Alcatel-Lucent OpenTouch Suite for Mid sized and Large Enterprises

OmniPCX Enterprise + OpenTouch Multimedia Services

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Notice:
While reasonable effort is made to ensure that the information in this document is complete and accurate at the time of printing, we cannot assume responsibility for any errors. Changes and/or corrections to the information contained in this document may be incorporated into future issues.
This document introduces the Alcatel-Lucent OpenTouch and OmniPCX Enterprise Communication Server, their products and features. All documents associated to this introduction cover most of the aspects for designing offers based on current manufacturers and business partner agreements. They include introductory explanations to position the offer in relation to client needs. References to in-depth documentation are indicated to direct you to product descriptions or product sites.

Who Should Use this Document?
As an introductory offer, this document can be used by Alcatel-Lucent vendors, clients, partners and associates involved with the implementation of Alcatel-Lucent systems.
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2 Alcatel-Lucent Enterprise changes the conversation

The pace of change in the competitive landscape for enterprises is accelerating, due to global economic, social, and technological shifts; business cycles that used to take days now take hours. Today’s business environment crosses traditional enterprise boundaries: remote or branch offices, global teamwork, mobile professionals, home workers and third-party partners have all become part of today’s enterprise.

**Enterprise communications challenges at the era of smartphones, and tablets**

Although today the majority of information workers are still conducting business from a desk, they are becoming more and more mobile, and the devices they want to use to improve their own personal productivity are must also be increasingly mobile and portable, whether these devices are provided by the company or not.

**80%**

Information workers are desk bound - Forrester - Jan’13

**+40%**

Mobile workforce over next 3 years - Frost & Sullivan - Survey Dec’13

**67%**

Tablets used at work are employee-owned - McKinsey - June’12

**5x**

Cost of attracting new customers vs keeping existing ones - Lee Resources - November’12

Information workers expect the same quality experience whatever their device, wherever they are. These knowledge workers are an essential part in the business processes required to keep customers happy. Considering that, and it is way more expensive to acquire new customers than it is to service existing ones, a key for current businesses is to ensure that they can meet these challenges of delivering quality communications to their entire user population.

**The mission statement of enterprise unified communications**

Unified communications create new opportunities to increase staff productivity and customer satisfaction in this changing environment. The goal of a truly unified communications environment is to improve the efficiency across the entire organization population:
- The employees who primarily work from their office in mission-critical processes (such as someone in the supply chain)
- The increasing number of employees in highly mobile and collaborative workplace (such as a business consultant or sales person)
- And customer facing employees – such as contact center agents or help-desk teams - who spend most of their time in conversation with internal and external parties, having a direct impact on customer satisfaction and business.

**Alcatel-Lucent OpenTouch: high-quality unified communications across the entire organization**

*OpenTouch* improves efficiency by providing high quality unified communications, in the office workplace, between sites, on the go, and across the enterprise boundaries:

- Primarily deskbound employees enjoy an expert business communications experience, to provide instant business responses
- The highly-mobile workforce benefits from new collaborative processes
- The organization’s brands benefit from a superior customer experience, through professional welcome and customer care, to the most advanced e-reputation management in social networks
These user experiences and emerging work styles are delivered by a unified application suite that simplifies management, improves the TCO, and enables smooth transformation paths from TDM technology to cloud optimization.
3 Introducing Alcatel-Lucent OpenTouch Suite offer

Introducing Alcatel-Lucent OpenTouch Suite offer

The Alcatel-Lucent OpenTouch Suite delivers high-quality unified communications. It is a modular software suite for large organizations that require professional business communications, multimedia collaboration at the office and on the go, customer service functionality and management services.

The choice of using traditional, mixed or full IP solutions depends on customer’s business objectives, organization, voice-data convergence projects, and most importantly expected return on investment.

The Alcatel-Lucent OpenTouch Suite for MLE consists of the following products:

- The Alcatel-Lucent OmniPCX Enterprise Communication Server: a standard-based, open, distributed communication server for medium to extra large corporations, supporting both traditional phone connectivity and IP configurations, providing the world’s most scalable, advanced business communication services and applications. The Alcatel-Lucent OmniPCX Enterprise Communication Server solution accommodates current needs and future upgrades imposed by rapidly changing business communications requirements.

- The Alcatel-Lucent OpenTouch Multimedia Services (OTMS): Employees who need powerful interactive visual communication will benefit from OpenTouch Conversation, the multi-device, multiparty, multimedia experience for easy collaboration at the office and on the go. OpenTouch Conversation sessions feature voice, video, instant messaging (IM), presentation sharing and natural conferencing capabilities to help users better engage with customers, partners and colleagues. Users are able to shift their session between their devices when they move to another location. They can create and join multiparty and multimedia conferences in a few clicks.

- The Alcatel-Lucent OpenTouch Message Center (OTMC).


- The Alcatel-Lucent OmniTouch Contact Center: the best in class call center solution. It is integrated to the Communications Server and features the same security and redundancy level.

Alcatel-Lucent helps companies to build complete converged solutions with its reliable, highly secure, next generation data portfolio. The important ROI increases and TCO decreases are generated from extremely efficient features such as PoE, continuous smart switching, network access control, power consumption, one click QoS, etc.
4 Devices and Clients for Connection users

4.1 Defining the Connection user experience

Employees who primarily make extensive use of voice communications benefit from the OpenTouch Connection, the advanced business communications experience available from reliable Digital or IP deskphones, as well as sturdy DECT or WLAN mobile handsets.

Users can pick the telephony features that suit their office work style from the comprehensive list of telephony features offered by the Alcatel-Lucent OmniPCX™ Enterprise Communication Server.

Office workers enjoy high-quality, wideband voice communications with easy audio and visual guidance, and ultra-fast directory look-up from the phone keyboard.

OpenTouch Connection user experience can be enriched with software clients for PCs, smartphones or tablets that boost their productivity in the office and on the go.

Examples of the OpenTouch Connection experience and applications

4.2 Business Telephony with hardphone

4.2.1 Premium DeskPhones

The Alcatel-Lucent Premium DeskPhones benefit from a new industrial design to enhance telephony experience. They come with an adjustable foot stand, enhanced audio quality, improved usability with backlit displays, dedicated functions keys and alphabetic keyboards.

Alcatel-Lucent 80x9 are digital deskphones and Alcatel-Lucent 80x8 are IP deskphones. They are equipped with an alphabetic keyboard and an adjustable foot stand ranging from 25° to 60°.
Phone capabilities can be extended with Premium Add-on 10 & 40 keys modules or Premium Smart display 14 keys module.

8068/8068BT Premium DeskPhone

- A Bluetooth® handset or wired Comfort Handset Hearing Aid Compatible
- 3.5 mm headset jack
- Alphabetic keyboard
- A wideband speaker for optimized sound

LED
- Flashing blue: arrival of a new call
- Flashing orange: alarm

Navigation
- Color screen
- 10 dedicated functions keys

Permanent features keys: Quick access to the phone’s main features
**8038/8039 Premium DeskPhone**

- **LED**
  - Flashing blue: arrival of a new call
  - Flashing orange: alarm

- **Comfort Handset Hearing Aid Compatible**

- **3.5 mm headset jack**

- **Alphabetic keyboard**

- **A wideband speaker for optimized sound**

**8028/8029 Premium DeskPhone**

- **LED**
  - Flashing blue: arrival of a new call
  - Flashing orange: alarm

- **Comfort Handset Hearing Aid Compatible**

- **3.5 mm headset jack**

- **Monochrome screen**
  - 6 dedicated functions keys

- **Navigation**

- **Permanent features keys: Quick access to the phone’s main features**

- **A wideband speaker for optimized sound**
4.2.2 OpenTouch Connection for 8082 My IC Phone

The Alcatel-Lucent OpenTouch™ Connection for 8082 is a new usage brought by the Alcatel-Lucent 8082 My IC Phone device. This new usage is taking benefit of the fully featured integrated IP connectivity and telephony already available on Alcatel-Lucent Premium DeskPhones (8068) sets by using the Alcatel-Lucent New Office Environment (NOE) protocol.

It offers an unprecedented level of comfort at the desk with high-quality wideband audio capacity and always-on availability. Its capacitive touch screen integrated into its award-winning design brings intuitive ergonomics and enhanced effective usage compared to a more standard business phone.

Open connectivity supports easy expansion
10/100/1000 Ethernet switch for LAN and PC connectivity
Embedded BT chipset - 3.5 mm headset port
Power supply and PoE (Class 3) support

Access in one touch
A sensitive Home key
4 Sensitive keys to pilot your audio
4 Sensitive keys to access your main applications

Wide touch screen
7-inch capacitive touch screen
LED-backlit

Outstanding audio
Full duplex wideband communications
Bluetooth handset
Large loudspeaker with High Fidelity audio

An adjustable base

The 8082 My IC Phone set supports 802.3AF power over Ethernet (PoE) (Class 3), and the maximum power in use is less than 8.2 W. An open connectivity supports easy expansion with a 10/100/1000 Ethernet switch for LAN and PC connectivity, an embedded Bluetooth chipset, a 3.5 mm headset port, as well as connectors for handset.

To reduce and simplify the wiring requirements, the 8082 My IC Phone is powered via Ethernet, using PoE (Power over Ethernet) technology. It also allows the system to be secured more easily. In some customer deployment the power adapter can be directly used.

Two references exist in the catalog, one delivers the phone with a Bluetooth handset, the other reference delivers the phone with a Comfort handset.
4.2.3 OmniTouch 4135 SIP Conference Phone

The Alcatel-Lucent OmniTouch™ 4135 SIP Conference Phone is a high-quality, easy-to-use audio conferencing module. SIP-based, it offers four simultaneous connections to create a five-way call for more efficient conferences. Calls can be recorded (on an SD memory card) and stored.

The conference guide enables calls to pre-programmed groups. With expansion microphones, the OmniTouch 4135 SIP Conference Phone is the business phone of choice for large conferences.

- Up to four user profiles can be saved with settings and contact details
- Call recording function on the SD memory card enables meetings and file notes to be saved and transferred to a computer
- A conference guide enables group calls – All participants in a group can be contacted at the same time with one button access. Up to 20 groups can be stored per profile.
- It contains an LDAP client with direct access to the directory via a dedicated key
- It is easy to configure with the Web interface – Settings can be imported and exported to other OmniTouch 4135 IP Conference Phones.
- Expansion for large rooms – A combination of the unit’s omnidirectional microphone with directional microphones increases voice pickup by two (from 30 m² (320 ft²) to 60 m² (620ft²)).

4.2.4 81x5 Audioffice

The Alcatel-Lucent 8115 Audioffice and the Alcatel-Lucent 8125 Audioffice are next-generation conference modules that add premium quality sound and easy-to-use audio conferencing capabilities to Alcatel-Lucent Deskphones and Softphones.

Audioffice is a versatile smart object with a simple, uncluttered design and outstanding audio performance that can greatly improve any conferencing situation. With six broadband speakers, four digital microphones, a passive radiator for bass boost and immersive spatial sound, Audioffice will foster more dynamic, nuanced and productive conversations between Alcatel-Lucent end-points for business communications.

The Alcatel-Lucent 8115 Audioffice features a 3.5 mm input/output jack to connect to Alcatel-Lucent Deskphones, and a USB port to connect to Personal Computers.

The Alcatel-Lucent 8125 Audioffice features a 3.5 mm input/output jack to connect to Alcatel-Lucent Deskphones, a USB port to connect to Personal Computers, Bluetooth connectivity for
Bluetooth enabled deskphones, smartphone and tablet and a universal docking solution for smartphones and tablets.

**Alcatel-Lucent 8115 Audiooffice**

**Alcatel-Lucent 8125 Audiooffice**

### 4.3 Mobility WLAN

**WLAN Offer**

In many business environments, mobility is an ever increasing priority, but the ways in which end-users communicate evolve constantly. Within company premises, end-users get accustomed to comfortable and efficient methods to ensure voice and data communication exchanges. Away from the desks, but still at work, they are entitled to expect the same facilities and services.

Alcatel-Lucent, the leader in wireless voice solutions for the workplace, offers the industry’s most advanced Voice over IP (VoIP) service for Wireless LAN (WLAN) networks, namely VoWLAN (Voice over Wireless LAN) or VoIP on WLAN.
To meet corporate user mobility requirements in company premises, Alcatel-Lucent provides a range of VoWLAN solutions for businesses in search of a scalable, secure WLAN network to deliver high performance user access, supporting location tracking applications.

Based on global standards for WLANs, Alcatel-Lucent VoWLAN solutions simplify network infrastructure by allowing converged voice and data traffic over a common wireless broadband (802.11a/b/g/n) network.

**VoWLAN handsets**

Alcatel-Lucent offers the industry's most versatile and complete wireless solution for the workplace. Mobile IP Touch Wireless Telephones are designed for a broad range of enterprise applications, from general office to industrial use.

![](image)

The Alcatel-Lucent OmniTouch 8118/8128 WLAN Handsets provide:

- Time saving benefits for voice and data applications
- Alcatel-Lucent proprietary protocol phone services such as caller name display for phone book members
- Excellent voice quality throughout the workplace
- Improvements for mobility, responsiveness, and productivity

The lightweight OmniTouch 8118/8128 WLAN Handsets are extremely simple to use, require minimal training, and are durable enough to withstand the rigors of workplace use. The rugged design has no moving parts or external antenna. A complete set of accessories is available including headsets, chargers, and carrying cases. OmniTouch 8118/8128 WLAN Handset offer more than just telephone communication.

A push-to-talk functionality is available with the Alcatel-Lucent OmniTouch 8128 WLAN Handset to broadcast communication between employees, eliminating the need for two-way radios or walkie-talkies. By putting Wireless to Work, Alcatel-Lucent has helped many commercial enterprises to improve productivity, responsiveness, and customer service.

Alcatel-Lucent's enterprise telephony integration capabilities, standards-based wireless architecture, excellent voice quality, and portfolio of handsets make Mobile IP Touch wireless telephones the right choice for wireless LAN telephony.
The Alcatel-Lucent OmniPCX Enterprise Communication Server R11.x supports configurations without any additional servers for WLAN handsets in an Alcatel-Lucent WLAN infrastructure. The Alcatel-Lucent OmniTouch 8118/8128 WLAN Handsets support:

- 802.11e Wi-Fi Multi Media (WMM)
- Enhanced Distributed Channel Access (EDCA)
- WMM Power Save (U-APSD)

## 4.4 Mobility DECT

### Dect Offer

To meet corporate user mobility requirements in company premises, the Alcatel-Lucent OmniPCX Enterprise Communication Server offers a wireless telephone service based on the international DECT (Digital Enhanced Cordless Telecommunications) standard.

The DECT standard is a cellular technology that uses the 1880/1900 MHz frequency band. DECT is available:

- In all European countries
- In a large number of Asian and African countries. The 1900/1930 MHz bandwidth is used for Thailand and Latin American.

The DECT standard is designed to provide mobility services in environments with high user density such as large buildings or campuses: 10 000 Erlangs/Km sq. (GSM 200 Erlangs/Km sq., DCS 500 Erlangs/Km sq.).

This standard is based on a digital technology providing high quality communication, with Roaming and Handover (Handoff) capabilities.

CDCS (continuous dynamic channel selection) is a unique feature that ensures that every mobile phone operates on the best available radio channel. In addition, no frequency planning is required when adding a radio base station. All base stations can transmit on any channel.

The Alcatel-Lucent OmniPCX Enterprise Communication Server integrates mobility components based on the DECT technology, offering ergonomics, security, and user-friendly management.

### Alcatel-Lucent DECT handsets

This product line, fully compatible with existing indoor and outdoor Alcatel-Lucent base stations, is based on three products:
The Alcatel-Lucent 8232/8242 DECT Handsets are designed to suit the voice requirements of employees who are away from their office. They offer access to the same added value voice services as Alcatel-Lucent fixed desk digital phones. They are equipped with a color display and can be dedicated to the intensive mobility needs of most companies today.

Designed as a high-end business terminal with capabilities such as a large color screen for crystal clear readability and HD Audio-Ready technology for superior audibility, the 8242 DECT handset also provides notification, and location capabilities, as well as a one-button alarm function to address verticals such as hospitality, healthcare or any other on-demand environment.

Alcatel-Lucent Mobile DECT 500 is mainly designed for isolated workers in harder physical conditions or explosive environments.

The products benefit from an improved usability through functions like backlight display and a vibrate mode.

### 4.5 PC & MAC Software applications

#### 4.5.1 OpenTouch Connection for PC

**Introduction**

The OpenTouch Connection for PC is an enterprise-grade softphone application that manages communications easily and efficiently, all from the computer desktop. This application can be used as business phone companion or can replace a deskphone. It provides the following capabilities: manage incoming and outgoing calls; display when contacts are available; provide a snapshot of all activities (call backs, new voice mail, and missed calls); search for local or corporate contacts; and manage voice messages. All these features are available from any location and use one single identity no matter which device is being used.
The OpenTouch Connection seamlessly integrates with Microsoft® Outlook™, Microsoft® Lync™, IBM® Notes™ and IBM® Sametime™ applications to provide telephony and messaging services. Users can also easily schedule and manage OpenTouch conferences from Microsoft Outlook.

![Session window](image1)

**Figure 1** Session window

![Search bar and taskbar icon](image2)

**Figure 2** Search bar and taskbar icon

## Benefits

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bring business-class IP telephony to the desktop</strong></td>
<td>The OpenTouch Connection is a softphone with high-fidelity wideband audio and deskphone control features (include the capability to make calls, receive calls, clear calls, forward calls, transfer calls, conduct three-party conference calls, hold/retrieve calls, and switch between calls). The OpenTouch Connection for Microsoft® Windows™ PCs makes voice communications simple and reliable.</td>
</tr>
<tr>
<td><strong>Work from anywhere</strong></td>
<td>Regardless of user location (on the company premises or off-site), the application boosts productivity by providing quick access to enterprise-grade business communication features and services, including: telephony services, event notification, corporate directory, communication history, and colleagues’ availability.</td>
</tr>
<tr>
<td><strong>Maintain a single identity</strong></td>
<td>Employees can be contacted faster and more efficiently with a single business identity when using the deskphone, PC, mobile phone, or any</td>
</tr>
</tbody>
</table>

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Monitor colleague’s availability

Telephone presence allows users to visually monitor whether colleagues’ phones are on- or off-hook. This helps users to avoid placing calls when the other party is unavailable and reduces the time spent recording and/or listening to voice messages.

Collaborate directly from Microsoft and IBM business applications

Access OpenTouch Connection application capabilities from any common Microsoft and IBM desktop applications, and:
- Click-to-initiate voice calls and click-to-play voice messages from contact cards and email when using Microsoft Outlook or IBM Notes.
- Schedule and manage OpenTouch conferences from Microsoft Outlook.
- Complement Microsoft Lync and IBM Sametime collaborative workspaces with enterprise telephony, messaging services and phone presence.

Communicate securely

Wherever employees work – on company premises or off-site – the OpenTouch Connection for PC allows secure communications with colleagues and customers.

Features

The OpenTouch Connection for PC can be used in the following contexts:
- Deskphone control
  - Users control their business phone from their PC while in the office.
- Mobility mode (also called “Nomadic” mode)
When away from their office, users can:

- Associate a PSTN number (e.g. mobile phone, home phone) with the OpenTouch Connection
- Or use voice over IP (SIP-based communications)

- Their business phone is frozen while in this mode.
- Voices over IP communications are SIP-based with narrowband (G.711u/a, G.729a/b, G.723.1) and wideband (G.722.2) audio codecs.

**Softphone mode**

- Users can make and receive phone calls from anywhere and can access the corporate network from their Personal Computer.
- Voice over IP communications are SIP-based with narrowband (G.711u/a, G.729a/b, G.723.1) and wideband (G.722.2) audio codecs.

**The main features of the OpenTouch Connection are:**

**Enterprise-class IP telephony**

- Make, receive, and control phone calls from the office or off-site.
- Use traditional telephony features with business-quality audio.
- Click-to-call from typical Microsoft and IBM desktop applications (Outlook, Lync, Notes, Sametime) without having to look up for phone numbers.
- Use integrated call control features for Plantronics® and Jabra® audio devices, including call answer/end and synchronized mute.

**Single identity**

- Users maintain a single business identity – with only one phone number – whether the device they are using is a PC, deskphone, mobile phone, or any other device.

**Contacts**

- Search for local (Microsoft Outlook) and corporate contacts.

**Phone presence**

- View colleague availability in real-time and avoid placing phone calls when the other party is on the telephone.

