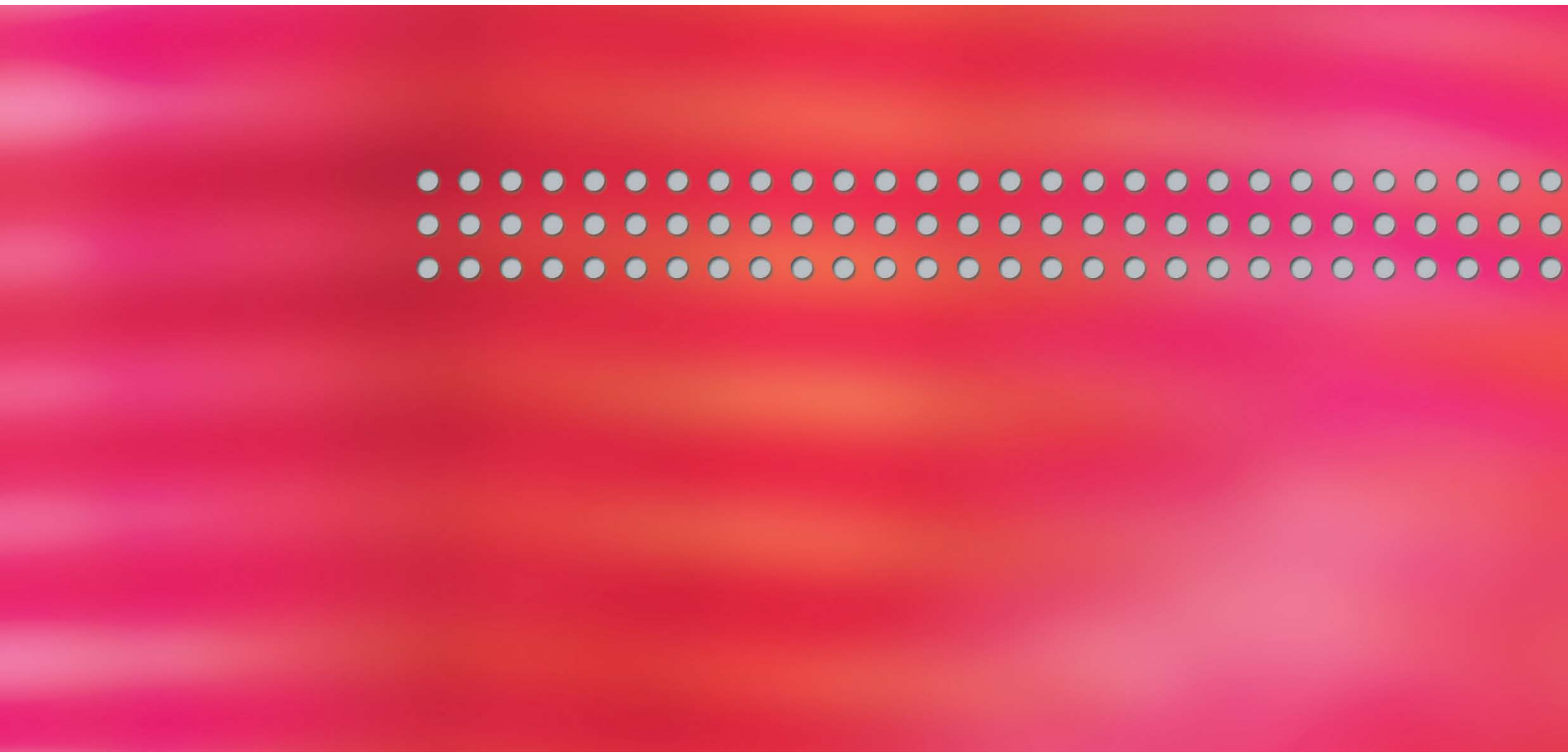
Alcatel·Lucent

APPLICATION NOTE

Centralization of IP Communications



Abstract

Today, large and extra-large enterprises have two major opportunities when transforming their IP communication network: Decrease operational expenses and work towards the convergence of IT and telecom infrastructures to prepare for tomorrow's unified communications.

Alcatel-Lucent views centralized IP communications as the most efficient IP transformation strategy for addressing the most urgent issues enterprises face: Decreasing recurring costs, speeding up the roll-out of new policies and applications, and controlling the upfront investments and operations of such a transformation.

Discover how Alcatel-Lucent enables large and extra-large enterprises to optimize network operation costs, build agile infrastructure and applications, and benefit from field-proven operational expertise as well as innovative business offers — providing a successful transformation towards a centralized IP communications architecture.

