FROM TELEPHONY TO IP COMMUNICATIONS: A NATURAL EVOLUTION

REDUCE COSTS AND IMPROVE MOBILITY WITH IP COMMUNICATIONS

APPLICATION NOTE

Alcatel·Lucent
Enterprise

CONTENTS

INTRODUCTION

Alcatel-Lucent Enterprise offers a 3-step approach to business telephony evolution:

Step 1: Reliability and technological continuity with a software upgrade.

Step 2: Reduced communication costs and improved mobility through IP evolution.

Step 3: Optimization of telephony operations and integration into business applications through the virtualization of communication services.

This document focuses on the second step of the evolution, which optimizes the communication system infrastructure with voice over IP (VoIP) technology. This lets you reduce communication costs and improve employee mobility inside and outside of the company.

Evolving workstations to IP and opening the WAN to IP communications are the foundations required for taking advantage of the unified communications and services offered by a private or public cloud.

INCREASE PRODUCTIVITY WITH A CONNECTED WORKSTATION

WHEN SHOULD YOU IMPLEMENT AN IP EVOLUTION?

Evolving workstations to IP often occurs when an organization moves to new premises or when construction is planned. An IP infrastructure eases the ability to move employees within the premises as well, it provides improved mobility to employees.

The flexibility offered by the IP infrastructure enables companies to optimize their real estate by creating open-plan offices with shared workstations used by employees who work remotely some of the time.

THE CONNECTED WORKSTATION FACILITATES TEAM MOBILITY

Changing Workstations without IT Involvement

Working in teams often requires staff moves to enable members of the same team to work in the same place. The number of moves can be significant in companies that work in project mode, or for which the number of employees varies.

Alcatel-Lucent Enterprise Premium DeskPhones and IP Desktop Softphones offer two ways to manage moves (see Table 1):

1. Change phones by pressing a programmed key and then entering a user name and password. This may require the involvement of technical staff or user training.
2. Plug the IP station into the new location, no other action is required. This is possible because of the automatic association of the MAC address with the telephone number. Additionally, if the LAN offers these functions, 802.1x guarantees security, LLDP-Med offers simplified VoIP deployments, and POE (Power Over Ethernet) switch means it is not necessary to equip the telephone with a power supply.

Table 1 - Moving Telephone Sets

	DIGITAL PREMIUM DESKPHONE	IP PREMIUM DESKPHONE	IP DESKTOP SOFTPHONE
Changing phones – with user intervention	•	•	•
Moving the phone – without user intervention		•	•

Connected Workstations Improve Productivity in Open-plan Environments

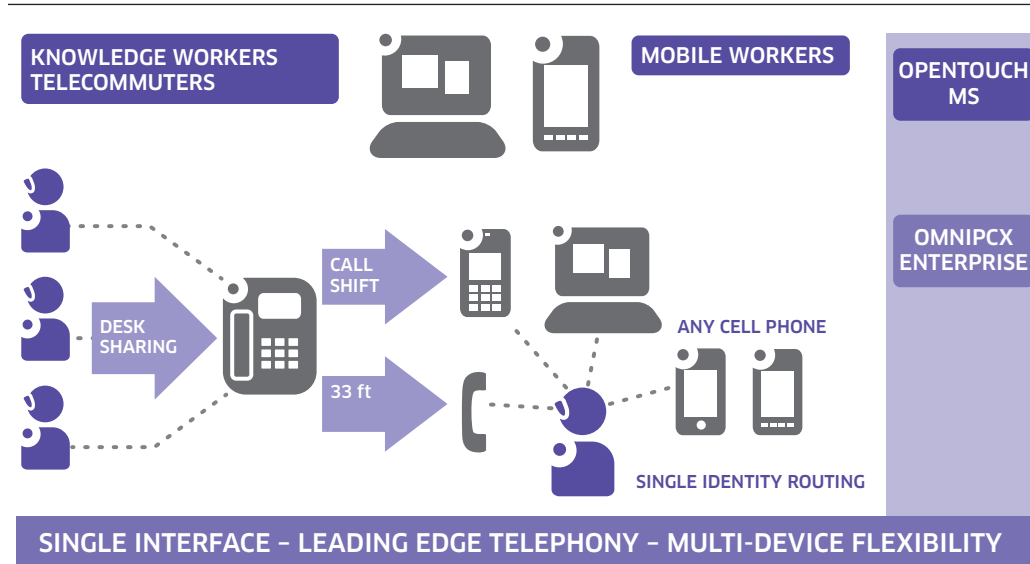### Wideband Audio for a Quieter Environment