**Communication history**

- View information on previous communications and quickly redial a party.

**Notifications**

- Check new voice messages, missed calls and callback requests.

**Visual voicemail**

- Display and manage voice messages as easily as e-mails using the visual voicemail interface where messages can be selected, played back or deleted in any order.

**Microsoft integration**

- Use Outlook to click-to-initiate voice calls from contact cards and email, and to click-to-play voice messages from an e-mail.
• Complement Lync collaborative workspaces with enterprise telephony, messaging services and phone presence with an external control pane.
• Schedule conferences from Outlook; sending an e-mail invitation or Outlook appointment which includes a link to the conference.

IBM integration
• Use Notes to click-to-initiate voice calls from contact cards and email, and to click-to-play voice messages from an e-mail.
• Complement Sametime collaborative workspaces with enterprise telephony, messaging services and phone presence via an embedded panel.

Virtual environments
• Complement deskphones (Voice over IP is not supported) by deploying the OpenTouch Connection for PC in virtual environments using Citrix® XenApp™ 6.5 and Microsoft® Windows Server™ 2008 Remote Desktop Services (RDS).

Secure access to corporate infrastructure
• Reverse proxy support.
• Session border controller (SBC) support.
• Virtual private network (VPN) support.

Figure 5 Notifications and Call history

Figure 6 Visual voicemail
4.5.1.1 Microsoft integration

The OpenTouch Connection is complemented with Microsoft Outlook (versions 2010 and 2013) add-ins for:

- Conference scheduling
- Telephony and messaging services
- Searching personal contacts

OpenTouch Connection complements Lync 2010 collaborative workspace with telephony services, messaging services and phone presence.

Conferencing add-in for Microsoft Outlook

Use Microsoft Outlook to schedule OpenTouch conferences. Participants receive an e-mail invitation or Outlook appointment that includes a link to the conference.

Click the Conferencing icon to create a new OpenTouch conference (this creates a new appointment in the Calendar with the selected date and hour) or start creating an appointment and then click the OpenTouch conference icon:
Telephony and Messaging add-in for Microsoft Outlook

Use Microsoft Outlook (via an add-in available in the Outlook Ribbon) to:

- Click-to-initiate voice calls from contact cards and e-mails
- Click-to-play voice messages from e-mails

Call the sender of an e-mail or make a call from a contact card:
Figure 10 Call from an e-mail

Figure 11 Call from a contact card

Play a voice message received via an e-mail (when using the unified messaging store based on the e-mail server):

Figure 12 Play a voice message received in an e-mail

Use the Record button (when creating a new mail, when replying to or forwarding an e-mail) to add a voice message (.wav file) to an e-mail:

Figure 13 Record and send voice messages

Microsoft Lync integration

The OpenTouch Connection complements the Microsoft Lync 2010 collaborative workspace (client-to-client integration) with enterprise telephony, messaging services and phone presence using an external control pane.
The OpenTouch Connection control pane for Microsoft Lync provides:

- Deskphone control
- Inbuilt softphone with wide-band audio (G.722.2) for PC to PC communications
- Phone presence
- Drag and call
- Direct dial
- Primary device management ("current phone" for the audio media)
- Notifications
- Call session management, call control, call forwarding
- Call history
- Visual voicemail
- Single sign in
- SIP TLS/SRTP (with Reverse Proxy and SBC network elements) for PC to PC communications
4.5.1.2 IBM integration

Telephony and Messaging add-in for IBM Notes

Use Notes to click-to-initiate voice calls from contact cards and e-mails, and to click-to-play voice messages from an e-mail.

- Call the sender of an e-mail or make a call from a contact card.
- Play a voice message received via an e-mail (when using the unified messaging store based on the e-mail server).
- Use the Record button (when creating a new mail, when replying or forwarding an e-mail) to add a voice message (.wav file) to an e-mail.
IBM Sametime integration

The OpenTouch Connection for IBM Sametime 8.5.x uses best in class unified communications capabilities from Alcatel-Lucent and IBM to transform the business processes and reach new levels of productivity. This easy-to-use desktop integration:

- Complements IBM collaborative workspace with Alcatel-Lucent business-class telephony capabilities and unified messaging services with:
  - Built on Sametime user expertise
  - Real time presence updates
  - Click-to-call from the contact list
- Increases productivity and speeds decision making by streamlining communications
  - Enriches existing IBM Sametime presence and instant messaging capabilities with a broad set of Alcatel-Lucent unified communications services
- Provides a single call-control architecture

<table>
<thead>
<tr>
<th>KEY FEATURES</th>
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<tbody>
<tr>
<td>Hardphone control or VoIP with the Personal Computer (high audio quality with G.722.2 wide band codec)</td>
</tr>
<tr>
<td>Phone presence of the Lotus Sametime contact whom the user wants to reach</td>
</tr>
<tr>
<td>Place a business call from the Lotus Sametime buddy list</td>
</tr>
<tr>
<td>Inbound call notification (move calls to the voice mail, to a phone number, answer with an instant message)</td>
</tr>
<tr>
<td>Notifications (displays missed calls, callback requests and new voice messages)</td>
</tr>
<tr>
<td>Visual voicemail</td>
</tr>
<tr>
<td>Business call history (display all incoming and outgoing calls)</td>
</tr>
<tr>
<td>Call forwarding (forward calls to the voice mail, or other pre-defined phone number)</td>
</tr>
<tr>
<td>Call session management (with mid-call control features, rich presence, call information...)</td>
</tr>
<tr>
<td>Media blending</td>
</tr>
<tr>
<td>Anywhere access: select any phone to be your current phone for making and receiving calls</td>
</tr>
</tbody>
</table>
Easy desktop integration and deployment

Single sign in

IBM Sametime and OpenTouch Connection clients are joined and appear as a unified user interface. The Sametime client uses the same extension as the OpenTouch Connection for Remote Call Control or the Softphone mode.

Calls originating from the Sametime client are routed through the OpenTouch Connection client. The OpenTouch Connection client is installed on the same machine as the Sametime client. Integration is available when the Sametime user is logged in.

Figure 17 OpenTouch Connection panel for IBM Sametime
4.5.2 IP Desktop Softphone for PC and MAC

The IP Desktop Softphone is a voice telephony application installed on a user’s desktop (PC or MAC). This fully-integrated, multimedia telephony solution completely replaces physical phones, when desktop connection is the preferred communication mode. The IP Desktop Softphone emulates a 8068 Premium DeskPhone. The application is quick and easy to install. User-friendly, it accommodates customizations to suit user preferences. This application makes it transparent for remote workers to phone and to be called as long as they are connected to their network using their company VPN.

Benefits

- Fully-integrated telephony solution
- Quick and user-friendly access to telephone facilities
- Help businesses optimize staff productivity
- 8082 My IC Phone user experience for fast adoption
- Easy integration of remote and home workers, especially when desktop connection is the preferred communication mode
- Carbon footprint reduction
- Communications, connectivity and hardware costs control

Features

- VoIP protocol provides voice communications on the computer
- Runs under MS Windows, Apple MAC OS
- Available off-site anywhere the user is able to connect to the company IP network via a company VPN (works on Ethernet, Wi-Fi, 3G/4G cellular)
- Available on-site on wired Ethernet connection or Wi-Fi
- Suitable in both Business and Contact Center environments
- G.711 and G.729 codecs are supported
- The user interface can be personalized
- Identical display and keys as the 8082 My IC Phone
- Desk sharing is supported
• Telephony is supported on any CTI environment (for example: Contact Center agent workspace, Desktop Application, TSAPI or specific CTI Toolbar)
• QoS Level 3 IP TOS / DSCP
• Up to 15 different ring tones
• Customized skins can be created to meet specific client needs on demand
• It is also possible to adapt the application on demand to meet specific needs

4.6 Smartphone Software applications

4.6.1 My Instant Communicator Mobile edition for Connection User

Benefits
• Borderless office
  o Users have access to unified communication capabilities everywhere (on-site and off-site) so that they are able to get business notification events (voice mail, callback request, missed call notifications, instant messages) and access enterprise-grade services (e.g., corporate directory, telephony presence, instant messaging and collaboration/conferencing) regardless of their location.
• Increases first-call resolution
  o Single business number for any user - Avoids wasting time by having one number that automatically follows a user across multiple phones (fixed and smartphone).
  o Media blending - Provides additional media options for answering a call such as email or instant message.
• Controls/reduces costs
  o Cellular: significantly reduces smart phone costs with savings on long distance calls.
  o Use of Wi-Fi when at the office or home.
  o Least cost routing: set up rule-based policies to reduce international direct dial and roaming charges.
• Consistent graphical user experience (common look and feel)
  o Allows users familiar with MIC Mobile Edition to instantly know how to use any mobile device.

Features
• Consistent graphical user interface regardless of the device used (common user experience)
• Single business number
  o One single phone number for fixed and smartphone devices
  o Single business identity, whatever the device used
  o Capability to control ringing (fixed and mobile or fixed phone only)
• Single business voice mail
  o Visual voicemail interface for displaying and managing voice messages as e-mails
• Directory lookup
  o Search local and corporate contacts
- Business call history
- Notifications at a glance
  - New voice messages
  - Callback requests
  - Missed calls
  - Instant messages
- Business caller identification
- Make a call
  - From the local contact list or corporate directory
  - From the enterprise dialing plan
  - From the business call history list
  - From the voice mail interface
  - Through the attendant or company switchboard operator
- Mid-call control
  - Make a call, take a call, clear a call, call forwarding, call transfer, three-party conference, hold/retrieve call, switch between calls, etc.
- Device handoff
  - Move an active call from a smartphone to a fixed phone
- Media blending
  - Capability to answer using a media other than voice such as e-mail or instant messaging
- Rich presence
  - Contact presence
  - Phone presence
- Instant conference
  - Set up and join conferencing calls instantly, anywhere
- Secure instant messaging and collaboration
  - Set up collaboration anywhere (from chat to data sharing)
- Data over Wi-Fi
  - Automatic switch to trusted WLAN (roaming)
- Secure access to enterprise
  - Reverse Proxy https support
  - Native BlackBerry Enterprise Server (BES) secured channel
- Business and private lifestyle management
  - Business mode: Incoming and outgoing calls are processed via the Alcatel-Lucent communication server. Business notification events are presented
  - Private mode: Incoming and outgoing calls are directly processed by the mobile carrier (no business notification events)
- Automatic fallback
  - Enterprise-grade voice services remain available (due to fallback in-band DTMF codes) when the secure data channel is off
- Least cost routing
• Allows savings for international roaming (set up of rule-based policies by the system administrator)

• Application management
  o Software download over-the-air
  o Remote configuration and provisioning through Alcatel-Lucent client management functions

4.6.2 IP Desktop Softphone for iPhone

The IP Desktop Softphone is a voice telephony application installed on a user’s Apple iPhone or iPod touch. This multimedia, fully-integrated telephony solution completely replaces physical phones. The IP Desktop Softphone emulates a 8068 Premium DeskPhone. The application is quick and easy to install. User-friendly, it accommodates customizations to suit user preferences. This application makes it transparent for remote workers to phone and to be called as long as they are connected to their network using their company VPN.
The IP Desktop Softphone for iPhone and iPad is available on the Apple Store.

**Benefits**
- Fully-integrated telephony solution
- Quick and user-friendly access to telephone facilities
- Help businesses optimize their employee's productivity
- 8082 My IC Phone user experience for fast adoption
- Easy integration of remote and home workers, especially when desktop connection is the preferred communication mode
- Carbon footprint reduction
- Communications, connectivity and hardware costs control

**Features**
- VoIP protocol provides voice communications on the iPhone and iPad
- Available off-site anywhere the user is able to connect the customer IP network via a company VPN (works on Ethernet, Wi-Fi, 3G/4G cellular)
- Available on-site on wired Ethernet connection or Wi-Fi
- Suitable in both Business and Contact Center environments
- G.711 and G.729 codecs are supported
- The user interface can be personalized
- Identical display and keys as the 8082 My IC Phone
- Desk sharing is supported
- Horizontal/vertical flip and horizontal full screen on the iPhone
- Telephony is supported on any CTI environment (ex: Contact Center agent workspace, Desktop Application, TSAPI or specific CTI Toolbar)
- QoS Level 3 IP TOS / DSCP
- Up to 15 different ring tones
- Customized skins can be created to meet specific client needs on demand
- It is also possible to adapt the application on demand to meet specific needs

### 4.7 IP Desktop Softphone for Android and iPad tablets

The IP Desktop Softphone is a voice telephony application installed on a user’s tablet (Apple iPad or Android). This multimedia, fully-integrated telephony solution completely replaces physical phones. The IP Desktop Softphone emulates a 8068 Premium DeskPhone. The application is quick and easy to install. User-friendly, it accommodates customizations to suit user preferences. This application makes it transparent for remote workers to phone and to be called as long as they are connected to their network using their company VPN.

The IP Desktop Softphone for iPad is available on the Apple Store and on Google Play for Android devices.
Benefits

- Fully-integrated telephony solution
- Quick and user-friendly access to telephone facilities
- Help businesses optimize their employee’s productivity
- 8082 My IC Phone user experience for fast adoption
- Easy integration of remote and home workers, especially when desktop connection is the preferred communication mode
- Carbon footprint reduction
- Communications, connectivity and hardware costs control

Features

- VoIP protocol provides voice communications on tablets and smartphones
- Runs under Apple iOS and Android (please check the list of compatible Android devices in the Services Applications Compatibility Matrix available on the Alcatel-Lucent Enterprise Business Portal)
- Available off-site anywhere the user is able to connect to the company IP network via a company VPN (works on Ethernet, Wi-Fi, 3G/4G cellular)
- Available on-site on wired Ethernet connection or Wi-Fi
- Suitable in both Business and Contact Center environments
- G.711 and G.729 codecs are supported
- The user interface can be personalized
- Identical display and keys as the 8082 My IC Phone
- Desk sharing is supported (except on Android devices)
- Horizontal/vertical flip and horizontal full screen
- Telephony is supported on any CTI environment (ex: Contact Center agent workspace, Desktop Application, TSAPI or specific CTI Toolbar)
- QoS Level 3 IP TOS / DSCP
- Up to 15 different ring tones
- Customized skins can be created to meet specific client needs on demand
- It is also possible to adapt the application on demand to meet specific needs
5 Devices and Clients for Conversation users

5.1 Defining the Conversation user experience

Conversation user profile

Employees who need powerful interactive visual communication benefit from OpenTouch Conversation, the multi-device, multiparty, multimedia experience for easy collaboration at the office and on the go on entry level to the most advanced SIP Business Phones, software clients for PCs, smartphones, tablets and WEB interface.

OpenTouch Conversation sessions feature voice, video, instant messaging (IM), presentation sharing and natural conferencing capabilities to help users better engage with customers, partners and colleagues. Users can move from a phone call to a conference call simply by adding people to the conversation — and can add video, show presentations, and exchange files with ease. Employees can optimize their time by transferring calls to their smartphone, tablet, videoconferencing end-point, or PC without interruption.

OpenTouch Conversation adapts to the way that users work, fostering conversations that enrich their business. The OpenTouch Conversation app supports native operating systems for Apple® iPad™, Apple® iPhone™, Microsoft® Windows™, and Android™ devices. The OpenTouch Conversation web client supports Google® Chrome™, Mozilla® Firefox™, Microsoft® Internet Explorer™, and Apple® Safari™ web browsers. No matter the device or platform, OpenTouch Conversation supports business communications needs.

Examples of the OpenTouch Conversation experience and applications
Conversation Services

Conversations across the company:

Social Imperative

Multi-party: **Native conferencing capabilities** during a conversation, at any time

Multi-device: **Rapid session shift** between devices while keeping the same context, no disruption or latency

Multimedia: **Seamless. Audio-video-document** sharing **escalations**

OpenTouch multi-device features

One-number routing

A user has one directory name and number. Calls to this number can be routed to the device of choice or to several devices at the same time. Depending on the working environment, the user can define routing rules to specify to which business devices (including business phone, mobile, tablet and PC), voice mail or other number calls are routed, and from which devices calls can be made. Users, while benefiting from OpenTouch advanced services, can always be reached whether they are on-site or off-site.

*Refer to device specific sections for further details.*

*Note: if the call is routed to a Mobile that is off-line, the call will go to the mobile’s voicemail system.*

**Rapid session shift** between devices
With the **One Number** feature, all the user’s devices can be rung at the same time. When the call is established, the call can be switched to another device with no contact loss or music on hold.

Session shift can be activated by a user on an outgoing call or when the user receives an incoming call.

The user presses a key or selects a menu on the initial device or on the target device. 

*Refer to device specific sections for further details.*

**Deskphone and mobile phone remote control from PC**

Using a Client PC interface, a user can search in the directory, including system and personal contacts, to perform calls from devices such as their mobile, home phone, or deskphone.

**Unified call and messaging history across devices**

The history of the one-number communications is available on the PC, smartphones and tablet clients. An entry in the call log history list includes the caller identity, the session time, date, status (i.e. missed, established) and duration.

Even if a device is not selected as the “Route My Calls” target, the history list on this device will show the call that was routed to other devices.

**Visual voicemail**

The OpenTouch interface on the devices can be used to directly access the mailbox. Display and manage voice messages as easily as e-mails, using a visual voicemail interface that allows messages to be selected, played back or deleted regardless of their order of arrival.

The visual voicemail lets the user be more responsive: instead of listening to messages in sequential order of receipt, it is possible to use key presses to navigate within the corporate voice mailbox, to prioritize messages and listen to the critical ones first.

*Refer to device specific sections for further details.*

**OpenTouch multiparty features**

**Multiline sets**

All advanced Alcatel-Lucent Enterprise phones can support multiple telephone lines. A multiline configuration can be implemented on one device. Multiple lines allow a high level of telephone traffic to be handled while clearly identifying the origin of the calls.

System configuration can provide a multiline over-ringing tone. This is a short beep tone emitted for each incoming call on a busy multiline phone.

**Enterprise presence including conversation status**

Members of the same team can be informed of the current status of team members. Depending on the capabilities of the device, other users can see that a team member is:

- Absent (Out of Office)
- Unavailable
- In a call
- Out to lunch
- Present and available
The presence status can be updated on PC, tablet and smartphone clients

Manager/assistant rules can be activated from the manager or assistant set.

For better call management between the parties, telephony status is available for the manager and the assistant.

A white list of calling numbers can be created so that incoming calls from these numbers are put through even if a monitoring rule has been activated.

In case of no response from any of the parties, the manager call overflow rules are applied.

Refer to the device specific sections for further details.

Supervision / Pick-up

OpenTouch Conversation users can benefit from call supervision (observation of telephony status) and call pick-up services. A supervised Conversation user can be equipped with any device (hardphone) and/or Conversation software client. Several users may supervise the same user

Refer to the specific device sections for further details.

OpenTouch Multimedia and Collaboration features

Multimedia escalation

OpenTouch Conversation users benefit from native multimedia communication features: depending on device capabilities, it is easy to escalate from audio to video or instant messaging to enrich the conversation with visual interactions.

Refer to the specific device sections for further details.

Multimedia conferencing and Collaboration services

Conversation users benefit from multimedia conferencing and collaboration services: users can establish conversations (on the fly or scheduled) with multiple participants. Users with presence and instant messaging features are included in the audio, video and data sharing communications. Depending on device capabilities, it is easy to add new participants or to escalate from one media to another. For instance it is possible to switch from IM to audio then to video and data sharing, to enrich the conversation.

Refer to the specific device sections for further details.
5.2 Business Telephony with hardphone

5.2.1 8082 My IC Phone

The 8082 My IC Phone set is a full-featured SIP device creating a new step in the implementation of user needs and comfort.

The 8082 My IC Phone set provides the benefits of advanced communications to all businesses. Industries, such as hospitality, finance, healthcare and retail, can bring new experiences to their employees and customers.

With the Alcatel-Lucent OmniTouch™ 8082 My IC Phone:

- **Conversations can be multimedia.** People can add video media during a conversation. There is no need to switch devices to converse in a different media

- **Conversations can have context.** When combined with the Alcatel-Lucent OpenTouch™ platform, users have access to a comprehensive new set of communications services, including address books, conferencing facilities and multi-device management

- **Conversations are easy.** The smartphone experience is available on the desktop. A touch screen allows application browsing. Any user can easily customize their homepage and their applications to suit their preferences or their role.

- **Conversations can include apps.** The deskphone can host applications for better efficiency at the desk. For example, automation features such as heat, or light control can be accessed by using your deskphone. Users can enjoy new ways of interacting with a business phone.