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1. Introduction

Converged data and communication networks are a reality in most large and extra-large enterprises. How can we make the most of these resources?

The digital natives have entered the workforce. How can we serve them in the most cost-effective manner?

Mergers, acquisitions and spin-offs are standard events for large enterprises. How can we provide the required flexibility for these events in the communication network?

Centralized IP communications is the key technical strategy to meet the challenge of these trends. This document describes the Alcatel-Lucent IP Communications centralization offer and its related, innovative business strategies for large and extra-large enterprises.

2. Challenges solved by centralized IP communications

The three main challenges that large enterprises face when transforming their communication network are recurring maintenance and upgrade costs, challenging rollout of new policies and large, upfront investment and operation costs.

2.1 Recurring maintenance and upgrade costs

A key issue for large and multi-national enterprises is the recurring costs of maintaining and upgrading their communication networks.

Distributed PBX servers in multiple enterprise sites require competent local support and specific logistics when upgrading the system with new releases or changing hardware. Alcatel-Lucent provides strong networking capabilities, however site-specific configuration and management are still required for each server.

Mixed multi-vendor PBX environments increase the need for network maintenance by skilled local workers. Upgrade and synchronization operations may lead to complex troubleshooting of interoperability issues and long deployment phases. Move/add/change/delete (MACD) operations need customized tools that require additional support.

Mixed hardware and software releases of PBX or IP-PBXs over a large network require longer upgrade phases and may lead to newer services not being immediately deployed to all employees.

Large companies with distributed communication systems may also need to synchronize **multiple business partners** when upgrading to gain access to new features. This leads to additional financial and operational complexity.

In addition, **multinational companies** suffer from an additional level of logistical complexity due to the geographic distance between sites, the international environments, the number of sites and the diversity of underlying voice and data networks.

A decrease in recurring costs in these environments must be achieved without compromising the support of mission critical communications, and reducing telecom bills (long distance calls, optimized service provider subscriptions). The Alcatel-Lucent IP Communications centralization solution optimizes the costs of running the network (see Section 3).

2.2 Challenging rollout of new policies

Large enterprises may also face difficulties when rolling out new communication applications such as one number services, in-sourced collaboration and conferencing, unified messaging or security policies such as encrypted communications or strong authentication.

Mixed environments may lead to **compatibility issues**, where applications are available only to a subset of employees, thus creating communication silos. In this scenario, business managers lack comprehensive tools to profile the applications and provide them to the right people

Applications or policies which require links between distributed communication servers and centralized business applications are difficult to deploy because of insufficient connectivity. Therefore, telecom and IT policies may not always be aligned.

Finally, transforming a large number of sites in a multinational company, a retail enterprise or a large bank with distributed communication systems is time consuming.

Alcatel-Lucent IP Communications centralization answers these challenges by improving the flexibility of real-time application deployment (see Section 4).

2.3 Challenge of up-front investments and operations

The transformation to centralized IP communications is a **long process**. Many large enterprises don't want to suffer the operational consequences of a rip-and-replace transformation—they want phased technical and operational migrations instead. Centralization takes place in businesses that are diverse in nature (for example, thousands of agencies in a large bank, world-wide offices of a major international airline, an 800 employee company centralizing IP communications at five regional sites). Therefore, the servicing offer that supports this migration must be flexible enough **to accommodate diverse topologies and timeframes.**

The human factor is also critical. Centralization often leads to defining new roles between stakeholders — business partners, IT and telecom managers in both the central and regional units. **Dealing with the organizational, financial and human aspects of transferring competencies from local to central** departments is a key factor of a successful centralization.

Alcatel-Lucent IP Communications centralization takes advantage of a phased approach, a flexible servicing offer and innovative financing strategies; key points of a successful transformation (see Section 5 and 6).