A recent study shows that 61% of employees say that noise from colleagues is the main source of distraction in an open-plan office. The Alcatel-Lucent Enterprise IP Premium DeskPhones and the IP Desktop Softphone provide High Definition (HD) sound quality with G722 codec. The G722 spectrum for voice is approximately 3 times wider than the G711. A conversation with good sound quality reduces the need to speak loudly and disturb other colleagues in the open-plan office.

Greater Mobility for More Privacy and Better Concentration

Some Alcatel-Lucent Enterprise office telephones have a Bluetooth handset with a 33-foot range. This provides employees with the flexibility to take a call at their desk and continue the call a distance away for more privacy. A Bluetooth earpiece can also be used.

One number service routing can be offered to all employees who have a DECT handset, cell phone or softphone connected to the company WLAN network through a PC, Mac, smartphone or tablet. All incoming calls are routed to 3 terminals. Employees can also transfer a conversation in progress (call shift) to another terminal by simply pressing a key, or for smartphones that have the OpenTouch® Connection mobile app[1] they can transfer the call with zero touch.

Figure 1 – On-Site and Off-Site Mobility Solutions

KNOWLEDGE WORKERS TELECOMMUTERS

MOBILE WORKERS

OPENTOUCH MS

OMNIPCX ENTERPRISE

CALL SHIFT

DESK SHARING

33 ft

ANY CELL PHONE

SINGLE IDENTITY ROUTING

SINGLE INTERFACE – LEADING EDGE TELEPHONY – MULTI-DEVICE FLEXIBILITY

The Softphone user interface on PCs, Macs, tablets and smartphones is the same as the Premium DeskPhones. This makes adoption easy with no additional training required.

A Free-Seating Workstation for Mobile or Visiting Employees

IP Premium DeskPhone telephones provide a "shared desk" application. The user takes ownership of the telephone by entering a user name and password. They then retrieve their programmed keys, telephone line and the associated services such as supervision groups or group calls. The "shared desk" feature is part of the communication server and does not require an additional server.

A Single Network Enables Savings

A Single Network

With Voice over IP (VoIP) it is possible to save on wiring and associated maintenance costs because telephony uses the same physical connections as the computers and printers.

Additionally, a single voice/data network provides savings on workstation upgrades, and makes it possible for IT and telecommunication teams to work more closely together.

[1]Contactless call shift with near-field communication (NFC).

The OmniPCX® Enterprise communication server controls both IP and non-IP phones making it possible to combine the advantages of the single network for desk sets for those who have:

- A DECT digital network offering dense coverage through synchronization of radio base stations performed by the communication server
- A DECT digital network compatible with industrial and exterior environments (including the EX standard)
- An economical analog and digital network for poorly connected buildings such as warehouses, garages or workshops

A Simplified Campus Network
If a new building is built or an existing one is converted, a number of IP cables are required between the building that houses the communication server and the new building. When the wiring is already in place (for IT), the savings in wiring and installation costs can be quite significant.

Simpler Remote Administration
When the communication server is connected to the IP network, telephone system administration can be performed from any point on the network, and access to the technical room is no longer required.

Moving IP stations no longer requires the involvement of a technician at the system or network level. It is the station that defines the number and not the port to which it is associated.

IP Premium DeskPhone stations are connected via IP to the communication server and not through interface boards as it is the case with digital or analog phones. Adding IP phones does not require adding electronic boards.