The 8082 My IC Phone set is built around a 7 inch capacitive LED backlit touch screen, which provides context sensitive feedback.

The presentation screen can be customized for:

- Personal preferences: screen displays and menu presentations can be modified according to personal needs (screensaver, melodies, background image, colors, backlight...)

- Company brand: Enterprise logos and information can be displayed to highlight the company image
Access to the most common features is facilitated by a quick access pad, where a sensitive home key brings you to the home page. Other sensitive keys pilot your audio volume and provide access to your main applications.

The 8082 My IC Phone provides 24 hour access to all the company communications tools. 8082 My IC Phone sets comply with the European standard (ETS300245-2 Annex B), US standard (UL/CSA 60950), and Australia standard (AS/ACIF S004) for noise and acoustic shock.

The audio quality is outstanding with:

- High fidelity audio quality loudspeaker and handsfree capability
- Wideband audio provides an acoustic frequency response covering a 200-6300 Hz range and audio quality compliance with most widespread narrowband and wideband VoIP standards
- Wideband Bluetooth handset (and headset) for privacy and wires-free mobility
- The Hearing Aid Compatibility (HAC) feature, which consists in providing audio assistance for hearing impaired people. A corded comfort handset is available for high fidelity audio communication.

A USB camera (Logitech C920) can be connected to the 8082 My IC Phone to provide video capabilities, based on H264 video negotiation.

The 8082 My IC Phone set supports 802.3AF power over Ethernet (PoE) (Class 3), and the maximum power consumption is less than 8.2 W. Open connectivity supports easy expansion with a 10/100/1000 Ethernet switch for LAN and PC connectivity, an embedded Bluetooth chipset, a 3.5 mm headset port, two USB connectors, as well as handset connector.

To reduce and simplify the wiring requirements, the 8082 My IC Phone is powered via Ethernet, using the PoE (Power over Ethernet) technology, which also allows the system to be secured. In most cases, a single backup power supply can be used for all devices connected to a switch. In some customer deployments a power adapter can be used.

The 8082 My IC Phone supports the 802.1x MD5 and 802.1x TLS authentication protocols.

The SIP survivability mode allows service continuity, with a restricted level of services, when the DHCP server or the Communication Server is not reachable.

To improve system operating reliability, 8082 My IC Phone sets support SIP server redundancy.

SIP server redundancy allows service continuity with the same level of features, when the main server fails, and a switchover to the secondary server occurs.

The two SIP servers can be in different IP subnetworks (spatial redundancy).
5.2.2 8012 Deskphones

The Alcatel-Lucent 8012 Deskphones is cost-effective, entry-level phones that offer SIP telephony for essential communications in a business-grade design. It is the perfect voice companion to desktop-centric activities to ensure connectivity and fast access to the enterprise directory.

Benefits

- Meet eco-friendly and low energy consumption standards
- Offer permanent connectivity to ensure the continuity of critical communications
- Integrate completely in a multi-device environment
- Can be the ideal companion to a softphone for better audio comfort
- Simplify operations and reduce OPEX and TCO through a seamless and single management platform shared with other devices, applications and networking elements
You can access all of their powerful features and services immediately with:

- A character-based display
- Two-way navigation menu buttons
- Display languages can include Latin and Cyrillic characters

### 5.2.3 4008/4018 SIP Phones

The Alcatel-Lucent IP Touch 4008/4018 phone Extended Edition sets are designed to operate in SIP standalone mode with an OpenTouch SIP Server. They can be re-used in case of investment protection and migrate from OmniPCX Enterprise to OpenTouch systems.

They allow Conversation users to use entry level low cost audio devices.

They can be used combined with other OpenTouch Conversation clients to enlarge user experiences.

Following their registration to the SIP server, they operate as integrated SIP sets and benefit from business telephony features, based on SIP standard best practices.

In SIP survivability mode, the Alcatel-Lucent IP Touch 4008/4018 phone Extended Edition sets can also operate on the duplicated Communication Server or Passive Communication Server.

- The SIP mode is activated directly by the management framework
- Easy managed via the 8770 device management
- Voice mail access is guaranteed from the phone set (dedicated key and LED indicator)
- Dedicated fixed keys are available (access to lines 1/2, call forwarding activation/deactivation)
- Programmable keys are automatically associated to a specific telephony service (Speed dialing)
- Three-party conferences are locally handled by sets
- Server redundancy is supported by sets (Communication Server duplication)

A set of paper labels is proposed for quick and easy identification of the programmable keys.
You can access all of their features and services immediately with:

- A character-based display
- Two-way navigation menu buttons
- Programmable feature buttons
- Display languages can include Latin and Cyrillic characters

### 5.3 OpenTouch Conversation for PC

**Introduction**

The OpenTouch Conversation for PC enhances collaboration and communication within the enterprise: users benefit from multimedia conversations with high-quality voice and video, instant messaging, presence, seamless session shifts, and embedded collaborative sessions.

The OpenTouch Conversation allows employees to find the right people, see if they are available and on what device, and collaborate using their preferred method.

Available on the latest Microsoft Windows platforms (Windows 7™ and Windows 8™), the OpenTouch Conversation for PC works in any location (on company premises or off-site), with industry-standard security mechanisms, to ensure clear and reliable communications.
**Benefits**

<table>
<thead>
<tr>
<th>Easy to learn and use on multiple devices</th>
<th>The OpenTouch provides a familiar and consistent user experience across a variety of devices, enabling users to move between PC, smartphone, tablet and deskphone applications with ease.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve collaboration</td>
<td>Increase communication efficiency with advanced, streamlined business conversations that can include multiple parties, persistent conversations, content sharing and high-quality video conferencing.</td>
</tr>
<tr>
<td>Work from anywhere</td>
<td>Boost productivity and reduce expenses with quick access to business communication features from any location. No matter where they are, users can receive business notification events and access enterprise-grade services including corporate directory access, telephony, conferencing, instant messaging, communication history, and colleagues’ availability.</td>
</tr>
<tr>
<td>Maintain a single identity</td>
<td>Employees can be contacted faster and more efficiently using a single business identity across multiple devices (such as a deskphone, PC, mobile phone, tablet, and home phone).</td>
</tr>
<tr>
<td>Stay connected</td>
<td>Workers can view colleagues' availability and select the best way to communicate by initiating a phone call, video call, an instant message or an e-mail.</td>
</tr>
<tr>
<td>Communicate securely</td>
<td>No matter where employees choose to work – at the company premises or off-site – the OpenTouch Conversation for PC allows for secure communications between colleagues and customers.</td>
</tr>
</tbody>
</table>
Features

The OpenTouch Conversation for PC can be used in following contexts:

- **Softphone mode**
  - A user can make and receive phone calls from any location, provided that they can access the corporate network with their Personal Computer.
  - Voice over IP communications are SIP-based with narrowband (G.711u/a, G.729a/b, G.723.1) and wideband (G.722.2) audio codecs.

- **Deskphone control for making calls**
  - Users control their business phone and make calls from their PC while in their office.
  - Calls can be deflected.

The main features of OpenTouch Conversation are:

- **Multimedia conversations**
  - Start with a simple one-to-one chat session and add people, voice, video, and content, seamlessly and effortlessly.

- **Single identity**
  - Maintain a single business identity, with one phone number, across multiple devices (e.g., PC, tablet, deskphone, mobile phone, and home phone).

- **Meetings**
  - Schedule meetings on-the-go using predefined meeting profiles that tailor OpenTouch conferencing capabilities to match the type of meeting or event (business meeting, webinar, training and conference call profiles).
  - View and conduct presentations (view shared presentations, PDFs, and images).

- **Contacts**
  - Search for local (Microsoft® Outlook™) and corporate contacts.
  - Instantly access favorite contacts with a single click-to-call/-video/-chat/-share.

- **Instant messaging and presence**
  - Chat securely with colleagues and corporate contacts.
  - View colleagues’ availability and identify what type of communication is most appropriate.

- **Conversation Wall**
  - See past conversations, active conversations and future meetings in a single view.

- **Notifications**
  - Check new voice messages, missed calls and instant messages.

- **Voice and video capabilities**
  - Place calls, manage incoming calls, switch between devices, and add and drop participants.
  - Use high-quality communications (HD voice, HD video) to improve personal connections.
  - Seamlessly move conversations between business devices with a single click.
Manage communications preferences and reachability, using call routing profiles, effortlessly and while on the move.

- Use integrated call control features for Plantronics® and Jabra® audio devices, including call answer/end and synchronized mute.

- **Visual voicemail**
  - Display and manage voice messages as easily as e-mails, using a visual voicemail interface that allows messages to be selected, played back or deleted in any order.

- **Secure access to corporate infrastructure**
  - Reverse proxy support.
  - Session border controller (SBC) support.
  - Virtual private network (VPN) support.

Add people, documents, presentations, voice or video easily to any conversation.

**Microsoft integration**
The OpenTouch Conversation can be complemented with Microsoft Outlook (versions 2010 and 2013) add-ins for:

- Conference scheduling
• Searching personal contacts (the add-in is automatically installed with OpenTouch Conversation)

**Conferencing add-in**

Use Microsoft Outlook to schedule OpenTouch conferences. Participants receive an e-mail invitation or Outlook appointment that includes a link to the conference.

Click to create a new OpenTouch conference (this creates a new appointment in the Calendar with the date and hour) or start creating an appointment and then click the OpenTouch conference icon:

---

**Starting Time:** March 27, 2014 at 12:30 PM, Europe/Prague  
**Duration:** 30

You have been invited to a conference call.

**To join both the web and audio conference (recommended), click here:**

https://kpr...15380

If you only want to participate in the audio conference, you may dial in with the following numbers:

+31 20 15380 (OpenTouch OTC Web Conference), and enter access code: 0115380

21 15380 (Internal OTC Web Conference), and enter access code: 0115380
5.4 **OpenTouch Conversation for Web**

**Introduction**

The OpenTouch Conversation for Web application (OTC Web) creates a productive and easy-to-use meeting experience that fosters real-time team collaboration. Guests can join meetings without downloading or installing bothersome plug-ins or following a myriad of complicated instructions and procedures. Designed for simplicity and ease of use, the OTC Web enables meetings to start on time without distractions.

The meeting launcher can easily schedule and manage OpenTouch conferences from Microsoft Outlook, or from the OT Conversation for Windows PC and iPad.

---

**Benefits**

<p>| <strong>Encourages use to increase productivity and save travel costs</strong> | Easy to use, elegant and powerful application to interact between groups and with your customers and partners, while reducing travel costs and employee downtime. |
| <strong>HTML5 to welcome anyone</strong> | Ensures open and easy access with support for the four most popular browsers. Real 0 footprint solution which doesn't require no intrusive plug-in nor add-in, and so welcomes users with PC, MAC, and tablets. |
| <strong>Effective services to foster collaboration</strong> | Improves productivity with support for popular and common document types for web presentations and annotation |</p>
<table>
<thead>
<tr>
<th><strong>Feature</strong></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Speaker identification</strong></td>
<td>Avoids confusion on calls by enabling speaker identification by displaying voice-activity clearly and succinctly.</td>
</tr>
<tr>
<td><strong>Private communications thanks to sidebar chat</strong></td>
<td>Enables private communications during meetings with public group chat and sidebar chat sessions.</td>
</tr>
<tr>
<td><strong>Highly secure meeting</strong></td>
<td>Password protected meetings reinforce confidentiality, in addition to SSL encrypted communications.</td>
</tr>
</tbody>
</table>

**Features**

The OpenTouch Conversation for Web PC welcomes any participant whether this person is a company employee with or without an OpenTouch account, or an external participant.

You can be invited, according to the meeting launcher choice, as the “meeting leader” or a “meeting participant”:

- The meeting leader has access to controls that are not granted to a meeting participant:
  - Control the attendance: mute, mute all, and drop.
  - Control the presentation: upload a document, start a presentation, change page, annotate a presentation.

The main features of the OpenTouch Conversation for Web PC are:

- **Join**
  - Anonymous users connection
  - Upload my picture / select an avatar
  - Password protected meeting
  - Dial in & dial out

- **Share & View**
  - Document sharing
  - Document upload, download
  - Full screen mode
  - Mosaic preview
  - Document Annotation

- **Control**
  - Mute yourself, mute participants
  - Drop a participant (leader role)
  - Identify the active talker

- **Chat**
  - Instant Messaging : public chat, sidebar chat(s)
Emoticons

Miscellaneous
- Easy to use, guided tour for first time user
- Conference information

Easily highlight your speech with annotations, identify who is talking, and perform private chats to align with your colleagues.
5.5 OpenTouch Conversation for iPad

The OpenTouch Conversation for iPad implements the features and flexibility of the OpenTouch Suite, on the popular iPad tablet device. Rely on the usual gestures to place calls, retrieve messages and move easily from a phone call or IM to a multi-party conversation. View and annotate presentations, PDFs, and images. Send IMs, exchange files, and activate and create call-routing profiles.

Features

- Place, answer, and manage voice and video calls using the enterprise dialing plan — call anywhere using the device, corporate directory, or OpenTouch contact list
- View contact presence and availability and tap to start and manage collaborative, secure conversations
- Start with a simple one-to-one chat and add people, add voice, add video, add content — seamlessly and effortlessly
- Open past conversations to review notes and exchanges or re-start the conversation where you left off
- Manage communications preferences and availability using call routing profiles, effortlessly while on the move
• Present a single business identity, with one phone number across multiple devices — desk phone, PC, tablet and smartphone
• Move the conversation between devices using Rapid Session Shift - move the late day video conference to your mobile device and be on time for the next appointment
• Listen to and manage voice mail messages
• Schedule meetings using pre-defined meeting profiles that tailor OpenTouch conferencing capabilities to match the type of meeting or event — Business Meeting, Webinar, Training and Conference Call profile types
• View and conduct presentations — view shared presentations, PDFs, and images
• Annotate shared presentations, PDFs, and images using gestures to select tools and make real-time edits
• Manage ongoing conversations using the complete set of conference controls — transfer, mute, hold, resume, hang up, add, promote and more

Benefits
• Compelling and heedful user experience that encourages use, encourages employee communications and encourages rich and frequent conversations
• Reduced enterprise communications expenses through the use of Wi-Fi or 4G/3G data connectivity for telephone calls and conference calls (VoIP)
• Improve collaboration and increase efficiency with streamlined evolution of business conversations to include multiple parties, persistent conversations, content sharing and high-quality video conferencing while on the move
• Boost productivity and save expenses with quick access to business communication features anywhere
• Be contacted faster and more efficiently with a single business identity across multiple devices
• Save time with automatic presence that indicates clearly when a contact is available and the best ways to communicate with them
• Improve the meeting experience with profiles that tailor system behavior to match the type of meeting or event, including webinars, training sessions and daily business meetings
• Express ideas and interactively collaborate and innovate using feature-rich annotation using feature-rich annotation tools
5.6 Smartphone Software Clients

My Instant Communicator Mobile edition for Conversation User

Benefits

- Access features anywhere
  - Users have unified communication capabilities everywhere, on-site and off-site. Regardless of their location, they can get business notification events (voice messages, missed calls and instant messages) and access enterprise-grade services, including corporate directory, telephony, conferencing, instant messaging, communication history, colleagues’ availability and assistant call delegation.

- Maintain a single identity
  - A single business number is used across multiple devices, such as desk phone, personal computer, mobile phone, tablet and home phone. Outbound calls from a mobile device can use a single identity and phone number, making it easier for colleagues, customers, partners and personal contacts to recognize calls from the MIC Mobile Edition.

- Stay connected
  - Workers can view colleagues’ availability and select the best way to communicate, by initiating a phone call, instant message (IM), e-mail or text message (SMS).

- Control/reduce costs
  - Cellular: Significantly reduce smartphone costs with savings on long distance calls.
  - Use Wi-Fi when at the office or at home for data usage.
  - Least-cost routing: Set up rules-based policies to reduce international direct dial and roaming charges.

- Connect more securely
  - Secure access is provided to the enterprise with Reverse Proxy https support, native BlackBerry Enterprise Server secured channel and VPN support.

Features

- Single identity
  - One phone number across multiple devices (desk phone, mobile, personal computer, tablet, home phone...)
  - Single business identity, whatever the device used

- Business caller identification

- Directory lookup
  - Search for local and corporate contacts from an user friendly interface

- Favorites
  - Instant access to favorite desktop contacts with a single click to call or chat

- Notifications
  - Identification of new voice messages, missed calls and instant messages

- Business calling anywhere
o Calling from the local contact list or corporate directory, favorite contacts list, enterprise dialing plan, business communication history, voicemail interface and more

- Mid-call control
  o Take a call, clear a call, transfer a call, hold/retrieve a call, switch between calls, add participants to a call (n-party conference)

- Instant conference
  o Set up and join conferencing calls instantly with a single click from the calendar or email invitation

- Switch device (handoff to and from)
  o Seamlessly move an active call from the mobile to any other device
  o Seamlessly pick up an active call from another business device to the mobile with a single click

- Unified business communication history
  o Filter events (voice calls, voice messages and instant messages) or display a unique view for all events

- Visual voicemail
  o Display and manage voice messages as easily as e-mails, with a visual voicemail interface that allows messages to be selected, played back or deleted in any order

- Instant messaging
  o Chat securely with corporate contacts

- Text messaging

- Rich presence
  o View colleagues’ availability (contact and phone presence)

- Media blending
  o Answer using a media other than voice, such as e-mail or instant messaging

- Call routing profiles
  o Control which device(s) will ring (for example, desk phone, tablet, mobile or personal computer) by using routing profiles, such as Office, Home, On the Move or Busy

- Manager/Assistant
  o For the manager: Activate/deactivate call delegation to the assistant and display details in the business call history

- Business and private lifestyle management
  o Business mode: Incoming and outgoing calls are processed on the Alcatel-Lucent communication server
  o Private mode: Incoming and outgoing calls are processed by the mobile carrier (a private call can be performed either from the MIC application or the native dialer)

- Automatic fallback
  o Enterprise-grade basic voice services remain available through in-band DTMF codes when the secure data channel is lost

- Least-cost routing
  o Allow savings for international roaming (rules-based policies set up by the system administrator)
• Data over Wi-Fi
  o Automatic switch to trusted WLAN (roaming)
• Secure access to the corporate infrastructure
  o Reverse Proxy https support
  o Virtual Private Network (VPN) support
  o Native BlackBerry Enterprise Server (BES) secured channel
• Application management
  o Software download over the air
  o Remote configuration and provisioning through Alcatel-Lucent client management functions

BlackBerry

OpenTouch Conversation for Android & iPhone

Benefits
• Optimize workforce mobility costs by using Voice over IP over wireless LAN. Place and receive calls over corporate WLAN and when at home or at a hotspot using Wi-Fi
• Compelling and heedful user experience that encourages use, encourages employee communications and encourages rich and frequent conversations
• Improve collaboration and increase efficiency with streamlined evolution of business conversations to include multiple parties, persistent conversations
• Boost productivity and reduce costs with quick access to business communication features anywhere
• Enable employees to be contacted faster and more efficiently with a single business identity across multiple devices
• Guarantee employee efficiency with a full set of notifications (voice messages, missed calls, scheduled conference alerts)
• Secure access to the enterprise with reverse proxy https support

Features

• Maintain a single business identity, with one phone number across multiple devices - desk phone, PC, tablet and smartphone
• Place, answer, and manage voice calls using the enterprise dialing plan
• Call anywhere using iPhone or OpenTouch contacts or the corporate directory
• View contact presence and availability and tap to start and manage collaborative, secure conversations
• Listen to and manage voice mail messages with Visual Voicemail
• One click to join a conference
• Private call capability
• Manage availability using customizable call routing profiles, including name, avatar, and list of devices
• Move the conversation between devices using Rapid Session Shift
• Manage conversations using the complete set of mid-call controls: consultation call, hold, back & forth, transfer, ad-hoc conference, add/remove participant, leave or terminate conference and hang up
6 System Services

6.1 A high level of availability

The network requirements of each client are defined by the balance between service continuity, network needs, and cost. The resulting choice is inevitably linked to the return on investment (ROI) that can only be defined by the client.

As the system reliability and availability increase in importance, the requirements for additional hardware increase. This section describes some of the available options and features.

Communication server redundancy (duplication)

The Alcatel-Lucent OmniPCX Enterprise Communication Server provides a unique and secure backup mechanism when mission critical applications require high resiliency. Communication Server redundancy (duplication) allows a switch over from one communication server to its mirrored communication server through an IP link.

In this type of configuration, two Communication Servers coexist in the same system. One server is active, and is the primary Communication Server. The other server is constantly in a standby watchdog mode. If the primary server fails, the standby automatically takes over.