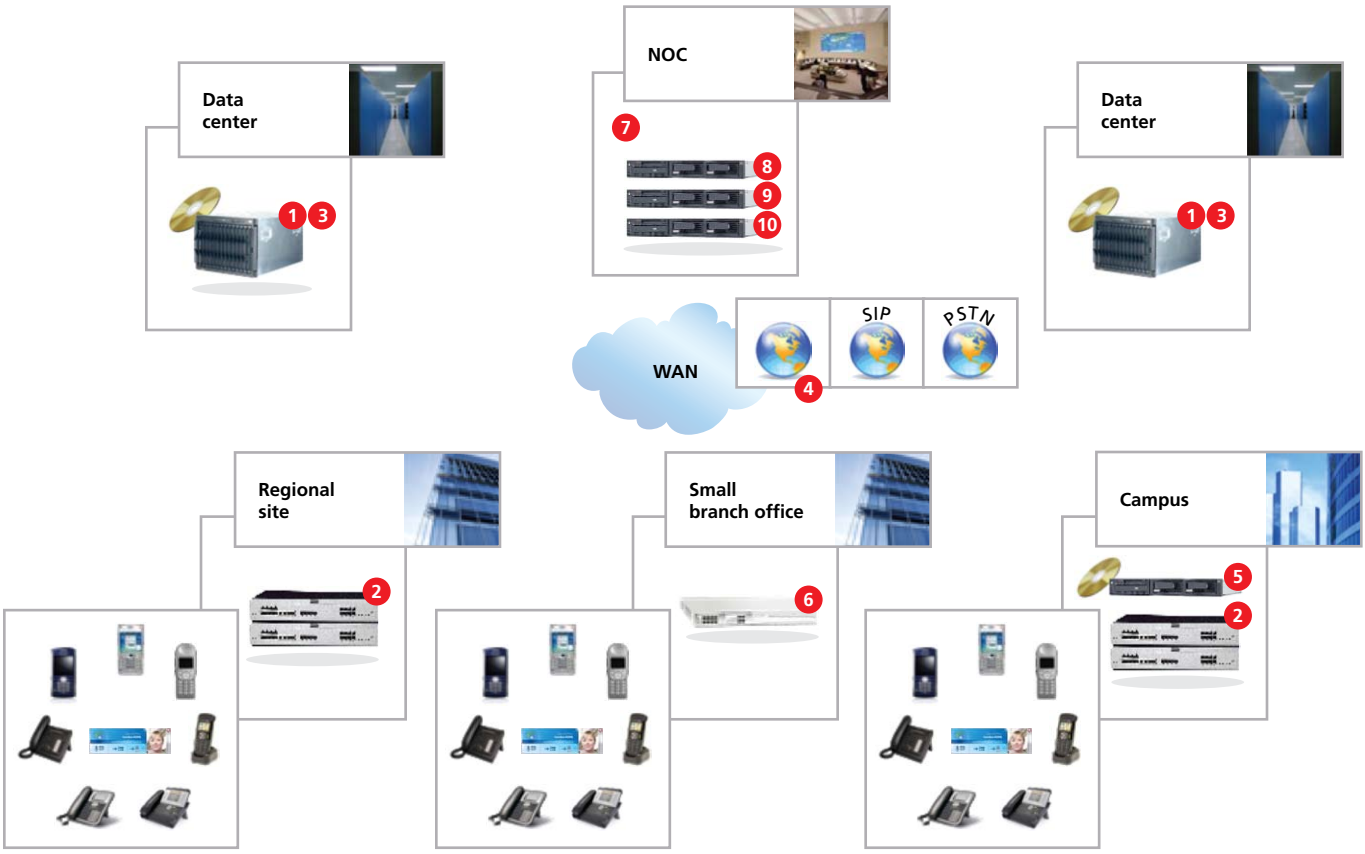
3. Centralize to optimize costs

Maintenance, upgrade and management costs are greatly reduced when migrating from a large number of distributed PBX systems to a small number of communication servers in data centers. The architecture's **centralized intelligence** enables a s**mall set of administrators and maintenance support teams to manage and upgrade** a large enterprise communication network. Savings between 5 and 20%[1] can be achieved on maintenance and upgrades. 10% to 40% savings can be expected on centralized management of voice and data networks.

Figure 1 represents a typical Alcatel-Lucent centralized architecture where all sites are connected to the enterprise's wide area network (WAN) and may access the public switched telephone network (PSTN) or Session Initiation Protocol (SIP) service providers. The text in this chapter refers to the elements in Figure 1.

1. These figures represent average savings compared to a distributed network. They were assessed from several Alcatel-Lucent customer centralization projects.

Figure 1. Alcatel-Lucent IP Communications centralized architecture



3.1 Highest performance architecture

The Alcatel-Lucent IP Communications architecture enables centralization of the communication servers (CS) into standard Linux appliances or blade centers in data centers (see ❶ in Figure 1). At the same time, slaved IP Media Gateways (IP-MG) provide local IP and legacy connectivity to endpoints and trunks in the branch offices (see ❷ in Figure 1).