THE WAN CAN REDUCE COMMUNICATION COSTS

Save Up to 75%
By moving PSTN voice traffic to the private network, companies can significantly reduce their communication costs. The savings become even more attractive when the company has a Wide Area Network (WAN) between sites because calls over the WAN are free of charge.

The savings can be even greater if the company has:

- several sites and/or branches in several countries
- many business interactions abroad
- provided employees with the option of working from home
- employees who are becoming more mobile
- plans to allow Bring Your Own Device (BYOD) where employees can bring their communication devices into the company.

On average, customers who have evolved to IP achieve 50-75% savings on their communication costs. This is because:

- calls are free of charge between the corporate sites and/or telecommuters' homes
- replacing public network subscriptions at each site with a single offering that combines voice and data reduces subscription costs by 10-20%
- choosing to group public network access via a SIP public provider offers better rates , particularly for international destinations; additional 10-20% savings
- a SIP public provider often allows you to remove a part or all of the fixed costs associated with telephone line monthly subscriptions
- employees make free calls with a softphone or smartphone connected to the company WLAN instead of using the corporate mobile package.

Alcatel-Lucent Enterprise offers the technological continuity to achieve the savings without the need for a full and immediate IP upgrade. Sites using digital and analog phones can be maintained, or upgraded at a later time.

Networking over the WAN is Simple

Easy Co-Location of IP and Digital Sites

The Alcatel Business Communication (ABC) dedicated protocol makes it possible to network together several OmniPCX Enterprise Communication Server (CS) or OmniPCX 4400 communication systems in TDM or IP while ensuring an advanced level of additional services. This allows you to connect all sites together in a single ABC network having some sites on the WAN, and others connected digitally. The network can scale, as a simple network configuration can have up to 100 systems.

Connecting a digital OmniPCX Enterprise or OmniPCX 4400 to the WAN involves adding one or more TDM-to-IP transcoding boards. OmniPCX Office Rich Communication Editions are connected by SIP or digitally.

Interconnecting the communications systems can be performed while maintaining of each site's prior numbering plan.

It is also possible to centralize and merge the communication servers for organizations that want to reduce the number of servers that need to be administered locally, and to increase the pooling of resources, including:

- data centers
- single administration
- service provider public accesses
- unified communication applications
- business applications

Simplifying Administration of Networked Systems

Configuration data is exchanged and updated in real time by the ABC, which facilitates administration operations. For example, a new telephone user created on the network will be automatically referenced across all systems. Users' services can be standardized because rights and profiles can be configured on one system and then broadcast automatically, or on demand, to other systems. In the same way, modifications are updated automatically. This feature is used when 2 or more systems are networked together, to blend the configuration and make administration operations more flexible.

Figure 2 - Single Management and Data Consistency
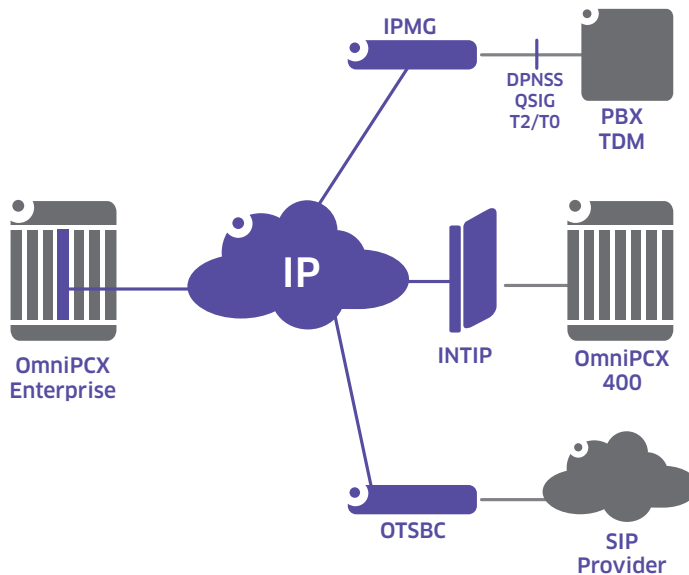
Improve Communication and Mobility between Sites

Compared to Public Switched Telephone Network (PSTN) communications, the ABC protocol offers the option of extending the telephone services of one system to the network of systems. This enables 2 users on the same network to benefit from the phone supervision feature regardless of how far they are from one another and without the addition of a PC application.