Note: To avoid possible communication server performance distortion, the CPU hardware must be identical for both the main and standby communication servers.

IP rack server (Common hardware) and Appliance server

During normal operation, a polling dialog is established and maintained between the main and standby communication servers. Interruption of this dialog indicates to the standby machine that the main communication server not available. The standby communication server then takes over as the main communication server.
Primary and secondary Communications Servers can be located in two geographical sites and can be in different IP sub networks thanks to dual IP addresses.

All the following applications are able to address the dual IP addresses:

- Network Management Center OmniVista 8770
- Voice mail applications
- Alcatel-Lucent OmniTouch Contact Center - Standard Edition solution except CCOutbound solution
- Alcatel-Lucent OmniTouch – IVR (CC-IVR)
- XML Web Services (My Phone WS, My Messaging WS, My Management WS, My Assistant WS, IP Touch XML Services)

*Note: To avoid possible desynchronization between databases, it is recommended to secure the IP link between primary and secondary Communication Servers.*

**Com server changeover**

When the changeover takes place, active calls are maintained and calls in the process of being set up are interrupted.

The data involved in the updates includes:

- Status of the different elements (including boards and terminals)
- Configuration information
- Accounting tickets (call detail records)
- CCD data

*Note: A manual change over command is also available in maintenance mode.*

In case of ABC network configuration (multiple Communication Servers interconnected through ABC-F2 TDM or IP links), active networked communications are maintained when the changeover takes place.

**Database consistency**

The standby Communication Server is updated continuously and is ready to act as the primary server at any time. ALL data, including databases, applications, and communication-handling software, is run in parallel on both servers. This operation ensures a reliable, secure switch over from one server to the other.

When the standby Communication Server is unreachable, the main Communication Server stores for a limited period of time the history of MAO (administration) commands used to update is database. Two situations can occur:

- If the standby Communication Server becomes operational before the expiration of the storage duration, the main Communication Server sends MAO commands to the standby Communication Server which automatically updates its database. As a result, the two databases become consistent.
- If the standby Communication Server is still unreachable after the expiration of the storage duration, the main Communication Server stops storing MAO commands and deletes them. When the standby Communication Server becomes reachable, the two
databases must be consistent via a database cloning operation (or master copy operation).

Automatic database synchronization is available for Communication Servers located on CS-2 boards (Common Hardware), Appliance Servers and Blade Centers. This operating mode is identical in a double main configuration.

Information handled by MAO commands are:

- Agent login/logout (Alcatel-Lucent OmniTouch Contact Center - Standard Edition)
- Configuration of set parameters (secret code, language, user name, keys, etc.). This applies to digital and cordless sets
- Set status (in or out of service)
- Interphony service
- Hotel/Hospital application data
- Configuration of attendant parameters (and attendant groups)
- Configuration of entity parameters
- Configuration of Call Distribution Tables (CDT)

**Communication server survivability for OpenTouch Conversation users**

The Communication Server Duplication service can be deployed in an OpenTouch configuration to improve the reliability of system operations.

An Alcatel-Lucent Communication Server hosted on an Appliance Server (or a CS-2 (Common Hardware board)) is used as stand-by Communication Server. It takes over when the OpenTouch is not reachable or out of service.

Communication Server Duplication offers the same level of service in both Connection and Conversation configuration, such as:

- Real-time duplication of telephony data, provided by the Communication Server hosted on the OpenTouch, including traffic observation, accounting records and Contact Center data

*Note: Data relating to CCA, OmniVista 8770, Alcatel-Lucent OmniTouch Unified Communications, and OmniTouch Fax Server are not duplicated.*

- Detection of OpenTouch Server loss and switchover
- Continuity of telephony services when a switchover occurs (e.g. established communications are maintained), except for:
  - ABC communications on hybrid logical links (e.g. ABC link through IP)
  - Communications with SIP devices or established via a SIP trunk group

A switchover can occur when the OpenTouch server activity is interrupted, due for example to a power failure or network problem. The dialog established between the OpenTouch server and Stand-by Communication Server is lost, and the stand-by Communication Server becomes the Main Communication Server.

The Stand-by Communication Server and OpenTouch server can be located:

- In the same IP sub-network. Continuity of telephony services is ensured, when the OpenTouch server is out of service (e.g. power failure)
In different IP sub-networks (spatial redundancy). Continuity of telephony services is ensured, when the OpenTouch server is either not reachable (e.g. IP link failure) or out of service.

Secure call processing with the passive communication server

The Passive Communication Server (PCS) provides call handling services to a media gateway or group of media gateways if the Alcatel-Lucent OmniPCX Enterprise Communication Server is unavailable.

If the IP links to the site which hosts the Communication servers are broken or the Communication servers are out of service, call processing continues at a local level.
PCS use in SIP environment:

The PCS can rescue SIP phones and SIP trunk groups (SIP trunking), provided the SIP devices (external gateways/SIP proxies, SIP phones) can handle primary and secondary DNS server addresses (to access the main and backup Communication Servers), and a proxy server address (to access the PCS). The Domain Name (DN) resolution is performed with DNS A (DNS SRV is not supported).

SIP registrations on the main Communication Server are not duplicated on the PCS. When the PCS becomes active (Communication Servers are down), the SIP sets must register on the PCS to be in service.

The Alcatel-Lucent OmniTouch 8450 Fax Software solution does not support backup SIP proxy.

In normal conditions:

- The Communication servers control the calls within the network
- The IP Phones and/or Media Gateways within a region are defined for the PCS
- Automatic or manual synchronization of the region is carried out on a general or individual PCS basis

If Communication Server loss occurs:

- Telephony services are restarted locally
- Centralized services such as voice mail are no longer available
- All standalone features defined inside active call processing are maintained by the PCS including OmniTouch Contact Centers.
- CDRs (Call Detail Record) are recorded in the PCS
When the IP link to the OmniPCX Enterprise is back IN SERVICE, the PCS switches to standby mode either after a timer or at a configured time (typically the PCS is configured to switch at night to avoid telephone disruption).

When the PCS switches to standby mode:

- IP phones and media gateway reboot and are under the OmniPCX Enterprise control
- Accounting tickets (CDRs) are transmitted to the OmniVista 8770

The PCS is defined with the same provisioning level as the Communication Server. It can be hosted on a Common Hardware CPU, Appliance Server, or Blade Server.

*Note: Because of the differences in the Database structures, IP Crystal Servers cannot be used in a PCS configuration. A PCS cannot be duplicated.*

**Secure call processing for Conversation users with the passive communication server**

The Passive Communication Server (or PCS) is a feature of the Alcatel-Lucent OmniPCX Enterprise Communication Server. It offers a SIP survivability level of service for OpenTouch™ Conversation users.

In an OpenTouch configuration, the PCS provides the continuity of telephony services and the Contact Center in case of:

- Loss of the OpenTouch host:
  - If the Communication Server Duplication service is not used, the PCS secures call handling when it is deployed on the main site for all Media Gateways
  - Additional PCSs can be deployed per Branch Offices (in other words per Media Gateway)

- Breakdown of IP network links:
  - WAN/LAN out of service
  - IP links lost between central site and Media Gateways
If the OpenTouch server crashes (configuration without Communication Server duplication), a phone reset takes place. After this reset, only telephony and the Contact Center CCD/CCS remain operational.

The CCA, CC-IVR, OmniVista 8770 Server, Alcatel-Lucent OmniTouch Unified Communications, XML Web Services, and OmniTouch Fax Server are no longer available.

The telephony service remains operational for a period of thirty days. It is recommended to repair the OpenTouch server as soon as possible.

*Note:* Other PCSs can be deployed in Branch Offices (typical OmniPCX Enterprise deployment).

**Backup signaling for IP media gateways**

*Note 1: This feature is only available for Connection Users.*

If the IP link between the communication server and a common hardware IP media gateway is lost, a backup signaling link is used to re-establish the signaling path over the PSTN. This service is designed to ensure continued telephone service at remote sites.

During the backup connection, users can make and receive calls over the local PSTN network connection (see the next section for more details), and VoIP calls between the remote and all the other sites can be redirected via the public network.

The communication server monitors the links to each media gateway using a polling dialog. An interruption of this dialog informs the communication server that a failure has occurred. The communication server then attempts to reach the remote media gateway over the PSTN (via GD internal modems). During this time, the remote media gateway restarts.

**Return to normal**

In backup mode, the media gateway periodically polls the IP network.

When the IP network connection is re-established, the media gateway switches the communication server signaling back to the normal link.

All calls are maintained while normal IP network signaling is re-established.
In addition, when the IP network is unavailable, voice inter-site communications can be established via the public network. Dialed internal numbers are translated automatically into public numbers. This mechanism can also be used when the Call Admission Control of the remote site is reached.

**Note 2:**
Because a minimum of telephone services are offered for inter-site communications, it is not recommended to use this "private to public overflow" permanently.

Within the Alcatel-Lucent OmniPCX Enterprise Communication Server architecture, it is possible to mix both features, PCS and "Backup Signaling Link of Media Gateways", if they do not back up the same sites.

**IP Touch sets survivability**

Dynamic IP address allocation of IP Touch sets (Alcatel-Lucent 8 Series sets), located in remote sites, can be done with a central DHCP server. During its first initialization, the IP Phone stores all the IP addresses (its address, TFTP server address, default gateway address, and subnet mask address) given by the DHCP Server. When an IP Phone cannot reach a DHCP server (for example, IP WAN network outage), the IP Phone initialization is still possible and it can establish its telephony signaling link with the Communication Server via the media gateway and the backup signaling link on PSTN.

The signaling link between a remote IP Touch and the Communication Server is direct. This means that, even if the remote Media Gateway is out of order, the IP Touch can communicate with other devices.

**Note:** Static IP addressing from the IP phone is always available. This feature is compatible with the IP Touch Security feature providing encryption and firmware integrity.

When there is no PCS and no backup signaling link, SIP survivability may apply to Alcatel-Lucent 8 series phone Extended Edition. When the Communication Server is not reachable via the IP network, the set operates as a SIP set via the SIP proxy.

Calls are established by the SIP proxy server through the PSTN.

Rescued phones must be situated in domains where there is a router implementing SIP proxy features. They must have been initialized in the Alcatel-Lucent proprietary mode at least once and sent SIP binaries and parameters to the Communication Server.

**Business continuity of IP Touch in case of IP failure**

IP Touch can maintain an active communication even when the connection with the Communication Server fails. The communication is maintained until either the user or the remote party puts the phone down.

When the Communication Server is lost, the phone is frozen, except for the audio management: the user can still put the loudspeaker on, mute/un-mute the conversation, or switch voice channels (handset, hands-free, headset). In addition, an error message is displayed on the phone screen.

After call completion (hanging-up of called or calling party), the IP Touch restarts and registers automatically to: either a PCS (in NOE mode), or an AudioCodes SIP survival gateway (in SIP or SIP TLS mode).
**Business continuity for out of service Digital/Analog devices**
To avoid losing communication, an automatic immediate call forwarding to a call forwarding number or associated call overflow number is offered when the digital or analog caller devices is out of service.

**Fallback when SIP Voice Messaging is not reachable**
To avoid losing communication, the calling device rings when it is forwarded (any kind of call forwarding) to an out of order or unreachable SIP Voicemail (e.g. OT Messaging).

**Dual LAN attachment**
The servers, hosting Alcatel-Lucent OmniPCX Enterprise Communication Server or OpenTouch™ packages, provide two Ethernet ports to prevent network related problems. If one of these two ports fails, traffic is automatically routed to the second port so that there is no service interruption.

Only one Ethernet port is active at a given time. Dual Ethernet does not support:
- Load balancing
- Split of data stream per application

Dual Ethernet is not compatible with encryption. When encryption is used, one Ethernet port is connected to the encryption device. The other Ethernet port is not used.

**Uninterruptible power supply**
An external UPS provides a battery backed up supply to keep equipment operating when there is a power cut and effective protection against damaging surges.

UPSs are designed for USB compatibility and include power management software.

As a battery pack, an external UPS may be used to provide power redundancy. In case of a prolonged power failure, the external UPS sends an alarm to the OpenTouch server, which initiates a shutdown of the different Virtual Machines and then the host, correctly.

This provides sufficient time to stop the system properly without risking any loss of data.

*Note: Only the UPS recommended by Alcatel-Lucent for the OmniPCX Enterprise are supported.*
6.2 SIP and web services

SIP and OpenTouch

In an OpenTouch system, SIP can be used for more than basic communication applications. SIP features for OpenTouch include:

- Multimedia Routing application controls:
  - Core Switching and handling
  - Building rules for a user to route their calls to the endpoints or to another user
  - User interaction for setting routing rules

- User Session Manager for the administration of:
  - Multiple device ownership
  - Session handover between the devices

- SIP Basic communication applications for basic and standard SIP endpoints. These include:
  - Make, take, clear, reject and deflect calls
  - CLIP/CLIR
  - Multi-endpoints forking for user centricity, Multi-lines
  - Hold/retrieve communication and consultation calls
  - Attendant and unattended (blind) transfer
  - Immediate/no response/ on busy/ on busy or no response call forwarding managed by the Telephone User Interface (TUI)
  - Callbacks for calls on busy telephones or unanswered calls
  - Lock and unlock of each endpoint
  - Message Waiting Indicator (MWI)
  - Get and deposit message in voice mail from internal or external calls
  - Peer to peer video calls between endpoints that support audio/video connections

Public SIP trunking

The communication server performs SIP trunk group signaling.

When the Alcatel-Lucent OmniPCX Enterprise Communication Server is connected to the PSTN via a SIP carrier:

- SIP signaling exchanges are between the Communication Server and the SIP carrier gateway.
- Voice flows are exchanged between Alcatel-Lucent IP phones or IP Media Gateway and the carrier Trunking gateway.
- TLS/SRTP protocols can be deployed to protect SIP communication with external/ public SIP Gateways. TLS protects SIP signaling and the SRTP protocol (there are two keys: one key is used to encrypt sent voice flow and another key is used to encrypt received flows) protects voice flows. This means that end-to-end encryption, between carrier and all OmniPCX Enterprise devices (IP Phone, Media Gateway, Communication Server, ...) can be offered.
  
  Note: end-to-end ABC subnetwork encryption is not yet possible.
- The SBC is the access point to the carrier infrastructure
A Session Border Controller (SBC) is a gateway that typically resides at the boundary of an IP network. This device is used to control the signaling and media streams. SBCs are put into the signaling and/or media path between calling and called party.

The call barring class of service, connection class of service and entity are taken into account.

Call Detail Records (CDR) are generated as for legacy trunk groups, and the Call duration mode is used for accounting purposes.

Call Admission control (CAC) is configured in the Alcatel-Lucent OmniPCX Enterprise Communication Server to control the number of calls through the PSTN trunking gateway and so controls admissible calls between SIP endpoints using the IP domain feature. CAC is used for:

- SIP sets
- Analog sets or FAX device behind SIP gateways (declared as SIP users)

*Note: CAC is not applied to SIP video flows. The bandwidth must be calculated to avoid deterioration in voice quality.*
6.3 OmniPCX Media Service (OXE MS)

In case of IP/SIP solution, the OmniPCX Media Service (OXE MS) is a software component allowing OmniPCX Enterprise (OXE) full software solution deployment, without Hardware Media Gateway.

Associated to an OXE Software deployment, Alcatel-Lucent can offer a hardware agnostic solution with a Green computing approach.

This solution can be used in a data center deployment approach, avoiding deploying a Hardware Gateway in this centralized “Software area”.

Note: Even in case of central software deployment, a Hardware Media Gateway can be associated in remote/branch office for PSTN backup connectivity for instance.

OXE Media Service offers simultaneous audio access ports (in G711/G729) for:

- Voice codec transcoding
- N parties audio conferencing
- Voice Guide accesses, including Music On Hold

OXE Media Services Software is intended to be deployed within a VMware virtual machine.
6.4 Attendant Services

The Alcatel-Lucent OmniPCX Enterprise Communication Server and OpenTouch offer a wide range of attendant solutions to welcome customers:

- An entry level solution consisting either in:

  Its context-sensitive softkeys provide a user-friendly access to attendant facilities for efficient management of incoming and outgoing calls.

  The attendant service on Alcatel-Lucent IP Touch 4068 phone Extended Edition is fully compatible with:
  - The Smart Display Module (up to three Smart Display Modules with 14 keys each can be connected to a set)
  - The IP Touch security feature
  - Display of long names and names in non-Latin characters (UTF-8 standard)

- A multimedia professional attendant solution, allowing the attendant to switch between telephony applications and Windows applications at any time. The full IP solution is provided by one of the following Alcatel-Lucent 4059 offers:
  - An Alcatel-Lucent 4059 IP attendant console for the OmniPCX Enterprise Communication Server including:
    - An associated Alcatel-Lucent 8/9 series set used for voice (IP or TDM)
    - The 4059 IP Attendant Application running on a standard PC
    - An optional Busy Lamp Field (BLF) application, running on a standard PC
    - An ergonomic telephony keyboard with LEDs, shortcut keys, and USB connection
or

- An Alcatel-Lucent 4059 Extended Edition attendant console (4059EE) for the OmniPCX Enterprise Communication Server and OpenTouch including:
  - An associated Alcatel-Lucent 8/9 series set used for voice (IP or TDM)
  - The 4059 Extended Edition Attendant Application (with an embedded Busy Lamp Field (BLF) option) running on a standard PC
  - An ergonomic telephony keyboard with LEDs, shortcut keys, and USB connection or a standard PC keyboard
The Alcatel-Lucent 4059 Extended Edition Attendant Console is a new design of the 4059 IP application. It provides a modern graphical user interface and new future-proof software architecture.

Note 1: The following descriptions apply to both Alcatel-Lucent 4059 IP and Alcatel-Lucent 4059 EE, differences are mentioned where applicable.

Note 2: The 4059 Extended Edition (4059EE) can cater for Conversation users.

The Alcatel-Lucent 4059 IP and the Alcatel-Lucent 4059 Extended Edition are Attendant Console applications that run on Windows® 7 and Windows® 8. They are connected to the OmniPCX Enterprise Communication Server through the IP network.

The PC is not solely dedicated to this application and can handle telephone applications and business software simultaneously.

In addition, the application can be combined with other Alcatel-Lucent software such as the OmniVista 8770 and 4059 IP BLF (Busy Lamp Field), as well as other market software (TAPI or non-TAPI), such as PIM, e-mail, agenda, scheduler, directory, etc.

The Alcatel-Lucent 4059 EE application embeds the BLF (Busy Lamp Field).

Features:
- Access controlled by a login procedure, 12 keys for basic call handling
- Screen setting: busy lamp field for extensions, trunks, bundles
- Directories at PC level Internal/external directories, company directory, multi-criteria search, etc.
- Automatic screen pop-up on incoming or outgoing calls, direct caller/called party mini-message display on screen

Characteristics:
- Open client/server architecture
- Windows® 7, Windows® 8 compliant application
- Fully compliant LDAP client: universal call-by-name in LDAP/ODBC databases
- Directory pop-up: manual/automatic, call type dependent, content customizable
- Drag and drop automatic dialing
- Import/export from Excel to operator personal phone book (OLE interface) (Alcatel-Lucent 4059IP)
- Import/4059EE)/export personal phone book from operator to operator
- Inter-working with other Windows TAPI applications for outgoing calls
- Interworking with other Windows TAPI applications for incoming call (4059 IP only)
- API for incoming calls monitoring (4059 EE)
- Non-dedicated PC. Minimum configuration: Pentium 1.5 GHz or equivalent, 2GB RAM, 4 GB disk space, DVD-ROM drive
- Screen graphics minimum 1280*1024 true color for the Alcatel-Lucent 4059EE

- An Automated Attendant (AA)

The enterprise welcome service (Automated Attendant) is an essential service to handle external (or internal) calls. It allows a caller to be guided to the correct company department or user, and it may also be used to assist attendants when there are too many simultaneous calls.

In all cases, the purpose is to ensure that no call goes unattended.

The flexibility of the automated attendant system allows to define a complete set of rules regarding the points of entry into the company and to implement them efficiently.

Automated Attendant services can be provided in two different modes:

- Embedded in the Alcatel-Lucent OmniPCX Enterprise solution
- Via the 4645 voice mail numbers
Advantages:
- Relieves the attendant of simple and repetitive tasks
- Available round-the-clock, every day of the year
- Offers constant high-quality greetings

6.5 Messaging Services

Overview
Alcatel-Lucent has been a worldwide leader in voice mail systems for enterprises since 1998, with significant experience in understanding and meeting enterprise voice mail requirements.