The Alcatel-Lucent CS provides telephony services with the highest **scalability in the market**. It supports 15,000 users on a single server, 100,000 users in a virtual CS network (also known as a subnet) and up to 250 interconnected networks over IP. The virtual CS network provides full-featured telephony and synchronized management which reduces the overhead of managing multiple machines. Because the virtual CS network can be distributed over several geographically distant data centers, it complies with large enterprise reliability requirements: a **data center per continent or large region**.

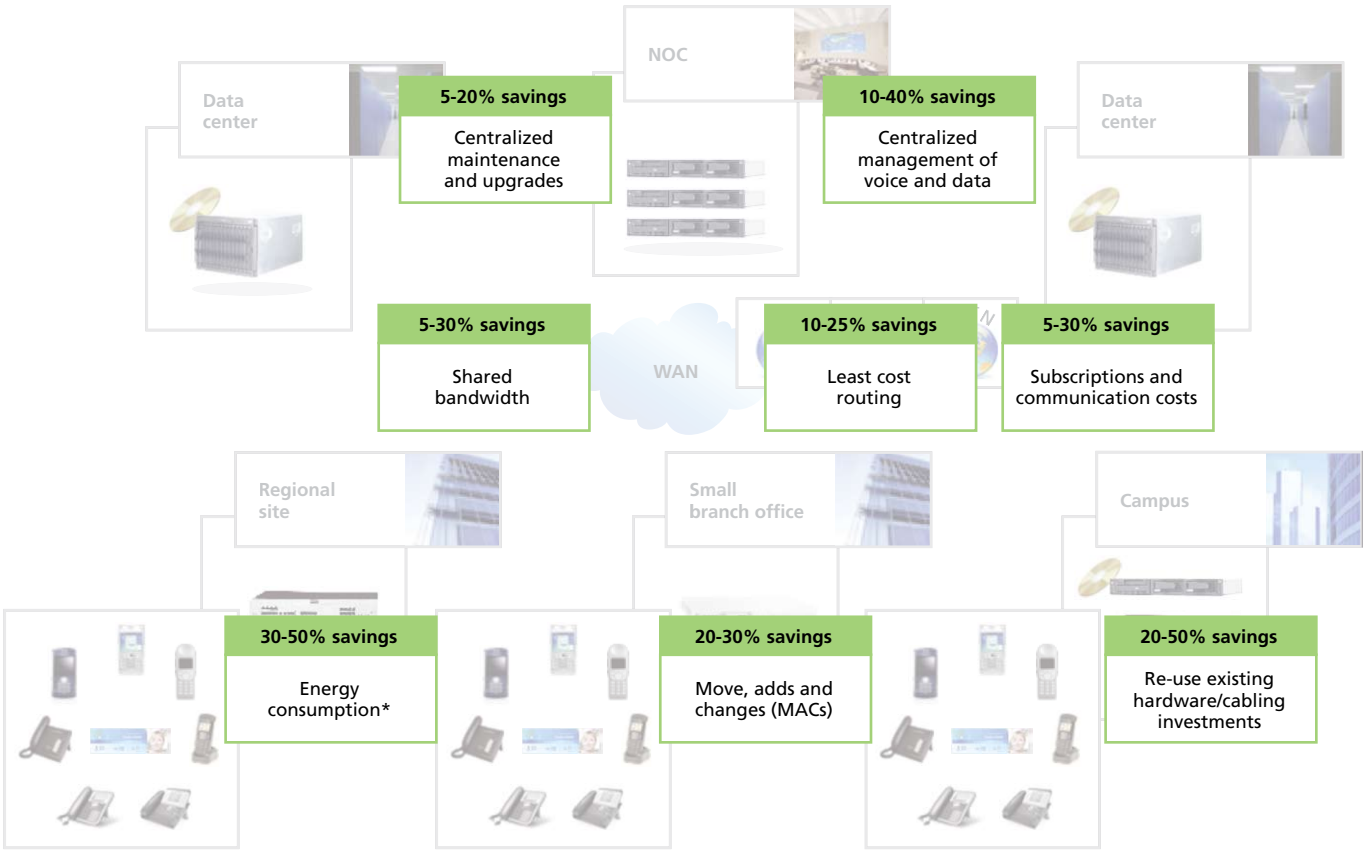
The management and upgrade operations related to unified communications (see ❸ in Figure 1) are simplified through the deployment of highly scalable messaging and collaboration services in data centers. For example, the Alcatel-Lucent OmniTouch™ 8440 Messaging Services software supports 150,000 networked mailboxes.