Users can keep their DECT mobile and be reached on it when they move between sites, and have DECT radio coverage. This feature is especially important for retail companies, where employees must often move between stores, warehouses and administrative offices.

Integrate All Sites at Minimal Cost

Supporting the Evolution of the WAN

OmniPCX Enterprise adapts to the WAN by offering bandwidth control to guarantee optimal voice quality. Voice compression algorithms can be managed centrally throughout the life of the system to ensure voice quality as the throughput rate offered by the WAN grows.

Networking Existing PBXs

OmniPCX Enterprise has several TDM or IP protocols for integrating third-party systems, including: ISDN, Q-SIG/DPNSS, SIP, H323.

Linking a TDM system over IP is done by adding an IP Media Gateway (IPMG) locally, which performs the IP/digital transcoding. Routing and configuration of the networking are handled centrally by the OmniPCX Enterprise communication server.

Centralized routing can also be set up to prevent costly modifications in the numbering plans of third-party devices.

Figure 3 - Options for Networking over IP on the OmniPCX Enterprise
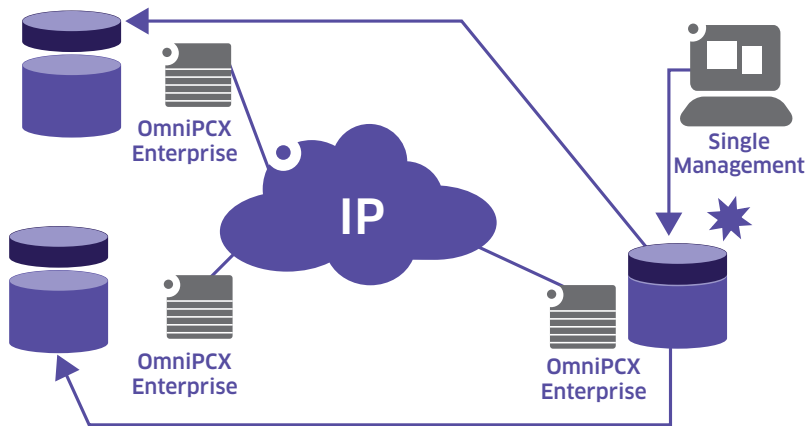
The OmniPCX Enterprise also offers the option of networking in H323 or SIP without deploying an IPMG in the site's third-party PBX. An OpenTouch Session Border Controller can be deployed to protect the SIP connection.

IP phones managed by OmniPCX Enterprise through the WAN can be added to phase out the third-party PBXs.

Equipping Isolated Sites

Some companies have sites that are not linked to the company network.

Equipping a site that is isolated from the company's core network, with VoIP, is possible at minimal cost due to the Communication Server (CS) built-in functions for managing VoIP. With the DHCP (Dynamic Host Configuration Protocol) server built into OmniPCX Enterprise, IP phones are deployed even when the isolated site does not yet have access to the company's centralized DHCP servers.

Radio mobility can be enabled at minimal cost, with IP DECT technology, when only voice mobility is required at remote sites such as warehouses or small agencies. IP DECT sites are administered centrally with OmniPCX Enterprise. Deployment is simpler than voice deployment on a WLAN (VoWLAN), which requires advanced quality of service (QoS) management as well as the configuration of network devices.

Centralizing Calls to the Public Network

Optimized Routing

Having IP connectivity is one thing; ensuring that it is always used when possible is quite another. With the "least cost routing" function, OmniPCX Enterprise determines on a case-by-case basis the cheapest path (generally IP) for establishing a call.

This function is particularly suited to international companies because it reduces the calling costs to other countries where the company has location presence. Calls to countries where there is a company presence will be made, whenever possible, on the private network in order for them to be recognized as local calls. This is known as Local break-out (see Figure 4).