The Alcatel-Lucent approach is to allow each user to handle incoming calls simply and efficiently, whether users are present, away from their desk, or busy on the telephone.

In addition to Automated Attendant (welcome) services, the Alcatel-Lucent voice mail applications offers natural interactive messaging. This increases the quality and efficiency of communications between colleagues and co-workers within the same enterprise. Sending a message via the Alcatel-Lucent voice mail system is as easy as placing a call to another individual.

An important aspect of any successful voice mail service is ease-of-use and operation. Alcatel-Lucent has a proven track record of innovation in human factor ergonomics.

From individually configured welcome services to more sophisticated global enterprise Automated Attendant (welcome) services, each call is efficiently handled by routing callers to the correct party, or by providing information relevant to the call.
As a market leader in voice mail systems, Alcatel-Lucent provides thorough customer support for implementing enterprise global voice messaging services and is available twenty-four hours a day, seven days a week.

**OpenTouch voice messaging**

The Open Touch voice messaging application is exclusively SIP based, which makes it flexible, easy to deploy and highly scalable: it can serve a high number of users and gradually extend according to business needs. It is an integral part of the OpenTouch Business Edition and OpenTouch Multimedia Services solutions to provide a legacy and unified voice messaging service for Conversation and Connection users. Both the OpenTouch Business Edition and OpenTouch Multimedia Services solutions can be installed in a virtual environment.

The scalability of OpenTouch voice messaging varies widely depending on the commercial package of the OpenTouch and whether it is installed on a physical server or a virtual environment. The currently highest possible values are 5000 voice messaging users and 180 concurrent calls for message deposit and retrieval plus additional 75 concurrent calls for automated attendant services.

### 6.6 OmniPCX RECORD Suite

The Alcatel-Lucent OmniPCX RECORD Suite offers small and medium-sized businesses a complete tracking solution for customer interactions through unique call recording, screen capture and coaching capabilities. Flexible, simple to install and user-friendly, it seamlessly integrates into both new and existing OpenTouch™ Server environments.

![OmniPCX RECORD Suite](image)

**Key features**

- **Modular offer**
  - RECORD: rich recording facilities of inbound and outbound calls in multiple audio formats (MP3, GSM6.10, WAV)
  - SCREEN CAPTURE: complete user desktop activity capture
  - SILENT MONITOR: remote and discrete monitoring
  - QUALITY MONITOR: evaluation of recorded employees and instant coaching sessions

- **Architecture**
  - Call recording in SIP (declared as SIP SEPLOS), VoIP, analog, digital and mixed environments
  - Web-enabled architecture that makes it easy to locate and use recordings
- Multiple language web interface
- Centralization of recordings from independent satellite sites to a central server
- Support of multi-node environments
- High availability (Warm standby)
- Support of virtualization
- Open integrations through the Application Programming Interface (API)

**Compliance**
- Records encryption
- Login authentication via Radius server
- Compliance with Thales encryption
- In line with Payment Cards Industry (PCI) requirements for call recording systems

**Benefits**
- Fulfills every need with a modular offer made up of four modules (Record, Capture, Silent Monitor and Quality Monitor)
- Accelerates resolution of customer issues
- Minimizes risk of disputes through complete tracking of customer interactions
- Boosts customer satisfaction and loyalty
- Enhances staff productivity thanks to monitoring and coaching
- Improves quality assessment based on actual customer-employee interaction recordings
- Transparently integrates with Alcatel-Lucent Communication Servers
- Minimal hardware requirement (single server)
6.7 Fax Services

Fax Services integrate seamlessly with Voice over IP (VoIP) technology and the T.38 fax relay capabilities of leading Alcatel-Lucent VoIP gateways, thus enriching unified messaging with fax communication in addition to e-mail and voice messaging.

Key benefits

Hardware-agnostic and easy to deliver thanks to a pure software solution:

- Provides seamless OmniPCX Enterprise integration and virtual machine support
- Improves collaboration & productivity:
  - Manages large fax volumes and delivers high levels of scalability, reliability and availability
  - Offers document communication, processing & storage
  - Streamlines business workflow
  - Improves presence, collaboration and customer interaction, anywhere, anytime
- Cost savings & ROI:
  - Reduces ongoing fax machine related costs
  - Eliminates junk faxes, reduces printing
  - Reduces energy consumption to advance Eco-sustainability initiatives
  - Reduces single purpose fax hardware and analog circuits
Facilitates security & compliance:
- Routes sensitive documents to designated recipients
- Provides an audit trail of transactions

**Key features**

Provides a full software-based solution with Red Hat® Enterprise Linux® environment on the server

Supports SIP/T.38; no hardware board is required

Enables transmission and receipt of faxes from:
- Anywhere through secure web access
- Any SMTP-based e-mail messaging system (advanced features through user forms are available for Microsoft® Outlook® messaging software and IBM® Notes® mailbox)
- Any desktop application through a virtual fax printer

Provides access to system management from anywhere through secure web administration

Enables enhanced survivability through server high availability (N+1) mechanism
6.8 Visual collaboration and video

6.8.1 Alcatel-Lucent Video Conferencing

The Alcatel-Lucent OpenTouch offer includes all facets of video conferencing and collaboration:

- Room systems
- Desktop devices and software
- Unified communications-based video conferencing and collaboration
- Video infrastructure—NAT/firewall, multipoint conferencing, gateways, management apps

Your needs can all be satisfied by the offer.

Unified Communications video services offer video media as a primary component of visual communications and collaboration.

The services provided include:

- Peer to peer video calling
- Multipoint video conferencing, using voice-activated video switching, native to the OpenTouch platform
- Multipoint video conferencing, using an external video multipoint control unit (MCU), which offers continuous display and supports an array of third-party video endpoints

Alcatel-Lucent offers endpoints and clients that benefit from the video quality of the OpenTouch platform. End users can use the MyIC Phone and webcam, integrated systems from LifeSize, the OpenTouch Conversation for PC (OTC PC), and the OpenTouch Conversation for iPad (OTC iPad).

LifeSize systems and devices address the need for enterprise group video conferencing and desktop video conferencing. LifeSize systems can be deployed with no integration to the OpenTouch, or they can be deployed in a tight and well-tested integration where the LifeSize device is a native part of the OpenTouch call flow.
The OTC PC and OTC iPad clients are most suitable for personal use. These applications run on standard devices and can interoperate with LifeSize systems. OpenTouch Conversation clients offer advanced unified communications features such as application and desktop sharing, presentation sharing and annotation, presence and IM, call routing, and conference administrative functions.

See the Alcatel-Lucent Application Partner Program for information on third-party video systems support.

**Video solution**

OpenTouch Communications can operate with one or several media:

- Audio only
- Audio and video
- Audio and data sharing
- Audio, video and data sharing

There are different ways of establishing video communication from the OpenTouch Conversation for PC (OTC PC) client.

**Peer-to-peer** session between two endpoints (e.g.: the OTC PC and MyIC phone). Peer to Peer is based on Direct RTP. The quality and performance depends on network configuration and video equipment (codec/webcam)

![Video session between 2 parties](image)

**Multiparty video conferencing** is a conference between three or more participants. These participants can use the client of their choice.

![Video of the active talker is broadcasted to all participants](image)

Within the multiparty video conferencing there are different types of conferences:
• Ad Hoc
• Scheduled
• Meet Me Conferencing

**Ad hoc conferencing** (immediate or on-the-fly) - this is an unscheduled conference that requires no advanced preparation. This type of conference is initiated by:

- Selecting several contacts through a user interface (e.g.: from the OTC PC) and pressing a video call button.
- Calling additional people during a call or conference.

Three-party and six-party conferences operate in the same way as Ad hoc conferences. No conference identification is provided or required. No conference resource is reserved. They are acquired from a pool of resources. If no resources are available, the conference is not established.

**Scheduled conferencing** - this is a scheduled conference organized in advance, where:

- The date, time, duration, and possible reoccurrence of the conference are defined using the OTC PC, OTC iPad, or Outlook
- Conference participants receive dial-in numbers and a conference invitation URL – if Outlook is used to schedule the conference, participants receive an Outlook Calendar appointment

**Meet-me** conferencing is a “reservationless” conference - this is a scheduled conference with an expected long duration. The conference “room” is always open and can contain persistent chat conversations and documents. Scheduled and meet-me reservationless conferences can be password protected for an additional layer of security.

The meet-me conference consists of:

- Dial-in phone numbers
- Conference invitation URL (meeting URL)

For meet-me, scheduled conferencing, and ad-hoc conferencing with more than three participants, the Conferencing option must be purchased.

There are two main modes of multiparty video conferencing:

- Voice-activated video switching (selective presence)
- Video mixing (continuous presence)

Depending on video communication requirements, CPU processing requirements can differ. An external video MCU, which is a dedicated hardware solution, is required for multi-party video conference with continuous presence or video mixing.

**Voice-activated video switching (selective presence)**
Selective presence means that only one participant is displayed at any specific time, this applies to presentations where the speaker must be seen by all the audience members.

In this context, video multiparty conference can be handled by the embedded OpenTouch software or an external hardware MCU solution.

Generally, with a software solution:

- All the devices connected to the conference must be running with the same video codec—codec conversion is not possible
- There is no resolution adaptation
- There is no possible framing modification

When the speaker changes, the new video stream is selected and broadcast to all participants thanks to the VAD mechanism (Voice Activity Detection).

To ensure the image quality on each of the video endpoints, all the video client must have the same configuration in terms of supported codecs, resolution and framing.

**Video mixing (continuous presence)**

Video mixing (continuous presence) requires an integrated LifeSize UVC Multipoint system. LifeSize UVC MP supports:

- Codec conversion (transcoding)
- Resolution adaptation (trans-scaling)
• Framing modification (trans-rating)

In addition to video collaboration solutions for PCs and in partnership with major actors of the videoconference market, Alcatel-Lucent offers:

• Full HD (1080p) videoconference facilities, to ensure optimum conference room conditions
• Multipoint Control Unit (MCU)
• Telepresence (HD video on a one-to-one scale)
• ISDN compatibility for external connections on ISDN
• Firewall management for IP external connections
• Administration solutions to pilot and configure all the devices from a central platform
• Recording platform for video streaming

6.8.2 Alcatel-Lucent Video offer

Two types of multipoint video are provided by Alcatel-Lucent Enterprise offer. The first is embedded in the OpenTouch solution and only supports selective presence conferences (voice-activated video switching). The second is based on 3rd party equipment (from our partner: LifeSize) to address selective and continuous presence conferences.

Embedded Voice-Activated Video Switching (selective presence)

The Alcatel-Lucent OpenTouch Business Edition and Alcatel-Lucent OpenTouch Multimedia Services solution embed a video switching capability (limited to selective presence). In addition to SD/HD audio quality mixing, this feature supports HD video switching where it is the active talker who is broadcast to the participants of ad hoc and scheduled conferences.

All the clients used by participants must be running in the same video codec (no trans-coding is performed).

The following table indicates embedded video switching specifications

<table>
<thead>
<tr>
<th></th>
<th>OpenTouch Business Edition</th>
<th>OpenTouch Business Edition</th>
<th>OpenTouch Multimedia Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of 3 party conferences (audio, video, data)</td>
<td>7</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td>Max Participants in 1 ad-hoc conference (audio, video, data)</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Max Participants in 1 or N scheduled conference (audio, data)</td>
<td>40</td>
<td>100</td>
<td>180</td>
</tr>
<tr>
<td>Max Participants in 1 or N scheduled conference (audio, video, data)</td>
<td>31</td>
<td>70</td>
<td>123</td>
</tr>
</tbody>
</table>
**External Video Multipoint Conferencing Unit (selective & continuous presence)**

**LifeSize UVC Multipoint**

Video conferences requiring continuous presence features are powered by the LifeSize UVC Multipoint software. Designed for ultimate flexibility and scale, LifeSize UVC Multipoint is a software-based multiparty solution for on-demand or scheduled video meetings.

The UVC Multipoint is a multiparty video solution which offers the option of purchasing one port at a time. This means that a company can buy precisely what it needs today and gradually buy more ports, as its needs grow. Furthermore, each port can expand its capacity: to the best adapted resolutions for mobile devices, a 720p capacity doubles at 480p and quadruples at 360p.

**LifeSize ClearSea**

For Enterprise customers who need entry level HD video conferencing solution for desktop and mobile clients, Alcatel-Lucent suggests the standalone LifeSize ClearSea solution.

LifeSize ClearSea enables professional HD video collaboration up to 1080p for an immersive, true-to-life experience. Powerful collaboration tools such as multiparty call escalation, presence and text chat, far-end camera control, data sharing, single number reach and a centralized contact list for easy directory dialing ensure that users can connect faster and easier than ever before in Full HD.

LifeSize ClearSea connects users from their desktops, or mobile devices of their choice, to any standards-based video collaboration system or infrastructure in seconds. A clustering capability ensures that large organizations can achieve the scale and redundancy they require to collaborate effectively over video.

The LifeSize ClearSea Server is available as a hardware appliance or as virtual machine software, providing complete flexibility on deployment. LifeSize ClearSea offers the flexibility to collaborate from HD desktop client (PC and Mac) or from mobile video solution (Android or iOS smartphones and tablets).
A built-in automatic NAT/firewall traversal and embedded media encryption provides secure video collaboration inside or outside the organization, without additional equipment or IT resources.

**8082 My IC Phone**

The 8082 My IC Phone set is a full-featured SIP device which constitutes a new step in the implementation of user needs and comfort.

The 8082 My IC Phone set is built around a 7 inch capacitive LED backlit touch screen, which provides a good video experience at the desk.

Intuitive and ergonomic, the 8082 My IC Phone brings video at the desk. It is as easy as launching an audio call.

A USB camera (Logitech C920) can be added on top of the My IC Phone to provide video capabilities, based on H264 video negotiation.

Thus, the OpenTouch user can start a communication in audio and then escalate the call with video. Multi-party video conversation is also possible.

Available video commands

- Mute video
- Display/hide Picture In Picture: Area to insert your own video camera view into the video display
- Full Screen mode
- Receives SD streams (704 x 576 @ 25fps)
- Emits in HD, by using the Logitech C920

User service mode: Capability to arrange and position the camera based on the requested viewed angle.

Example of video escalation from the MyIC Phone:
Video software client

In addition to hardware video equipment, Alcatel-Lucent provides its own multimedia software clients which are:

- OpenTouch Conversation for iPad
- OpenTouch Conversation for PC

The OpenTouch Conversation for iPad brings a new user experience for rich communications usage (Voice & Video and data sharing).
• H.264 profile 3.0
• 640x480—15 fps, 4:3 format
• Video calls and multiparty conferencing
• View and share presentations
• Availability presence
• Directory look-up
• Scheduling
• And more...

The OpenTouch Conversation for PC (Windows 7 and 8) offers the following:

• H.264 baseline profile level 3.1
- 1280x720—30 fps, 4:3 format
- Video calls and multiparty conferencing
- View and share presentations concurrent with video display
- Availability presence
- Directory look-up
- Scheduling
- And more...

**OpenTouch Conversation for iPad (OTC iPad)**

Video commands are provided within the OpenTouch conversation window:

These video software clients are supported in the following solutions:
6.9 Hotel/hospital management

Hospitality
The hospitality offer is based on OmniPCX Enterprise hardware and specific Alcatel-Lucent Hospitality Software.

The users of the system are divided into two different types:

- Administrative staff:
  Hotel or hospital staff members need access to information such as the Guest Name and Room Number. Other useful information such as Language Spoken and VIP status can be useful to improve the guest service levels.

- Guests (or patients)

The salient features of the system are the simplicity of basic functions, and user-friendly ergonomics.

In the Alcatel-Lucent offer, the compatible telephones are all the telephones of the current range... Particularly for the hotel context, the Alcatel-Lucent OmniTouch™ 8082 My IC Phone is much appreciated for its design and its potential to customize the display of all information and features. Its screen provides an excellent platform for the additional services that the hotel or hospital can provide.

The Alcatel-Lucent OmniPCX Enterprise Communication Server hospitality software is an integrated application providing a consistent group of features designed to address the following needs:

- Handling guest arrivals and departures
- Handling group arrivals and departures
- Management of wake-up calls
- Management of guest voice messages
- Dynamic hotel suite configurations (in guest-based configuration)
- Billing of calls (itemized and global) from rooms (two currencies are available)
- Real-time tracking of guest telephone credit (deposit)
- Verification and tracking of room status
- Management of room service
- Management of waiting messages

The OmniPCX Enterprise hospitality software can also work in association to a hospitality property management system (PMS) with the Alcatel-Lucent hospitality link (AHL) to satisfy the following needs:

- Dialing plans adaptable to the hotel configuration, such as matching phone numbers to room numbers
- Different and separate outgoing trunk groups for the room phones and the administration phones
Specific guest requirements:
  - Check-in, checkout
  - Billing
  - Wake-up calls
  - Voicemail & Message handling, etc.

Overview of available services

- Room occupancy: occupied or vacant (automatically updated by guest check-in/check-out and room assignment commands)
- Room status: up to 10 possible statuses: to clean, being cleaned, cleaned, ready (or customizable statuses). Automatic and manual updates are available
- Voice guides in up to four languages
- Wake-up calls: pre-programmed key or prefix or set by attendant, with acknowledgement provided by a voice guide, snooze feature (four additional wake-up calls)
- Do not Disturb: pre-programmed key or prefix or set by attendant, acknowledgement provided by a voice guide, incoming calls routed to the attendant (except for wake-up calls)
- Set lock/unlock: protection against misuse, PIN requested to unlock the phone
- Phone booth: monitored by the attendant and transferred to guest's bill
- Privacy: guest names and numbers may be masked when making internal calls
- Messages indicated by LED, automatic routing to mailbox if desired
- Call forwarding: to mailbox or internal/external number, immediate or delayed
- Greeting customization
Multi-dispatching room service

**Alcatel-Lucent compatibility with other hospitality software**

The Alcatel-Lucent Hospital Link (AHL) is a computer link used to access the OmniPCX Enterprise, for hotel/hospital features only, from an external PMS computer.

The AHL link enables the front office computer to incorporate telephone features in hotel/hospital management. The AHL link works on V.24 or TCP/IP Ethernet, CTI lines.

For each transaction, an acknowledgement is sent back by the other system.

<table>
<thead>
<tr>
<th>Messages from the Com server</th>
<th>Messages from the external application</th>
</tr>
</thead>
<tbody>
<tr>
<td>– Call ticket</td>
<td>– Check-in/check-out</td>
</tr>
<tr>
<td>– Check-in/check-out</td>
<td>– Room allocation</td>
</tr>
<tr>
<td>– Room allocation</td>
<td>– Assignment of voice mail facilities</td>
</tr>
<tr>
<td>– Room status modification</td>
<td></td>
</tr>
<tr>
<td>– Voice mail and wake-up facilities</td>
<td></td>
</tr>
<tr>
<td>– Guest telephone account</td>
<td></td>
</tr>
</tbody>
</table>

The Alcatel-Lucent Applications Partners Program certifies many CMS and PMS publishers. The complete AHL protocol is only available to developers who have a partnership contract with Alcatel-Lucent.

**8082 My IC Phone hospitality package**

The introduction of the Alcatel-Lucent OmniTouch™ 8082 My IC Phone opens new possibilities for communications in hotel environments. All the features of the hospitality offer are available and enhanced by the intuitive interface and high-resolution touch screen incorporated in the 8082 My IC Phone.

The telephone screen can be customized to accentuate the company services or to show external or internal commercial offers that could be interesting for the client. Subjects of interest could include:

- The hotel or hospital services
- Weather information
- Local tourism
- Restaurant information
- Shopping propositions...

The 8082 My IC Phone set is fully compatible with Hotel management applications that can handle:
- Customer checkin/checkout
- Billing and accountancy tasks
- Guest name and directory
- In/out calls management
- Suite management
- Room status
- Wake-up calls, Do not Disturb, call forwarding
- Voice mail management
- Door Cam service
- In addition to the native Hospitality package, Alcatel-Lucent offers a rich set of hospitality applications called Smart Guest Applications, providing guests with advanced bedroom control and complete personalized hotel services for a unique experience.

The architecture is based on the following architecture to allow for efficient management of the communications system.

*Note: The Alcatel-Lucent OmniPCX Enterprise Communication Server must be in release 10 or later release.*
The basic client telephone displays icons to access any available services directly. In this way the client can be guided, which can definitely improve guest experience.

Figure 4.3: The basic hotel screen example

The following image is an example of a hotel visit to show the qualities of the conference room.