3.2 Phased migration with an agile architecture

Multiple form-factors of IP-MG provide the most cost-efficient response to connecting a large number of phones depending on the IP/digital/analog mix in the branch. Many enterprises choose **full IP branch offices** for their new offices because Alcatel-Lucent IP Touch 8 Series phones fulfill business users' requirements. Full IP branch offices avoid additional costs related to the specific connectivity needs of digital and analog phones.

Signaling and, in most cases, voice travel over the WAN (see ❹ in Figure 1) between sites. The telecom bill is reduced because bandwidth admission control and efficient standard voice encoders provide the required **quality of services** and enable the **free transport** of inter-site and long distance calls **over IP**. 5% to 30% savings can be realized for on-net calls with shared bandwidth usage of the WAN for data and communications. Figure 2 represents potential cost savings in a centralized IP communication network.

Figure 2. Estimation of cost savings in a centralized IP communication network



Any legacy mixed PBX or IP-PBX network may also benefit from WAN communications as the Alcatel-Lucent OmniPCX™ Enterprise Communication Server supports analog, digital, and IP trunk types (see ❹ in Figure 1). The copper **cabling** of large legacy branch offices can also be **re-used**, thanks to the IP-MG analog and digital capabilities. At the same time, networks benefit from the management cost reduction with centralization. 20% to 50% cost savings compared to a full move to IP can be realized when re-using existing cabling.

In the case of WAN outage, the IP-MG provides **several survivability strategies**. The passive communication server is a slaved CS deployed in the branch (see ❺ in Figure 1) which provides **full-featured** telephony to isolated mission-critical sites when the WAN is down—at no additional management expenses. **Cost-efficient** PSTN survivability is also available with IP-MG or the SIP-capable Alcatel-Lucent OmniAccess™ Unified Services Gateway routers (see ❻ in Figure 1). If the WAN is functional, but a disaster occurs in a data center, the **geographic hot-swapping redundancy** of the CS enables another data center to seamlessly handle the traffic.

* this figure refers to cost savings compared to similar equipment from the competition.

3.3 Leveraging the cost savings

The high user density on OmniPCX Enterprise and OmniTouch 8440 servers reduces the cost of support facilities such as space, cooling, and batteries. These savings can be increased by deploying Alcatel-Lucent data network equipment for LAN, WLAN and WAN; equipment which dissipates power values that are among the lowest in the industry. 30% to 50% cost savings related to energy consumption can be realized by combining Alcatel-Lucent IP Touch phones and Alcatel-Lucent IP networking products.

3.4 Improved NOC productivity and new hosting opportunities

Network operation centers (NOC) (see ❼ in Figure 1) improve productivity in a centralized architecture because the number and the complexity of CS decreases drastically. Productivity also improves because performance management tools for data equipment, voice and application servers enable operators to fine-tune the network and enforce service level agreements (SLA). The Alcatel-Lucent VitalSuite™ Performance Management Software (see ❽ in Figure 1) monitors 700 network elements from 50 vendors and is used by leading SP and outsourcers worldwide.

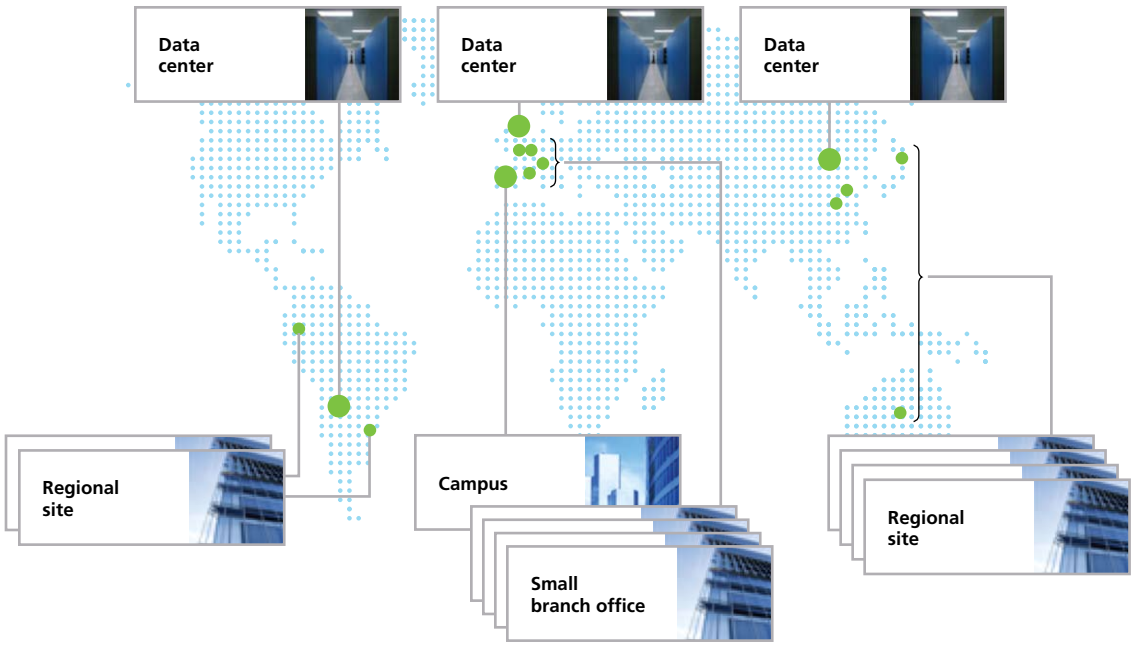
IP address management software such as the market-leader Alcatel-Lucent VitalQIP™ DNS/DHCP IP Management Software (see ❾ in Figure 1) improves the cost efficiency of managing addresses and DNS records of IP phones and Personal Computers (PC).