Figure 4 - Local Break-Out
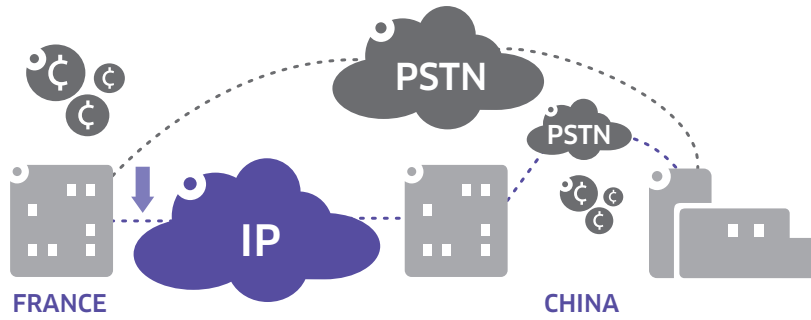
This feature allowed an international company to save 30% on its telephone bill.

Additionally, if the call that originated on the public network is to a company number, the call will automatically be routed to the private network. This feature offers many advantages such as, substantial savings can be made without having to change users' dialing habits (for example, dialing the public number). It also improves the level of service by displaying the name of the called party.

Figure 5 – Rerouting Public Calls to the Private Network
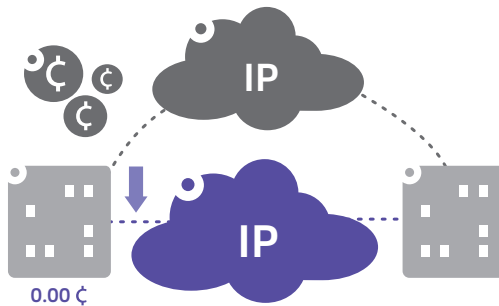
By relying on the OmniPCX Enterprise centralized routing function, administrators avoid having to upgrade all the routing tables on numerous systems.

Centralizing Access with SIP Trunking

OmniPCX Enterprise is certified by many SIP service providers. Replacing PSTN devices with SIP trunking allows you to:

- have access to attractive rates
- centralize each site's local subscriptions to leverage the centralized traffic
- renegotiate local maintenance agreements as local PSTN access boards are no longer required, except in the event of mission-critical activities that need a local PSTN access.

Securing Routing between Sites and the Network

Centralizing the routing of communications implies an increased need for redundancy. The OmniPCX Enterprise provides hot standby redundancy of communications between terminals. On an ABC network and on an SIP network this is done through the addition of a server or an additional virtual machine in the local network, or at a remote data center. The redundant servers are synchronized automatically and do not require any specific administration.

Securing the network, if it is connected to SIP networks, may require the addition of OpenTouch Session Border Controllers. These SBCs are certified by many access providers and provide:

• application firewall technology dedicated to SIP, voice, and video-over-IP protocols
• simplified management since routing is delegated to the OmniPCX Enterprise
• a redundant solution compatible with all OmniPCX Enterprise redundancy modes

A COMPANY CLOUD IMPROVES COLLABORATION

The combination of connected workstations and a WAN that is open to company communications provides opportunities for improving collaboration between employees from different sites. It can also improve customer relationships by providing applications that deliver a superior quality of interaction, such as:

• a corporate directory with one-click calling from a Web page
• one-click calling to other users and to the public network on all PCs
• phone control for rapid dialing, finding contacts, and seeing who is calling, directly from the PC;
• Outlook unified messaging, click-to-call , and document sharing
• Instant Messaging and presence enriched with phone status
• corporate communication from a smartphone or a PC outside of the company
• creating and controlling a conference with documents and screens sharing within the company and with guests from outside the company

Alcatel-Lucent Enterprise provides an application suite that improves OmniPCX Enterprise users' interactions. These applications and the savings that can be achieved by deploying in the corporate cloud can be achieved by evolving the company's communications to IP. This third step of business communications evolution is described in the virtualization application note.

Alcatel-Lucent Enterprise solutions provide digital, IP and SIP technology continuity. This makes it possible for companies to achieve savings, improve team productivity, and the quality of the customer relationship while managing their IP evolution strategy.

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