The administrative options include a set of embedded skins to instantly change the screen appearance. This is a useful and simple method to develop an ambience, coordinated with color schemes.
The skin may be customized by the Business Partner for any specific hotel by using the 8082 My IC Phone Customizer. This tool is delivered on the Enterprise Business Portal and is presented as a WYSIWYG application to modify the appearance of the telephone display to fit with customer graphical chart. An advanced option is available for more customization, such as modifying the position of buttons, creating new shortcuts or even altering application behavior (for instance enable/disable the call transfer option).

8082 My IC Phone Smart Guest applications

Smart Guest applications offer guests a unique experience thanks to an unmatched set of hotel applications, accessible from a single device, the 8082 My IC Phone. This telephone set provide guest access to hotel services and control to their room environment (such as adjusting the lighting and temperature), or manage their room status. Hospitality representatives can promote their hotel services, activities or nearby shops, thanks to a
customizable presentation service. With simple access to the relevant information, guests can easily call to enjoy hotel amenities.

**Key features**

- Customizable screensaver: background image and guests services
- Hotel services presentation (restaurants, bars, spa...) with direct call buttons
- Presentation of shops close by with direct call button for booking
- Presentation of hotel leisure or business activities
- Interactive clock screensaver, with direct access to main services
- Room automation controls: lighting, blinds, air conditioning
- Privacy management (Do not Disturb status) IT administration with configuration backup
- Option: weather forecast for the area, hotel favorites or any city chosen by the guest (this feature requires a customer subscription to the weather forecast provider)
- Icons, skins, background, modules and others can be customized upon request to Alcatel-Lucent Professional Services

**Benefits**

- Convey a state-of-the-art brand image of the hotel
- Provide greater convenience and comfort, with quick access to the relevant services and information
- Gain new opportunities for advertising and enhance brand awareness inside the hotel
- Increase staff efficiency and optimize hotel operations
- Create new revenue opportunities with added-value services
- Strengthen guest loyalty by creating a unique and satisfying experience

![Image of customizable presentation service](image-url)

**Figure 4.7: Examples of skins for the 8082 My IC Phone Smart Guest applications**
7 Customer Services

Introduction
Today, the telephone is the first point of contact and typically the preferred communication tool between a company and its customers. Therefore, the quality of service offered over the phone is essential for good customer relationship and customer retention, which results in a marked competitive advantage and business growth.

The ideal choice for a basic contact center is the Greeting Assistant. This is an embedded application that uses the features of an Alcatel-Lucent IP Touch 4038 (8038) Phone or an Alcatel-Lucent IP Touch 4068 (8068) Phone to create a simple call distribution system. It offers queuing with announcements to receive incoming calls and enables redirection to the right person. This solution, easy to use and configure, is ideal for small agent/attendant teams.

Since the introduction of contact centers, about thirty years ago, the need for a call center has evolved from basic phone call handling to the management of a complex customer information and interaction center supporting multiple types of media (e-mail, chat, Social media, Fax, SMS) access and applications. Depending on the desired degree of sophistication, a contact center requires one or more of the following:

- Pre-qualification by an Interactive Voice Response (IVR) unit for front-end caller identification/authentication and call characterization
- IVR self-service, at least for call overflow or out of service hours, using touch tone and/or speech recognition with text to speech information updates
- Automatic call distribution and multimedia distribution to a pool of agents or individually skilled agents or a sophisticated routing strategy
- Ergonomic agent workstations supporting multimedia handling and multimedia blending
- Computer Telephony Integration (CTI) with the enterprise information system
- One or more supervision and administration workstations to manage traffic flow and system configuration.
- Integrated multimedia, real-time monitoring and historical reporting on individual or combined components of the contact center
- Centralized, distributed or Head-Quarter/Branch offices IP topologies.
- High availability and branch survivability or more simple backup solutions

The Alcatel-Lucent OmniTouch Standard Edition suite is the foundation for a world-class contact center providing the tools and functionality required for companies to implement a quality customer organization while controlling operating costs. Alcatel-Lucent solutions address these needs by providing:

- An open and modular architecture based on computer and communication standards:
  - Real-time Linux kernel for communications servers (OmniPCX Enterprise) embedding the OTCC-SE CC.
  - Windows operating system for OTCC-SE CC application servers (CCS Server, CCA Server & ACR Server)
- Windows operating system for OTCC-SE CCA clients, for voice handling.
- Windows operating system for OTCC-SE CCS clients, for supervision and administration.
- Computer Supported Telephony Applications (CSTA) communication protocol (OmniPCX Enterprise)
- TCP/IP with Ethernet link to the information system
- KVM virtualization layer running CC servers (CCS Server, CCA Server & ACR Server) allowing to embed all logical CC servers on an OpenTouch Business Edition appliance server
- VMware ESXi virtualization layer running OTCC-SE CC servers (CCS Server, CCA Server & ACR Server) allowing to embed all logical CC servers on Blade or Appliance servers.

- An innovative and patented call routing and distribution algorithm
- Intuitive and ergonomic telephones

**The Alcatel-Lucent OpenTouch Customer Service Editions** deliver a modular solution that unifies all touch points throughout the organization.

Alcatel-Lucent offers solutions for every type of contact center including Customer Service, Action Request Systems, Telemarketing, Banking Services...

Contact center managers can focus on key goals by monitoring in real time the operations and business outcomes and taking immediate actions to improve productivity and results.

- An open and modular architecture based on computer and communication standards:
  - Windows operating system for OpenTouch Customer Service application servers running multimedia handling and complementing the OTCC-SE solution.
  - Windows operating system for the OTCS Unified Desktop client, handling voice and multimedia interactions in blending a model for the Plug-In edition or native multimedia for Prime edition.
  - Computer Supported Telephony Applications (CSTA) communication protocol (OmniPCX Enterprise)
  - TCP/IP with Ethernet link to the information system
  - VMware ESXi virtualization layer running OTCS CC servers allowing embedding all logical CC servers on Blade or Appliance physical servers.

- A flexible interaction distribution logic, based on scripts
- Intuitive and ergonomic telephones
- Agent desktop applications with “out-of-the-box” or custom CRM integrations
- Web-based supervision and administration systems (Web Management Portal)
- An extensive portfolio resulting from partnerships with third party solution providers (Recorders for Quality Management, Workforce Management integration)

**Alcatel-Lucent contact center suite portfolio**
The Alcatel-Lucent OmniTouch CC suite is a comprehensive offer. It starts with the **EasyContact**: the Alcatel-Lucent Enterprise Greeting Center and can be enhanced with features covering advanced greeting needs, providing the ability to expand and adapt to large communication flows.

The Alcatel-Lucent OmniTouch CC suite consists of the following contact center solutions:

- **The EasyContact** package solution is designed for greeting centers. All companies want to improve customer service (internal or external) and optimize call handling, but not all companies can afford fully dedicated resources or have the time for precise call supervision and traffic reporting.

  The EasyContact pack is a simple, comprehensive, and professional greeting solution, dedicated for small groups of people. This solution is fully embedded in the OmniPCX Enterprise. For more information, refer to the corresponding documentation, available from the Enterprise Business Portal and Technical Knowledge Base.

- **The Alcatel-Lucent OmniTouch Contact Center - Standard Edition** is the ideal solution for needs related to voice communications. The Alcatel-Lucent OmniTouch Contact Center - Standard Edition can handle 5 to 2000 connected agents in a single OmniPCX Enterprise node and more for multi OmniPCX Enterprise nodes configuration. Since the contact center router and database are embedded in the OmniPCX Enterprise, the Alcatel-Lucent OmniTouch Contact Center - Standard Edition supports several important features:
  - High availability - with main and back up communication servers
  - Branch survivability with passive communication server
  - Short deployment and fast reactions to business changes

- **The OTCS Plug-in Edition**, complementing the Alcatel-Lucent OmniTouch Contact Center - Standard Edition, adds multimedia (SMS, Chat, Social Media, SMS, Fax) interactions handling to voice handling by the OTCC-SE. The OTCS Plug-in Edition provides integration to the Contact Center eco-system such as Recorders, Workforce management and CRM applications.

  The OTCS Plug-In supports:
  - High availability and survivability—for multimedia interactions
  - An OTCS Voice portal for complex IVR strategies, including TTS and ASR technologies as well as involvement of other departments of the company.
  - Native or custom business integration with 3rd party applications such as Workforce Management or Customer Relationship Management (CRM).
  - Native or custom integration with 3rd party recorders, providing quality management, coaching, as well as mentoring through recording voice/data agent sessions.
  - Customizable integration to business applications

- **The OTCS Prime** provides full multimedia (Voice Inbound, Voice Outbound, SMS, Web-Chat, Web callback, Social Media, Fax) interactions handling while voice is handled by the OTCC-SE. The OTCS Plug-in Edition provides integration to the Contact Center eco-system such as Quality Management with Recorders, Workforce management for agent capacity planning and CRM applications to manage a business relationship with a customer.

  The OTCS Prime supports
- High availability and survivability - for multimedia interactions
- An OTCS Voice portal for complex IVR strategies including TTS and ASR technologies as well as involvement of other departments of the company.
- Native or custom business integration with 3rd party applications such as Workforce Management or Customer Relationship Management (CRM).
- Native or custom integration with 3rd party recorders providing quality management, coaching as well as mentoring by recording voice/data agent sessions.
- Customizable integration to business applications
8 Management Operations

Overview

Telecom managers need flexible network management tools to deal with the challenge of staying up-to-date with today’s network and telecommunication advances. The network administration platform has evolved from a simple management tool to a powerful applications suite, which monitors staff activity and provides invaluable information to managers.

The Alcatel-Lucent OmniVista 8770 Network Management System suite is a comprehensive set of applications designed to help telecom managers and administrators in their day-to-day tasks. It can aid them in making strategic choices for their converged networks, by combining reliability, assured availability, performance information, access security, configuration management and telecommunication cost tracking.

The OmniVista 8770 provides centralized management for the Alcatel-Lucent OpenTouch™ Suite:

- Alcatel-Lucent OmniPCX Enterprise Communication Server from release 6.0,
- Alcatel-Lucent OpenTouch™ Business Edition, Multimedia Service, Enterprise and Office Cloud and Message Center,
- Alcatel-Lucent OmniPCX Office RCE from release 5.0.

This modular platform offers a suite of management applications:

- Unified and Device Management
- Configuration for a system or a global network
- Operations Audit
- Topology and Alarms management
- Multi-carrier consolidated Call Accounting and Tracking
- Performance monitoring
- LDAP Enterprise Directory
- Scheduler
- Maintenance
- Security
- External applications launching

All the applications can be ordered and run separately, except for:

- Topology, which is an additional option for the Alarms Application,
- Microsoft® Active Directory integration and User provisioning API which are additional options for Unified Management,
- SNMP proxy, which is an additional option with the Alarms Application,
- Scheduler, Maintenance and External application launching, which are always included in the application.

(1) Not available for OmniPCX Office

The OmniVista 8770’s client/server scalable platform can handle networked or standalone OpenTouch™ Suite systems, with up to 50,000 users configured on one OmniVista 8770 server.
Up to **100,000 users** and 300 nodes can be managed with a distributed architecture (one module per server).

**OmniVista 8770 value propositions:**

- **Manage and control convergence**

  The OmniVista 8770 provides tracking of Voice over IP calls, to monitor the VoIP traffic and quality, and ease the integration of VoIP into the customer's data network.

  Its long-term trend reporting capability aids in planning anticipated infrastructure upgrades. The OmniVista 8770 provides administrators with configuration and tracking of voice and Voice over IP traffic with a combined applications suite.

- **LDAP directory**

  The OmniVista 8770 includes an LDAP Directory, based on the Oracle® Java System Directory Server. The Directory is automatically synchronized with the OmniPCX Enterprise network and OpenTouch™. In addition, OmniPCX Enterprise users can place a call by simply clicking on a displayed phone number. Administrative information can be added, by importing/exporting contact information from other LDAP compliant directories, such as Microsoft® Active Directory.

  The Directory can be reached via any PC with an internet browser, any workstation on the LAN/WAN via the Directory client or any standard LDAP client (such as MS Outlook®).

  The Alcatel-Lucent Multimedia Attendant Console 4059, OpenTouch™ and OmniTouch Unified Communication can access the Directory.

- **Integrated application suite**

  Though they can be ordered separately, OmniVista 8770 applications are tightly integrated together for operational efficiency.

  Two examples:

  - Modifying a user name in Unified Management is applied immediately to both the Directory and Accounting applications
  - Right-clicking on an item in Topology provides access to the configuration or to the alarms for the selected item

- **Proactive tool**

  As soon as new information is generated, the OmniVista 8770 can send an e-mail, an alarm or launch an application to notify the appropriate person, for proactive management. For example, if an alarm occurs, the information can be sent via e-mail to the network manager.

  In the same way, accounting and performance reports can be automatically generated in different formats (MS Excel, .PDF, HTML, text files) and sent via e-mail to the relevant supervisors.
A distributed administration access
The OmniVista 8770 integrates an embedded security agent that configures administrator access rights. Each administrator accesses the applications according to their rights, from their workstation, through the company’s LAN/WAN or through the company’s intranet via a browser. Several applications can be accessed simultaneously.

Directory
Because a company’s success depends on its people, a corporate directory is a key success factor for efficient internal communication. The directory needs to be flexible, providing assistance to every employee with quick and relevant information on their desktop.

The directory application included in the Alcatel-Lucent OmniVista 8770 Network Management System is designed to address a converged infrastructure and provide information to all desktops. It works with the main enterprise directories as part of a unified directory strategy based on the LDAP standard.

The directory is also used to organize the users for the unified management module.

The OmniVista 8770 company directory feature is available for the OmniPCX Enterprise and OpenTouch™.

The OmniVista 8770 Directory is based on the Oracle Directory Server Enterprise Edition R11, is LDAP V3 compliant, and provides:

- Import and Export in LDIFF (LDAP Directory Interchange File Format)
- Access through Alcatel-Lucent clients such as the Alcatel-Lucent multimedia Attendant Console 4059, the OpenTouch™ and OmniTouch Unified Communication systems
- Access through standard LDAP V3 clients
- Synchronization with other Directories, including Microsoft Active Directory
- Access by LDAP commands

The OmniVista 8770 directory server can be synchronized with an external LDAP server. This process can be automated thanks to a specific LDAP connector. This connector performs a regular automatic synchronization between two LDAP sources (fields mapping, selection of master fields between the two sources, etc.). The OmniVista 8770 scheduler regulates this synchronization to follow a specified planning.
The integration with the external LDAP directory can be extended in order to provide the possibility to provision users from the external directory (for instance Microsoft® Active Directory). Refer to the paragraphs on User Unified management for more information.

There is automatic database synchronization between distributed Alcatel-Lucent Enterprise servers and the OmniVista 8770 directory server. For example, when there is an update of a cost center or a name in the company directory, it automatically updates the cost center and the name of the user in the OmniPCX Enterprise and OpenTouch™ databases. The alarm license allows an update in real-time; otherwise the Directory is updated during daily synchronizations.

There is no need to manually update multiple directories, which means reduced TCO.

Any terminal with a **Web browser** can access the directory information via a user-friendly interface.

In addition, any OmniPCX Enterprise user can place a call by clicking on the **displayed phone number.** Security management automatically checks the access rights of the user, through their login and password. A first level access is available without any login/password.

The OmniVista 8770 directory can contain up to 200,000 entries. These entries are grouped in the company directory **organization tree.** This hierarchical structure maps the company **organization chart.**

These entries can be branches of the tree (with sub levels):

- Companies
- Countries
- Departments
- Cities

They can also be leaves (end-points):

- Persons
- Rooms
- Groups

Each entry contains fields (for example 93 fields per person). The administrator selects among the fields which ones to display in the user interface. Field names can be customized.

These fields can be telephone information, updated in real time by the OmniPCX Enterprise, the OpenTouch™, as well as administrative information, such as geographical location, department, photo, and employee number.

To simplify the task of the administrator, each person’s entry can be automatically created and then updated, from the OmniPCX Enterprise / OpenTouch™ users’ information.

Several internal phone numbers (Alcatel-Lucent 8/9 series, DECT set, modem, etc.) and several external numbers (DDI/DID number, mobile phone, fax, etc.) can be associated to the same entry. These numbers are updated in real time in the OmniVista 8770 company directory.

The fields in the organization (e.g., Company, Country, Department...) can be automatically filled in with the information from the organization tree.

There are three possible accesses to the Directory:

- **Web directory:** users can access or update the company directory through their browsers. This interface provides the "click to call" feature.
- **Directory lookup:** users can access the phone numbers of the directory entries when performing a search by name from a MyIC Phone / Desktop/Mobile or OTC client.

- **Directory administration:** administrators manage the directory (and other authorized applications) through the OmniVista 8770 Directory Administration, via the Java-client or a browser.

To meet the challenge of multiple users with the same name (homonymy), the directory entry is created with an identifier made up of three fields:

- Name
- First name
- Free construction rule, may be left blank or contain additional information:
  - Extension number (internal OmniPCX number)
  - OmniPCX number
  - Cost Center

If a homonymy issue is found, the system launches an OmniVista 8770 alarm. If a user has several phones (DECT, FAX), the administrator can manually associate these phones to the same directory entry.

**Unified User Management**

The OmniVista 8770 NMS Unified User Management module allows administrators to provision OmniPCX Enterprise, OmniTouch 8400 Instant Communication Server, OmniTouch 8440 Messaging (from version 6.7.1) and OpenTouch™ users on one unified interface with a reduced set of parameters. It also allows the association of devices and the activation of services for OmniPCX Enterprise and OpenTouch users. The Company directory, OmniPCX Enterprise, OmniTouch 8400 Instant Communication Server, OmniTouch 8440 Messaging (from version 6.7.1) and OpenTouch™ are automatically updated with the user data configured in the Users application.

The application provides features such as:

- Profiles to apply to sets of users
- Meta profiles definition for user creation
- Association of devices to users
- Creation and association of new devices to users, in one step
- Mass provisioning through txt/csv import and export
Device Management

The Device management application is the interface for the configuration and deployment of the SIP and mobile devices handled by OmniPCX Enterprise and OpenTouch™ nodes. Addressed devices can be SIP physical phone sets, OpenTouch™ Conversation or Connection applications on PC, tablet, smart phones and video devices. The application displays the available devices with all configuration parameters and firmware for their commissioning. Up to five different types of devices can be associated per OpenTouch™ user, one device for OmniPCX Enterprise users.
With the Devices application, it is possible to:

- Configure devices (creation, update and deletion)
- Associate one or several devices to an OpenTouch™ (Conversation) or OmniPCX Enterprise (Connection) user
- Display information on devices
- Configure devices
- Deploy software versions on SIP devices
- Mass provision devices through import/export to or from a file (CSV format)
- Check firmware and application information

**User Provisioning API**

The OmniVista 8770 User provisioning API (Application Programming Interface) enables third party applications to provision OmniPCX Enterprise and OpenTouch™ (from version 2.0) users and devices. It can be used for example by end-users to easily create OmniPCX Enterprise and OpenTouch™ users from a management portal through commercial profiles.

It is an option of the OmniVista 8770 User Management.

The available operations are: create, read, update and delete users and associate 8012 Deskphones, 8082 My IC Phone and OpenTouch Conversation for PC devices to Conversation users. It is based on Web Services (https). It is orderable as an option of the OmniVista 8770 (from version 2.0). A user provisioning API is available for OmniPCX Enterprise users (from version 6.0), provided they have no SIP device, and OpenTouch™ users (from version 2.0).

The benefits of this management API for the developers are an unified interface for all available versions of OmniPCX Enterprise (from version 6.0) and OpenTouch™ (from version 2.0), the simplicity of user creation through profiles, the stability of the Web services across past and future systems versions, as this feature is based on the OmniVista 8770 server Unified management.

**Configuration application**

The configuration module provides centralized management of the OmniPCX Enterprise and OpenTouch™. It has been designed to be flexible, user-friendly, and easily integrated into a legacy environment. The OmniVista 8770 configuration provides local or remote management of a single Alcatel-Lucent OmniPCX Enterprise and OpenTouch™ or networked system (i.e., with multiple nodes of the OmniPCX Enterprise and OpenTouch™).

The network manager can quickly and easily edit, create or delete any network object in the managed network.

A configuration tree and a configuration table are displayed to view at a glance, navigate, and select one or several instances. A search function helps the network manager locate any object or field. In addition to the OmniPCX and OpenTouch™ search, the OmniVista 8770 enhances the search capability because it offers searches for an attribute name or value within the grid result.