The comprehensive Alcatel-Lucent OmniVista™ 4760 Network Management System (NMS) platform (see ❿ in Figure 1) is also a key highlight of an efficient NOC for configuration, billing, alarm and audit. 20% to 30% cost savings on MACD operations can be expected in a centralized network. Because these tools provide strict control of SLAs, two main hosting opportunities arise from centralized IP communications: Hosted NOC or hosted data center with NOC facilities (see ❿ in Figure 1).

3.5 Proven solution for large regional and multinational enterprises

Large regional enterprises can safely deploy IP communication services across **multiple time zones**; services such as telephony with the OmniPCX Enterprise CS and messaging with the OmniTouch 8440 Messaging Services. Each IP-MG is configured with a time-zone and therefore, all the attached branch offices benefit from local time indication on their desktop phone, timed alarms, properly time-stamped voicemails, call detail records and billing information. Figure 3 represents a typical multinational enterprise with centralized Alcatel-Lucent IP communications characterized by regional data centers and by multiple time zone requirements.

Figure 3. Example of multiple time zone and multinational deployment



Multinational enterprises often require that a small virtual CS network centralizes IP Telephony for sites in separate countries. This design has three main advantages: It has easy-to-understand reliability for regional entities, it contains regionally-caused traffic bursts (for example, return of holidays), and it is flexible, in case of further organization changes. A small virtual CS network provides management consistency and greatly reduces the operation costs compared to a distributed architecture. The OmniPCX Enterprise virtual CS network supports many **multi-country traits**: Local tones per IP-MG, local dial-plan usages for break-out, attendant or emergency services, local greeting and user-oriented voice guides, and SP trunk variants.

3.6 No compromise on mission critical telephony and optimized phone bills

When centralized, the Alcatel-Lucent IP Communications services still support mission critical telephony thanks to their **multi-level reliability design** and the **wire-speed voice and signaling encryption**.

Optimized subscriptions to service providers (SP) with **intelligent, least cost routing** are also available and can be combined with centralized SP access that often takes place in an IP communications centralization project. Digital, H.323 and state-of-the-art SIP trunks enable innovative models of accessing SPs. Least cost routing may lead to 10% to 20% cost savings.

4. Centralize to improve transformation flexibility

Centralization also provides opportunities to keep or generate extra revenue by rolling out communication-enabled business applications. 5% to 20% cost savings are provided by centralized applications because of easier maintenance and management.

The following section explains how Alcatel-Lucent IP Communications provides more flexibility when deploying new communication applications or transforming the telephony network.

4.1 Drive performance through applications

Depending on the business needs, several applications can be deployed to extend the efficiency of the communication solution:

- One number services to easily reach the mobile employees
- Global network presence with Fixed-Mobile Convergence (FMC) deployments to empower collaboration with mobile professionals
- Virtual office bundles for home workers
- In-sourced audio conferencing services that can evolve into collaboration
- Voice messaging that can evolve to unified messaging
- Integration of real-time communication in business processes and on the user PC desktop

In all these cases, IP communication centralization adds flexibility to the deployments. Managing the **user software licenses** is easier, and configuring the links **between IP communications and business applications** is simpler via a flat data center topology rather than in distributed sites with diverse types of WAN connection to the IT servers. In addition, mobility deployment can take advantage of **mutual access links to SP** to roll out FMC features faster.

4.2 User Profiles vs. one-size-fits-all

To increase employee productivity, Alcatel-Lucent provides a pragmatic and innovative approach through User Profiles. This methodology consists of offering the most appropriate communication solution to each employee/end-user in accordance with user needs, jobs and profiles. Figure 4 represents the Alcatel-Lucent User Profiles.

