework comes to foreground of your applications if a user performs a “Ctrl-C” on information.
 - Communication Framework examines and classifies the information to determine if the copied



- information is a name, email address, phone number or other unique user information which Communication Framework believes the users wishes to make a call.
- Clear input window. If information resides in the input window, a (x) appears in the window. Pressing the (x) shall clear the window to allow you to insert new user information



4. Import Contacts

A user can import their contacts for Communication Framework; Searching, inbound and outbound calling, application sequencing and linkage.

This is performed by right mouse clicking on the contacts tab and selecting Sync Contacts. This shall import your email client contacts to Communication Framework based on the email application you have defined within Communication Framework.



Diagram: Example of syncing your email contacts with CF

5. Communication Framework coming to the Foreground

Communication Framework can come to the foreground of your applications to initiate communications with a party.

Communication Framework does this when a user copies specific information "Cntl C". A rules based engine within Communication Framework determines if the copied information is user related (name, email address, phone number) and if so will come to the foreground to allow the user to search and initiate a call immediately.

This functionality can be disabled from the Communication Framework toolbar icon

6. Exiting Communication Framework

Exiting the application is via the toolbar

7. Upgrading Communication Framework

Every time the user restarts Communication Framework, Communication Framework attempts to connect to the corporate web server. If Communication Framework connects, it queries the web server to determine if there is a newer version of the Communication Framework application available. If a newer version exists, Communication Framework shall upgrade itself automatically. This usually takes 15 seconds.

8. Change Extension Number

The extension number assigned to Communication Framework is performed when CF is started. Select or enter the Extension associated to CF.





8. Application & Error Messages

Communication Framework displays system and error messages in the Information Window of the User Interface to inform the user of current operational states. The messages are broken into 2 sections:

1. System Messages &
2. Error Messages

Application Messages

- Network Connected – system tray popup message showing “Test Connection” result
- Network Disconnected – system tray popup message showing “Test Connection” result
- LDAP Search Not Enabled – system tray popup message showing “Test Connection” result
- LDAP Connected – system tray popup message showing “Test Connection” result
- LDAP Search Completed – status bar message
- Contact Import Completed – status bar message
- Starting Skype Video Call – status bar message
- Call <phone number>

Error Messages

- Error while Querying LDAP Server – status bar message
- Invalid Phone Number – status bar message
- Call Failed - Active Call Exists – status bar message
- Call Failed - Invalid Credentials – status bar message
- Call Failed - Number or Extension Invalid – status bar message
- Call Failed - Invalid Session – status bar message
- Call Failed - Switch Not Reachable – status bar message
- Call Failed - Missing Resources – status bar message
- Call Failed - PBX Connection Timeout – status bar message
- Transfer Failed - No Active Call Exists – status bar message



About CCNA

Converged Communication Network Applications Pty Ltd (CCNA) is an Australian and Asia Pacific solution and service provider for Enterprise and Government.

CCNA is Services lead company, which specialise in delivering leading technology solutions within the Enterprise, Government, and Carrier market place. The design, development, and implementation of converged communication network applications are the core area of expertise for innovative solutions. Our approach is to provide customers with a flexible technologies outcome lead road map. Convergence design and implementation would initially be focused on ensuring customer network readiness for deploying any converged applications.

Over and above voice and video applications, CCNA focus on ensuring network continuity for such applications as: Unified Communications, Collaboration, Virtualisation, and Mobility real time service offerings. An understanding of all critical business application services ensures that the maximum business returns is achieved across multiple vendors. CCNA customers are developing and deploying multiple vendor technologies throughout a network of locations.

Our Solution Offerings include the following:

- IP Telephony and video
- Networks cabled and wireless
- Contact Centre Applications
- Multi-media offerings including email, web chat, web collaboration and SMS
- Unified Communications
- Desktop Solutions