In the configuration tree, the nodes (OmniPCX Enterprise, OmniPCX Office, ICS, OpenTouch™) are grouped in sub-networks and networks.

While using the configuration application, the network manager can access and modify the data in the alarms and directory applications by clicking on the corresponding tab.
**Audit application**

This application provides centralization and follow-up of the recorded operations performed in the OmniPCX Enterprise network. Operations are recorded regardless of the platform that has been used: OmniVista 8770 Configuration, Telnet/Manager, eConfig, etc. This is an option of the Configuration module.

The OmniPCX database contains information about:

- Communication Server CPU, version, site and contact information
- Media Gateway type and localization
- Board localization within the Media gateway and Serial Number
- Telephone devices by site for UA/analog lines or IP address and serial number

*Note: the serial number has to be filled manually if the device is not an IP Touch*

The OmniVista 8770 synchronizes all the information items, stores them in its LDAP database, and displays them in the Configuration application. The data can then be used by the other OmniVista 8770 applications. The data can also be consulted by an LDAP client or via the configuration application with no need to connect to the Alcatel-Lucent OmniPCX Enterprise. The field labels can be customized if required by the administrator.

The Alcatel-Lucent OmniPCX Enterprise inventory stored in the LDAP database has six additional data fields. The administrator can change the names of these additional fields according to company needs. The additional data fields are: Misc1 • Misc2 • Misc3 • Misc4 • Misc5 • Site Address.

The Audit application is embedded in the Configuration module. It enhances OmniPCX Enterprise security:

- In case of a security threat, specific analysis provides information on the operations performed during a given time range
- For Service Level Agreement, e-mail distribution of monthly reports provides the list of the operations made for this customer or department by the administrators in charge
- The Audit application is a supervision tool used to record and manage:
  - MAO object configurations (also named Operations) performed on an OmniPCX Enterprise and OpenTouch™. The OmniVista 8770 provides centralization and follow-up of the recorded operations performed in the OmniPCX Enterprise network. The configuration operations are recorded regardless of the tool used to perform them:
    - OmniVista 8770
    - Telnet/Manager
    - eConfig, etc.
  - System operations performed on an OmniPCX Enterprise. It provides the history of the Telnet sessions opened and the detail of the commands entered
  - Login/logout operations on OmniVista 8770 clients
  - Accesses to the OmniVista 8770 client applications, such as Accounting and Reports

**Audit Grid and Tree Structure**
A summary of all the operations and details of an operation are displayed in the audit grid. Filters per node, on a time range, on an object, on the user id (if security access activated on the OmniPCX Enterprise), on an action, etc. are available for display and edition.

The OmniPCX Enterprise nodes are displayed in a tree by sub-networks and networks. Right-clicking directly launches the node configuration.

**Statistics on Audit Information**

The statistics on the Operations audit provide a follow-up of the configuration actions performed in the OmniPCX Enterprises. These statistics are available with the Audit option (no accounting or performance license is needed). Filters can be applied on a sub-network, a node, an object, a user id, on the action performed, and on other criteria.

- Operations audit
  
  There are three predefined reports delivered with the OmniVista 8770 available in the Reporter, in the Audit folder:
  
  - Total reports: hourly and daily synthesis of operations, provides counters by operation types (Create, Delete, Update, Action)
  
  - Detailed report: each operation is detailed (date/hour, action performed, object name, server name, user name, etc.)

  In addition, administrators can create their own audit reports by modifying existing ones or creating them from scratch.

  Example of hourly operation synthesis:

  ![Operation Hourly Synthesis](image)

  - Information about logs

  The OmniPCX Enterprise generates its log file automatically (no configuration is required). However, log retrieval from the OmniVista 8770 requires activating the audit process on the entire system and for each OmniPCX. The audit graphical application and the audit report provide predefined filters to access specific logs. In addition, the console access to the Alcatel-Lucent
OmniPCX Enterprise provides advanced maintenance commands for debugging purposes (such as traces of a process or traces specific to one component).

Using the OmniVista 8770 Audit application, the administrator can check any change that was made in the OmniPCX Enterprise configuration. The grid view presents a summary of all the modifications:

- Server or tool used to perform the change; the server can be:
  - An OmniVista 8770 server
  - An application such as the Instant Communication Service
  - The manager application embedded in the OmniPCX Enterprise
- Login of the user who has performed the changes
- Date of the modification
- Action performed: add, update, delete
- Type of object modified: subscriber, programmable key
- Another Alcatel-Lucent OmniPCX Enterprise broadcasting its internal changes

From the grid, the administrator can display the detail view with the new applied values.

**Syslog files**

With the security-by-default mechanism, the SYSLOG file is enabled on the Communication Server and registers all network events as part of the process to prevent security issues. A record of every event that involves the kernel, the network interface, the login, and other components seen by the Linux system is distributed. These records are categorized by origin and severity and stored in files (directory: /var/log (ex: messages, secure, auth.log, etc.).

The SYSLOG file keeps records or logs that concern:

- Connections (who connected, and at what time)
- The Kernel and registration of the daemons used on devices
- Unauthorized attempts to enter the system
- History of system commands used

Log files are dynamic and can vary widely in resource utilization. To avoid congestion on the disk caused by these files, an automatic mechanism rotates log files. They are compressed and renamed by this mechanism.

The rotational schedule is weekly and/or when the file exceeds 500 Kb (before compression). In concept, SYSLOG is a straightforward tool used to send small textual messages (usually less than 1024 bytes) to a logging server via UDP and/or TCP. In the most common configurations, SYSLOG messages are sent across a network in clear text, but options do exist to use SSL/TLS services to transport SYSLOG messages in encrypted form.

**Launching external applications**

External applications (an exe file or a browser) can be launched in a separate window from the client. Access to these applications is controlled by the OmniVista 8770 security agent.

**Maintenance**
The Maintenance application provides:

- Immediate or scheduled backup for one or for a set of OmniPCX Enterprise and OpenTouch™.
- Immediate or scheduled software update for one or for a set of OmniPCX Enterprises.
- Tools for the OmniVista 8770 server: Immediate or scheduled database backup, defragmentation, reboot are provided in the 8770 maintenance.

A minimum bandwidth between the OmniVista 8770 server and the remote systems is necessary for network maintenance operations.

**Alarms application**

The Alarms application centralizes the alarms and events coming from the OmniPCX Enterprise and the OpenTouch™, as well as the internal faults detected on the OmniVista 8770 server, and the Performance threshold crossing, when this module is activated.

- The alarms may result from a call, an environment, an equipment problem, or a processing failure. If the Performance option is activated, alarm thresholds crossing in the OmniPCX Enterprise voice over IP quality are also consolidated.
- The events can be the creation, the deletion, modification of an object such as a user or an extension, a change in the value of an attribute, or a security breach. The events are available for the OmniPCX Enterprise. Relevant events are handled by the OmniVista 8770 server to update its inventory and its internal application, but all OmniPCX Enterprise configuration changes are handled by the audit application.

These alarms and events are displayed in real time, according to filters and are processed by the alarms application according to the needs of the telecom manager. The alarms are displayed following the ISO model, using specific colors related to the severity level.

By default 1,000 alarms and events are displayed, and the 5,000 most recent alarms and events are stored in the OmniVista 8770 database. Filters and details allow the network manager to look for specific items in the list.

The administrators can manage the alarms: delete an alarm, clear it or acknowledge it.

Alarms and events lists and details can be printed, in order for the network manager to archive historical data.

Statistics on alarms are also available in the report application.

When an alarm occurs, a sound can be played, an automated e-mail can be sent, or a script can be processed, thus providing pro-active management.

Right clicking on the alarm or the event directly launches the configuration of the corresponding object.

The alarms and events automatic deletion can be set up (by default: 45 days and 10,000 alarms and/or events).

**The combination of the OmniVista 8770 topology and the alarm application empowers the network manager to reduce troubleshooting time and be more proactive.**

**Topology**
Topology maps provide a logical view of the networks, sub-networks, nodes (OmniPCX Enterprise, OmniPCX Office and OpenTouch™) and the OmniVista 8770 application as well as the logical links to the OmniPCX Enterprise.

They are updated in real time with the alarms, using the color code for severity. Only correlated alarms (alarms having a beginning and an end) are used to update topology.

The topology application is an option in alarms.

Enhanced mechanisms have been implemented such as auto-discovery of the ABC links between OmniPCX Enterprises, and automatic display of the sub-networks and nodes existing in the configuration.

If a problem occurs, the manager clicks on the object and accesses the faulty item. The display provides everything from an overall view to a close-up display of the faulty element. The network manager benefits form a global view of the network, updated in real time, and can still drill down on a node, a component, etc.

If a parameter needs changing, the telecom manager right-clicks on the object to launch the configuration for this object, or access the corresponding alarms. Telnet can also be started for a direct access to the OmniPCX Enterprise and OpenTouch™ embedded maintenance tools.

The topology maps can be customized to display geographical aspects or a domain. Network managers can customize background maps, and create their own topology views by selecting the networks, sub-networks and nodes among the existing one, or by creating new objects.

From the OmniVista 8770 2.0, a filter has been added to the Topology to display only selected alarms.

For the OpenTouch™ (from version 2.0), alarms are displayed by service, to inform the administrator in real-time of the status of the different features of the OpenTouch™: Communication, Conferencing, Messaging, etc. Some services, for instance, Communication, have sub levels (Routing and Telephony), to specify which features are concerned.

For the OpenTouch™ Message Center (OTMC) 2.0, the High Availability (HA) is automatically displayed in the standard Topology view. Below the OpenTouch™ instance level, the two redundant servers are displayed with their respective alarms. The static default role is displayed: primary or backup. It is possible to do a manual switchover from one server to the other by right-clicking on the icon of one the two servers, which launches a connection to the system.
Accounting

Decreasing telecommunication costs and providing better service to customers are constant concerns of any company. This is just as true for telephone usage as for any other expense: telephone costs must be controlled and efficiency measured. The OmniVista 8770 offers all companies, operating on one or several sites, a tool to analyze their telecommunication costs as well as the quality of their telephone service.

The OmniVista 8770 automatically retrieves charging information from all of a company’s sites equipped with one or more of the OmniPCX Enterprise, the OmniPCX Office and the OpenTouch™, whether networked or not. Telephone costs can be consolidated by means of comprehensive reports.

The OmniVista 8770 is equipped with a relational database in which information can be searched, sorted, analyzed, presented and exported according to selected criteria. This database contains the organizational map, the report definitions, the CDRs (Call Detail Records), the performance counters, the carriers’ code book and the alarms and events. The database can be saved and restored.

Costs can be controlled in a multi-operator environment. Simulation features help to make the best choice.

Detailed and summary reports as well as hit lists are available. Most typical reports are predefined and pre-installed to ease the task of the accounting manager. They can be automatically and periodically generated, exported and sent by e-mail. Many different formats are available, such as Excel, PDF, txt and HTML.

This powerful and secure tool communicates with OmniPCX and OpenTouch™ systems using standard protocols, enabling large amounts of information to be processed quickly: the maximum number of CDRs handled per day is 500,000. The maximum number of CDRs stored in the database is 30 million. Any number of CDRs beyond this amount must be archived.

The use of passwords and partial concealment of dialed numbers ensures confidentiality.

Call monitoring provides the supervision of Telecom expenses and can automatically send an e-mail when these expenses exceed a specified threshold.
The main parts of the OmniVista 8770 accounting administration are:

- **Organization map**: the organization map is a tree displaying the financial organization of the company. Costs are dispatched and reports are generated according to cost centers and organizational levels of the tree. Historical information is recorded, so that the administrator can see the changes that occurred within the organization of the company. The accounting tree represents the past and present accounting organization of the company.

- **Accounting management**: allows the administrators to manage the carriers’ fees, to apply specific costs and ensure confidentiality. Advanced features such as comparison and simulation of carrier fees provide reports on what would have been the telephone costs with another carrier, on selected directions. In the OmniVista 8770, different carrier fees can be set up by trunk groups.

- **Monitoring (tracking)**: The option Tracking/Monitoring provides a graphical view called “Tracking status” and a notification by e-mail or alarms in case of a threshold crossing. In addition, the accounting application provides predefined or customized reports on Monitoring, or threshold crossing, using cumulative counters.

- **Reporter tool**: The main function of the accounting application is to produce reports on telecommunication costs, according to the parameters provided in accounting management and to the information provided by the OmniPCX Enterprise in the CDRs generated after each call. Using the Reporter, the user can generate predefined or customized accounting reports. The Reporter is also used to manage reports on Performance and Alarms.

**Traffic analysis**

As your organization grows, your communication system needs to be permanently monitored:

- Is your on-site infrastructure (DECT/PWT) well designed?
- Does your installation have enough bandwidth to handle the overall traffic to carrier networks?
- Do your attendants answer calls fast enough?

Managers expect that their Network Management System can optimize capacity, ensure the quality of the network, support a wireless DECT/PWT infrastructure and save telecommunications costs.

Here are some examples of information provided by Traffic analysis:

- Measurement of response time
- Statistics on the line-occupancy ratio for incoming calls
- Reports on attendant and user traffic
- Occupancy rates of the different internal and external links
- Average time spent waiting for an attendant
- Base station traffic analysis for capacity control of cells

This information is provided through predefined or customized reports. The OmniVista 8770 allows network managers to schedule reports and then receive them by automated e-mail, as well as access them from anywhere on the intranet. This application is only available for the OmniPCX Enterprise.
Voice over IP Performance

To achieve a level of visibility that VoIP deployments require, it is necessary to monitor both audio and signaling quality performance indicators that impact call quality before, during, and after a VoIP deployment. Analysis technology must be able to capture VoIP PBX generated performance statistics. It must collect, measure, analyze and correlate results from IP-PBX VoIP call detail records.

The OmniVista 8770 Performance monitoring application can measure VoIP performance indicators within a network carrying VoIP traffic to baseline performance and alarm on problems. The OmniVista 8770 Voice over IP Performance monitoring application provides the critical information necessary to plan a VoIP deployment, to pre-empt post deployment problems and to optimize resources to maximize return on the Voice over IP network investments (ROI). The tool provides visibility into geographically dispersed, multi-technology converged OmniPCX networks. It enables IT and VoIP managers to monitor, analyze, manage and predict OmniPCX performance from a single centralized location.

The Voice over IP Performance option is available for OmniPCX Enterprise from 8.0, and OmniVista 8770 from 2.5.

The Voice over IP Performance option is available for OmniPCX Office from 5.0, and OmniVista 8770 1.3. The same VoIP reports as OmniPCX Enterprise are available.

VoIP Performance is an option of the OmniVista 8770 Performance application.

The OmniPCX Enterprise consists of variety of components, each of which produces data related to performance monitoring:

- VoIP equipment, which are also referred to as couplers (INT-IP for 4400 racks, GA/GD for MG, IP voice mails 4645)
- IP-Phones which may be either software running on a PC as IP desktop softphone, or a VoIP capable telephone set as the 8 Series (some previous generation sets are also supported as 4035 IP, 4020 IP, 4010 IP and IP Softphones 4980)

For the customers equipped with the IP encryption solution Server and Media Security Modules (SSM/MSM), information encrypted/not encrypted is available in the VoIP CDRs. Four predefined VoIP reports on encryption are included in OmniVista 8770 VoIP Performance. These statistics provide information on the encryption ratio for a device, an IP domain, and detailed reports on communication encrypted or not.

This section will provide the following information:

- Data collection and alarming for data available from the OmniPCX Enterprise and Office,
- Bulk data collection of VoIP statistics tickets to provide per-call performance data
- Performance features that support analysis of VoIP performance for the OmniPCX data, including Network Thresholding and Alarming capabilities associated to VoIP monitoring,
- Reporting on performance, including predefined reports that include data from the OmniPCX Enterprise and Office.

Reporter tool

The Reporter application includes powerful tools to create, modify and delete reports and report definitions.
The Reporter is used for the Accounting, Traffic analysis, Audit and Alarms applications, and VoIP Performance for the OmniPCX Office and Enterprise.

Predefined report definitions (e.g. Accounting: detailed report per extension) are delivered within the OmniVista 8770.

Customized report definitions can be made from predefined reports (e.g., Detailed report per extension for the Commercial Department on calls > $100) or newly created.

Reports can be generated using report definitions, and then exported to different formats: Excel, PDF, txt, HTML, or sent by e-mail.

The report generation, export and notification by e-mail can be scheduled automatically by the OmniVista 8770.

Dynamic filters can be defined in a report definition to limit the scope when generating reports (for a specific period, for a specific node in the network, etc.).

**Accounting and VoIP Ticket collector**

The OmniVista 8770 provides an interface “Ticket collector” to export the OmniPCX and OpenTouch Accounting CDRs for an external application (billing application, etc.). The Ticket Collector SDK and documentation are available for the registered partners on the Alcatel-Lucent Application Partner Program. A Ticket Collector license can be ordered from the OmniVista 8770 application in ACTIS.

The Ticket Collector allows the export to various files, stored in a local or external directory in the PBXs’ format.

The VoIP CDR Ticket Collector feature is the same as the Ticket Collector, except that instead of, or in addition to Accounting CDRs, VoIP CDRs are collected for OmniPCX Enterprise. VoIP Statistics records contain various data items (codec used, jitter impact, packet loss, delay...) designed to identify the causes of potential problems with IP devices connected to an OmniPCX that could result in a bad Quality of Service (QoS).

The data collected can be exported to third party applications to provide Statistics records for analysis.

**Integration into standard management platforms**

Standard management platforms provide solutions to manage multi-vendor heterogeneous IP networks.

The integration of the OpenTouch™ Suite with leading standard Network Management Platforms provides a solution to manage a Voice and Data, converged Enterprise Network.
9 Security

9.1 Global security view

In addition to employee mobility, securing communications for all voice and data applications is the key to supporting new business models. The aim is to establish a trusted dynamic enterprise that competes effectively in today’s business environment. Security must become a positive enabler to drive business performance. To achieve this objective, enterprises must have a corporate-wide strategy — a security blueprint — which allows the enterprise to be open for business in a trusted environment. This requires a shift to a user-centric approach to security, delivered from within the network to protect networks, people, processes and knowledge.

The user-centric security blueprint

A user-centric security blueprint can enable a powerful shift to a trusted, dynamic enterprise, while the same time, managing risks, protecting private data, and maintaining compliance.

With a security blueprint, enterprises satisfy the demands of employees, business partners, and customers for always-on, always available voice and data applications, which can be accessed from anywhere and at any time.

The blueprint delivers enterprise security from within the network and protects networks, people, processes and knowledge. When abiding by the blueprint, the enterprise benefits from:

- **A network** that is user-aware and provides security for voice, data and mobility, and ensures compliance with policy enforcement and audit
- **People** securely collaborating across organizational boundaries, leveraging business-to-business relationships, Web 2.0, and cloud computing without security-imposed productivity barriers
- **Processes** that are agile, automated and always secured
- **Knowledge** in the form of protected private data, as well as secured knowledge sharing

The user-centric security blueprint prescribes a global, corporate-wide security infrastructure that provides a consistent and corporate-wide application of security.

Applying the security blueprint

Securing the information system core and consequently securing the solution and the network implies handling security against potential vulnerabilities at every level. Based on this approach, Alcatel-Lucent integrates security at each of the different levels in the following model.
Defense in depth is an information assurance (IA) concept in which multiple layers of security controls (defenses) are placed throughout an information technology (IT) system. The intent is to provide redundancy in the event of a security control failure or vulnerability. This can reduce all aspects of personnel, procedural, technical and physical security, during the system's life cycle.

Security is not just a function that is implemented at a specific level. Efficient security means taking all the different levels into account in order to address multiple types of potential vulnerabilities. Security must be global and has to adapt to environment constraints.

This approach is used in the OpenTouch security policy, where the guiding principles provide customers with communication solutions that are secure. The vendor's factory floor must stay secure during all processing steps and milestones. Product development rules define: Security in Design, Security by Default, and Security in Deployment.

**Security in Design:** In the OpenTouch context, the target of security in design is to avoid flaws in products as early as possible in the development process. Developers are trained to avoid the programming interfaces known to lead to security vulnerabilities 99% of the time.

**Security by Default:** In the OpenTouch context, security features are enabled to protect products coming out of the factory, during the installation phase.

**Security in Deployment:** OpenTouch products, once deployed, must stay secure over time, despite an ever evolving threat context. A good layering approach is to have a security control that prevents an attack, backed up with a mechanism to detect any potentially successful attack and alert administrators. Where security needs are strong, a third layer can be added to mitigate the impact of a successful attack.