Figure 4. Alcatel-Lucent User Profiles

Alcatel-Lucent has defined five **user profiles** that match various communication needs: Office Worker, Team Worker, On-Site Roamer, Mobile Professional, and Executive. For each user profile, a bundle of adapted telephony, collaboration, messaging and unified communication services is available. Additional communication options allow a perfect customization of the user profile to ensure an **optimized match with the end-user's expectations**. These profiles are mapped to the enterprise job descriptions which prevents a cumbersome and expensive one-size-fits-all deployment.

An IP communications centralization project is an excellent opportunity to assess communication needs and productivity gains with User Profiles.

4.3 20 sites a week transformed in a large bank!

This transformation of twenty sites a week was undertaken with a major Alcatel-Lucent customer.

The deployment flexibility brought by centralized Alcatel-Lucent Unified Communications improves the roll-out of new sites and the migration to IP of legacy sites. Alcatel-Lucent has **hands-on experience** with extremely fast transformation of these sites, because of the architecture design and the field experience of the Alcatel-Lucent Enterprise Services teams.

Centralized CSs are provisioned before the actual physical migration takes place. An IP-MG is then shipped to the new site and legacy endpoints are connected to it. IP Touch endpoints are plugged into the LAN and then the IP-MG and endpoints automatically connect to the central site to retrieve the latest binaries and configuration. In the case of a legacy site with an IP-MG currently in place, the change consists of redirecting it to a new centralized CS. **Therefore, the downtime is reduced to a minimum**.

4.4 Accelerate deployment of remote task forces

UC centralization enables some operation-oriented large enterprises to quickly deploy their employee task-forces next to the customer or to an on-going building site. An on-premise access router with VPN connection to the enterprise WAN, IP Touch and PC endpoints is all that is needed to get the remote task force up and running.

4.5 Organization friendly

Flexibility in a communication network is also required when large enterprises transform their organizations through mergers, acquisitions, spin-offs and divestments (for example, a retail company's acquisition of new retail and warehouses facilities in a country, or an equipment vendor moving to indirect sales channel model). The architectural design of the Alcatel-Lucent OmniPCX Enterprise and OmniTouch applications ease the transformation.

Mass provisioning tools enable the transfer of software licenses at a fast pace.

In the case of spin-off or divestment, **virtual CS networks** configured according to organization requirements **can be split physically**: Smaller virtual CS networks are then available in each new organization. If some sites are transformed into autonomous entities, each passive CS can be transformed into a stand-alone CS.

While the Alcatel-Lucent IP Communications architecture enables organization-friendly configurations, the critical success factor is the requirement analysis between the enterprise and Alcatel-Lucent solution designers.

5. Design a successful centralization plan

IP Communications centralization projects for large enterprises can be highly transformational. Unfortunately, there is no "one-size-fits all" approach. Consequently, every transformation initiative must be evaluated according to its own strategic direction, assessed according to its own characteristics and tailored accordingly in order for it to be successful.

5.1 Alcatel-Lucent centralization assessment framework

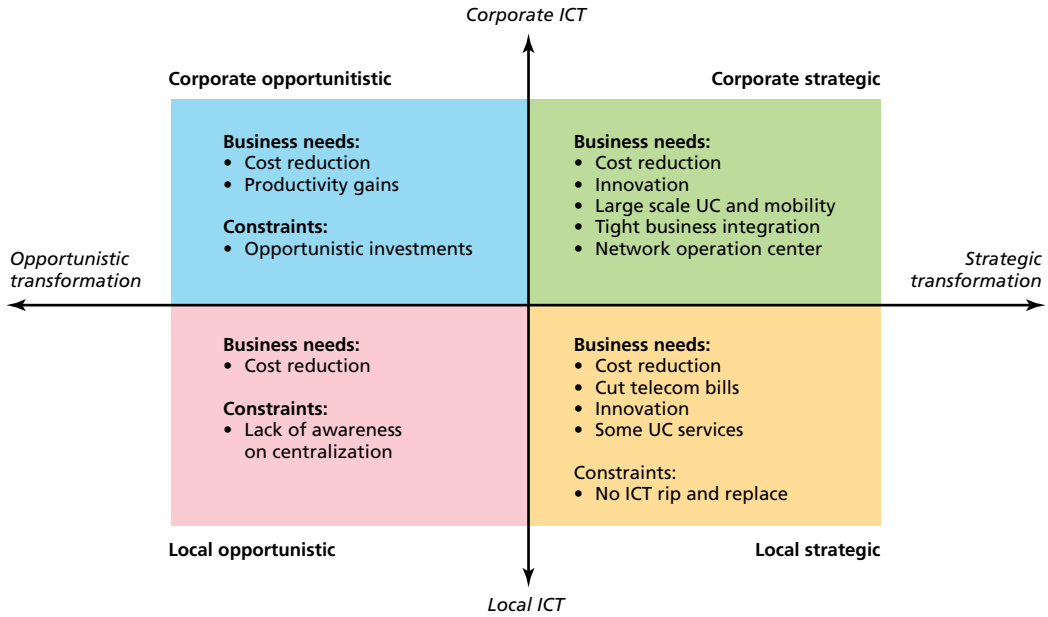
Alcatel-Lucent has designed a framework for centralization based on the specific requirements of its customers. This framework helps enterprises assess their needs in terms of centralization and discover how to design the best phased approach towards this goal.