**Perimeter security**
Choosing a perimeter security solution usually implies different choices according to the various types of enterprises. It is greatly dependent on security strategy.

If an enterprise prefers to follow a best-of-breed approach to threat management, separate solutions are required for firewall/VPN, anti-virus, anti-malware and web filtering. If an integrated approach to threat management is preferred, a unified threat management and firewall solution is attractive.

If an enterprise has many independent branch offices, an integrated solution which includes routing functionality, referred to as a security router, is an approach to be considered.

In today’s network, a web application firewall is a must to protect web servers and web-facing applications. One overall consideration in controlling security operations costs is scalability and manageability of the perimeter solution chosen, especially for enterprises with many locations to protect.

Protecting a company at the perimeter with a firewall is a good practice, but not enough for good security practice. Adding an intrusion detection system (IDS) inside the perimeter protected by the firewall will at least alert administrators when an attack from the Internet has successfully circumvented the firewall (or came from inside the LAN).

**Network access control**

Network access control can be achieved by looking at several categories of solutions. Starting with IP address management that offers the ability to provide an address to devices connected to the network, followed by host integrity check solutions that ensure that it is safe to allow a device on the network, ending with role-based access control solutions.

Authentication (802.1x) at the network level is recommended to avoid unauthorized accesses to the LAN.

802.1x is the IEEE standard for port-based Network Access Control for authentication of devices attached to a LAN port. It is used for certain closed wireless access points, and is based on the EAP, Extensible Authentication Protocol (RFC 2284).

All Alcatel-Lucent deskphones implement the supplicant part of 802.1x protocols and support EAP-MD5 and EAP-TLS authentication protocols.

Host integrity check solutions will determine if a device is configured in accordance with enterprise policy and ensure that it contains no malware before the device is allowed onto the network. It is a must
in any wireless environment, where users connect devices to the network at will. Enterprises that have a stringent need to protect certain servers and applications, or are in highly regulated industries, should consider role-based access control solutions to provide the required controls with audit. These solutions can be deployed without having to re-configure networks on a physical level to achieve security requirements.

Identity management

Identity management is essential to user-centric security and starts with an enterprise-wide password management platform and directory server farm. Many organizations today will consider the move to some form of strong authentication, based on certificates, coupled with two factor-identifications of end users and devices. Providing a rich set of interface and control points to the voice and data fabric of the enterprise is one of the key to the deployment of an Authentication, Authorization and Accounting (AAA) infrastructure.

Of course, an enterprise-wide single sign-on capability is also important to provide an internal secured environment that does not hinder work potentials. With the move to Web 2.0 and cloud computing, the addition of a federated identity management capability may be necessary.

Application security

The deployment of new applications such as VoIP, the adoption of new business models, leveraging Web 2.0 and the Cloud, as well as new compliance regulations create the need for security solutions to protect user activity, with an understanding for the application being used by the end user.

With the deployment of VoIP, it is important that the existing enterprise security can ensure that the new virtualized perimeter us defended, and possibly that encryption requirements for VoIP are met.

In the case of Web 2.0 and the Cloud, solutions that secure individual Web services and can act as a trusted intermediary with the Cloud are becoming crucial to protect enterprises. The implemented solutions must ensure that enterprises are compliant with regulations in the processing of monetary transactions and must control the cost of being compliant.

Mobile security
Many enterprises increasingly see their employees spending many of their working hours outside enterprise premises, using mobile computing devices such as laptops. Solutions for securing mobile laptops must address the concern of private information, and the risk of this information being lost or stolen. Such solutions must also address the need for the configuration of laptops at any time.

**Security management**

Security management requires a number of platform choices, covering performance and event management, patch management, vulnerability detection and compliance management. Solutions deployed for performance and event management must be provide capabilities for global enterprises, to collect a rich set of data from the voice and data fabric, and provide a robust event response and escalation engine. Solutions for patch management must integrate with enterprise platforms that manage mobility.

**9.2 OpenTouch Session Border Controller**

**Introduction**

The OpenTouch SBC (Session Border Controller) enables OpenTouch multimedia conversations to securely traverse the enterprise IP border, while controlling quality and ensuring interoperability.

The OpenTouch SBC enables seamless connectivity to SIP trunking providers and deployment of OpenTouch clients on the internet, outside the enterprise firewall.

The OpenTouch SBC is a software-only solution, running on a standard server, avoiding the costs associated with dedicated hardware (logistics, inventory), while providing high scalability and high availability. The OpenTouch SBC can also be virtualized to integrate into different environments and platforms (VMWare).

The SBC can also be used with the Alcatel-Lucent OmniPCX Enterprise system.

Aimed at mid-size to large-size enterprise customers, the OpenTouch SBC maximum capacity is 4,000 SIP sessions, but its typical capacity is from a few tens to a few hundreds of sessions.

To remove dependency from a specific HP platform in order to address smaller capacities, the OTSBC can run on a VM ware Hypervisor (up to 250 sessions).

The SBC is an OEM product developed by AudioCodes, referred to as the Mediant Software E-SBC. The SBC benefits from the rich capabilities of AudioCodes E-SBC product series. AudioCodes E-SBC is already used for SIP interoperability between the Alcatel Lucent Enterprise OmniPCX Enterprise and Microsoft™ Exchange and Lync® Server 2013.
Features/Benefits

FEATURES:

- Enterprise perimeter defense against SIP denial of service, fraud and eavesdropping
- Certified with SIP service providers
- Addresses the communication security requirements of mid-size and large enterprises
- Enables SIP protocol adaptations for interoperability
- Provides secure SIP/media connectivity and NAT traversal for OpenTouch voice and video collaborative conversations over the internet
- Acts as a secure softphone proxy for enterprises that need a demarcation point between a segregated voice network and softphones that are in an all-purpose data network
- Provides business continuity over redundant servers, with SIP and media session preservation
- Runs on a commercial off-the-shelf (COTS) server and virtualization layer
- Provides easy-to-use web-based management

BENEFITS:

- Provides security between the enterprise and SIP trunking providers
- Complements the enterprise firewall with dedicated protection against SIP-based attacks
- Simplifies interoperability with various flavors of SIP trunking
- Enables cost-effective and secure conversations with OpenTouch remote workers over the internet
- Solves SIP and media traversal of Network Address Translation (NAT) devices
- Provides an easy-to-manage central demarcation point between softphones on an untrusted network and the communications network
- Monitors voice quality for Service Level Agreements (SLA)
- Improves the TCO with a high-performance solution running on a COTS server and virtualization layer

9.3 IP Touch security

The security of voice over IP communications is generally considered less secure than in a TDM (Time Division Multiplexing) environment.

Voice flows over a shared network are susceptible of being intercepted and listened to by anybody with access to the LAN, with the help of "freeware" tools. A package of measures at the infrastructure level of the network allows the essential limitation of interception risks (switched LAN environment, VLAN voice segmentation, management of ACLs between VLANS, protection against ARP spoofing or flooding), but the only way of being certain that voice flows are well protected is end-to-end encryption: even if they are intercepted, communications will prove inaudible.

This allows a level of confidentiality superior to that found in a TDM environment (without special equipment).
In order to have a sustainable encryption solution, it is equally necessary to secure the phases preceding the establishment of voice flows. To this end, encryption and the integrity of the signal between the communication server and IP telephones/Media Gateways must be established.

The authentication of the different elements comprising the IP telephony solution must be a prerequisite to the establishment of secure communications. If not, there is a risk of a certain number of attacks of a "man in the middle" type, which puts the confidentiality of the message in danger through the interception of private information.

The initialization of IP terminals must be secure in order to avoid a binary (downloaded from a rogue server) being executed on the set. To this end, IP phones initialize in a secure way by validating the signature of downloaded files.

Alcatel-Lucent has a partnership with Thales, a major security player in the domain of Defense and Enterprises. This partnership in its endeavor to provide clients with vital reliable security solutions has produced a high performance encryption solution responding to the demands of voice communications: real time (delay and commutation time) and a high level of security.

The solution allows the encryption of all communication flows linked to voice at the moment they cross through the LAN and even WAN. It does not encrypt TDM flows for example on a T2 junction or on a link to an analogue post, even if the IP section of the communication is encrypted.

The devices compatible with encryption are:

- The range of communications servers (IPAS, IPRS, IPCS) and passive communication servers (PCS)
- The Media Gateways IP range (Common Hardware or Crystal)
- The IP Touch range (Alcatel-Lucent 8 series)
- Premium DeskPhones (8028-8038-8068 models)
- IP Desktop Softphone application (software emulation of Alcatel-Lucent IP Touch 4068 Phone set)
- OmniTouch 8400 ICS servers (application servers and media servers)

This solution strongly depends on standards in order to guarantee sustainability and future evolutions of SIP environments, for example:

- The encryption of the signaling call control by IPSec ESP (RFC 2406) in transport mode with AES encryption in block mode (AES CBC). The signal keys are negotiated between terminals and Communication Server with the help of IKE (Internet Key Exchange – RFC 2409) based on a calculated PSK (Pre Shared Key)
- Voice encryption by SRTP (RFC 3711) protocol with AES encryption in counter mode. The symmetrical voice keys are derived from receipts from when the Communication Server crossed the encryption signal.

Alcatel-Lucent and Thales have decided to separate communication and encryption functions at Communication Server and Media Gateway level, to guarantee the solution’s flawless security.

The advantage of this approach is to avoid deactivation, either accidental or intentional, of the encryption without the user being aware of it.

Thus, an IP Media Gateway equipped with a security module cannot be de-securitized without being taken apart.
The great benefit is that deploying this IP Touch Security solution on an existing Alcatel-Lucent OmniPCX Enterprise Communication Server does not require the re-engineering of the IP telephony solution.

The IP Touch Security solution supports large capacity configurations: up to 15,000 Alcatel-Lucent 8 series or Premium DeskPhones (8028-8038-8068 models) sets and 240 Media Gateways. System start-up is optimized to reduce start-up time. A system with 15,000 IP phones restarts in approximately 10 minutes.

The high availability of IPT solution is the same with or without dedicated encryption appliances.

The implementation of the IP Touch Security solution does not affect the Communication Server high availability, as the SSM module has a dedicated processor to perform hardware encryption and therefore does not use any resources from the Communication Server where main task is Call Handling.

Alcatel-Lucent has chosen hardware-based encryption for the Communication Servers and Media Gateways because this hardware encryption does not add any delay to the scale generally found in VoIP (dozens of ms). SSM uses a dedicated processor for encryption that means adding encryption does not add any burden to the Communication Server processor signaling where the only dedicated task is the Call Handling.

There is no bandwidth overhead when using SRTP instead of RTP. Packets exchanged during a call have the same size, because the optional fields introduced by the SRTP protocol are not used in IPT Security feature, as compared to RTP.

Concerning signaling Call Control encryption, there are supplementary messages exchanged between security modules and IP Touch sets for IPSec negotiation, mainly at system initialization. In all cases, the signaling part of a communication can be considered non-significant when compared to the volume of voice packets.

### 9.3.1 Encryption architecture

The Alcatel-Lucent IP Touch Security solution provides:

- The capability to encrypt voice and call control signaling flows (confidentiality)
- Integrity of call control signaling (ensuring that messages have not been modified)
- Secure download of binaries and configuration files in IP Touch sets, Premium DeskPhones and IP Media Gateways

A Server Security Module (SSM) protects:

- The Communication Servers (Main and Standby)

SoftMSM (embedded in IP Media Gateway) protects:

- The IP Media Gateways (Common Hardware or Crystal)

MGSec (Signaling encryption only) protects:

- The IP Media Gateways (Common Hardware)

A Media Security Module (MSM) protects:

- The Passive Communication Servers (PCS)
- The IP Media Gateways (Common Hardware or Crystal) managed by a PCS
- The OmniTouch 8400 ICS: application and media servers, OmniTouch 8440 MS
- The IP-DR link Voice Logger

An Embedded Security on:

- IP Touch sets & Premium DeskPhones

End-to-end communication encryption is supported by an OmniPCX Enterprise configuration consisting of networked nodes. The link between OmniPCX Enterprise nodes is an ABC IP hybrid link.

- Inter-node signaling is encrypted using IPSec
- Voice media is encrypted with SRTP
- Voice Media keys used for encryption are generated by the Communication Server managing the called party.
9.3.2 Security modules

The Server Security Module (SSM) and the Media Security Module (MSM) are cryptographic components placed between the "not secured/encrypted" LAN and the "secure/clear" connection to Alcatel-Lucent OmniPCX Enterprise Communication Server components.

- SSM: protects the Communication Server
- MSM: protects the Media Gateways

Although the physical aspects of the SSM and MSM are almost the same, they differ in the functions they perform.

*Note: IP touch security modules are based on the Mistral platform from Thales (VPN encryption), which is based on a military design.*

The SSMs and MSMs are available in rack-mounted models.
Characteristics | Rack-mounted model
--- | ---
**Rack-mounted model** | **SSM-RM/MSM-RM**
Dimensions (depth, width, height) | 215mm x 371mm x 43.6mm (19” standard rack mountable)
Ethernet ports (10/100 Mbps) | 4 clear and 1 encrypted

**Server Security Module (SSM)**

The SSM is the central component of the IP Touch Security solution. It is connected by a "crossed" RJ45 patch cord to the Communication Server on its "clear" port and to the "unsecure" network on its "encrypted" port.

The SSM negotiates and establishes encrypted signaling sessions with IP phones, Media Gateways (through MSM) and Media Gateways secured with MGSec (see: MGSec) or SoftMSM (see: Signaling and voice encryption on IP media gateway): SoftMSM).

Additionally, the SSM also establishes encrypted media sessions when the media server is protected (Alcatel-Lucent 4645 Voice Media System, IPMG) by this component.

It is transparent to QoS tagging (802.1p/DiffServ) from the Media Gateways or Communication Server. It reacts as a bridge from an IP point of view (no routing).

It also manages QoS based on layer 3 tagging, to prioritize telephony traffic (whether media or call control signaling) over non real time traffics.

SSM module installation has no impact on Communication Server redundancy operation. There is one SSM module on Main CS and another SSM module on Standby CS. The both SSM modules are active. If an SSM failure occurs on Main CS or if the Main CS fails there is an automatic and transparent takeover performed by the Standby CS and its own SSM module, in order to perform encryption.

**Media Security Module (MSM)**

The Media Gateway is connected to the "clear" port of MSM through a "crossed" RJ45 patch cord.

The MSM is in charge of encryption for Media Gateway signaling traffic to the Communication Server.

It also encrypts media traffic (to other MSMS, to IP Phones, ...) using per session keys.

**Call control signaling encryption and integrity**

IP Touch phones and secured Media Gateways are controlled through a "stimuli" protocol called NOE over IP.

Call Control signaling (from the Communication Server to IP Touch phones and from the Communication Server to secured Media Gateways) is protected using IPSec ESP (transport mode) with the AES encryption algorithm (CBC).

Symmetric keys are negotiated between IP Touch phones or a secured Media Gateway and SSM, and are changed regularly.

Call Control signaling is protected both in confidentiality and integrity. Integrity is checked using the HMAC SHA1 signature of the flow. Integrity means that the message has not been changed
between the Communication Server and IP Touch phones or a secured Media Gateway by a Man In the Middle (MIM) attack. HMAC-SHA1 is used for integrity to the phones. For integrity between SSM and MSMs, AES XCBC is used.

**Media encryption**

Media (voice) is encrypted using SRTP with the AES (counter mode) encryption algorithm.

The benefit of SRTP is that it introduces no bandwidth overhead on WAN compared to unencrypted traffic. It will not add any additional complexity to "network level" services (QoS, trouble shooting, firewalling) configuration.

Symmetric keys are used and they change at every RTP session. They are sent by the Communication Server to end points through encrypted signaling sessions.

Transparent modem (and transparent fax) encryption is also supported (with the straight constraints on delay).

A call between two IP Touch phones registered in two different Alcatel-Lucent OmniPCX Enterprise Communication Server can be encrypted if the two nodes are secured. Encryption within the network is also preformed between a Media Gateway on one node and the IP Touch phones or between two Media Gateways.

Fax relay (T38) is supported, not on SRTP but on IPSec (T38 fax does not use RTP).

**Notes:**

- Voice media is encrypted, but existing "authorized" devices used to log voice calls (voice loggers) are still compatible with IP Touch Security, except for those capturing packets at the IP level between the components of the IP Touch security solution.
- Audio conferences, whether 3 parties or N parties, are also encrypted, if the conference bridge is located in an IPMG protected by an MSM or by SoftMSM.

**Telephone user information**

The majority of telephone users are not concerned whether their communications are encrypted or not. Typically, it is an assumed IT manager task to make sure that their communications are secured and not at risk.

**Visible information**

For demanding users, encryption can take place between the parties, if all the parties are capable of encryption (i.e. IP Touch sets, Premium DeskPhones and secured IPMG). On each set, signaling is encrypted (IPSec). Voice communications are also encrypted (SRTP).

On IP Touch phones and Premium DeskPhones (but not on the Alcatel-Lucent IP Touch 4018 Phone), the lock icon is displayed when encryption (signaling and media) is in operation (with either IP Touch Security or a Security module) for the current communication.

If a legacy IP Phone (without encryption capability) enters the conference the lock icon disappears indicating that encryption is no longer ensured. Signaling remains encrypted on IP Touch/Premium DeskPhones but not on legacy IP Phones. Partial encryption remains (voice traffic from IP Touch to IP Touch is encrypted, but voice traffic between legacy and IP Touch or Premium DeskPhones is in clear mode).

When the non-encrypted user, i.e. the legacy IP Phone (without encryption capability) leaves the conference, the lock icon reappears, indicating that encryption is ensured.

In this way, the user can control that the communication is encrypted end to end:
• Only for a communication to another IP Touch or Premium DeskPhone (this can be verified if both users see the encryption icon)
• Which is on the same campus or which uses a hybrid IP link (through the WAN, the call can overflow via the PSTN, and then call is not on IP from end to end)

Note: In the context of end to end encryption, it is recommended not to use Bluetooth handsets or headsets, as these are not encrypted and can be intercepted.

There is no display when communications from IP Touch or Premium DeskPhones are not encrypted (media), for instance to TDM end points that are not protected by an MSM.

Note: Users cannot decide whether they want a communication to be encrypted or not.

Encryption is decided by the Communication Server:
• By default between IP Touch phones or Premium DeskPhones
• Depending on the encryption capabilities of end points for all other types of communications (to Media Gateways for instance)

Encryption (Voice and signaling), once configured on the SSM, applies to all IP Touch or Premium DeskPhones. IP Media Gateways flows (Signaling and Media). IP Media Gateways flows (Signaling and Media) on remote sites can be encrypted, depending on the configuration of a SoftMSM or the implementation of a MSM module (PCS survivability). Another option named MGSec provides Signaling encryption only for IP Media Gateways with a few users on remote areas.

All IP Touch or Premium DeskPhones on a secured system benefit from encryption. It is sometimes requested that encryption be provided for a small number of telephones, but voice encryption is merely the most apparent aspect of the IP Touch Security feature. Security begins when the IP Touch or Premium DeskPhones is initialized, so there is mutual authentication of telephones and SSM modules, based on the Pre Shared Keys mechanism. This mutual authentication is designed to prevent the possibility of a rogue IP phone trying to connect to the Communication Server.

To ensure a good level of security, all IP Touch and Premium DeskPhones sets should take advantage of this mechanism. IP Touch phones may be de-secured only when going in survivability mode without security.

9.3.3 Signaling and voice encryption on IP media gateway): SoftMSM

In order to secure the Media Gateway communications (voice and signaling), it can be necessary to insert an MSM box between the GD/GA or INTIP and the LAN network.

The OmniPCX Enterprise is equipped with a powerful Gateway board INT-IP3/GD-3 (for Crystal and Common Hardware) where a "software" encryption solution can be deployed to avoid adding MSM hardware cost.

This "soft MSM" is used:
• To protect the IP signaling link (IP Link) between the Communication Server (through the SSM-RM, mandatory) and the Media Gateway, with authentication and integrity, in order to protect the availability of MG against MIM attacks. Additionally the IP link is also encrypted to protect against sniffing
• To encrypt voice though SRTP

This security module uses SHA-1 as an integrity method with SSM-RM box (in front of Communication Server).

It has the same initialization process has the hard MSM.
Hard MSM (MSM RM) are still required in the following contexts, even when there are INT-IP3/GD-3 in the IPMG:

- To protect application SIP and RTP flows (UM, My Teamwork, A4645)
- When encryption is required on PCS
- For some specific cases where INT-IP3 cannot replace INTIP (for instance IOIP).

End of document