The framework takes into account:

- *Organization*: A centralization project requires alignment of local and central organizations. This is achievable if the migration plan follows a global strategy with local considerations. The transformation can be driven primarily by the corporate information and communication technologies (ICT) department or by the regional ICT structures.
- *Business plan*: A centralization project must include a business plan that takes into account LAN redesign, energy consumption, data centers, and security systems. If every entity affected benefits then the business plan will be well received. An enterprise may look forward to quick wins (limited deployments of new services that target the business challenges at hand) or to centralized quick wins (larger deployments) with a backbone migration.
- *Business needs*: A centralization project must lead to a positive business impact. The priorities must be excellence in customer interactions, better services for the consumer and distributors, ability to attract and acquire new talents, partnership with local suppliers and back office optimization.

Figure 5 shows how enterprises can assess where their own centralization project belongs in terms of organization, business plan and business needs.

Figure 5. Alcatel-Lucent centralization assessment framework

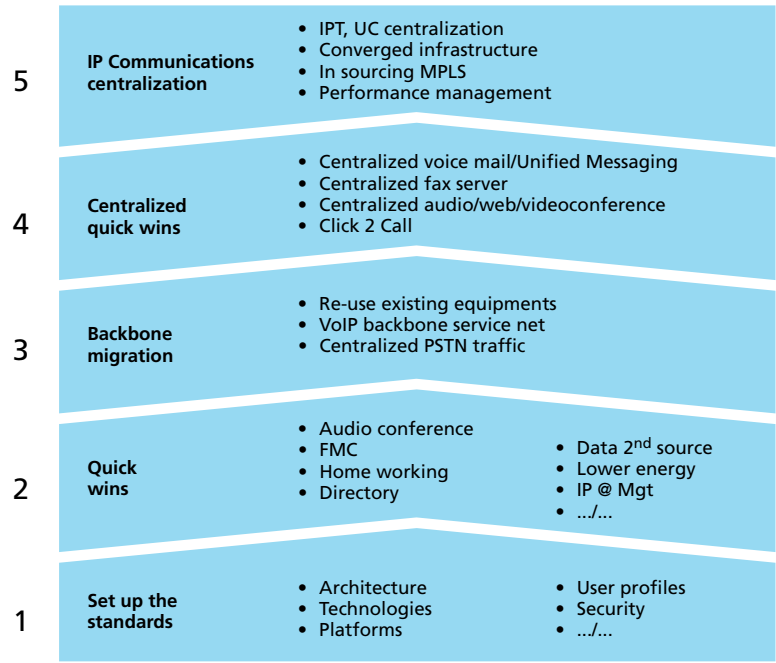


5.2 Alcatel-Lucent centralization methodology

Alcatel-Lucent delivers a methodology for a step-by-step approach to centralization which is represented in Figure 6. It takes into account where an enterprise fits in the centralization framework using the following five steps:

1. *Set up the standards*: The enterprise defines which ICT architecture and standards they want. Enterprises then review vendors' offers according to these standards. Enterprises with a corporate ICT drive and opportunistic strategy will use this phase to determine their own migration pace.
2. *Quick wins*: A transformation with quick wins which consists of limited deployments of new services that target the business challenges at hand. Enterprises implementing an opportunistic strategy without a strong corporate ICT may perform this step first. They may use it as a tool to bring awareness of the benefits of IP communications centralization to their stakeholders.
3. *Backbone migration*: WAN migration to a VoIP backbone between sites to reduce costs due to on-net and off-net calls and to prepare for centralization. Regional equipment and infrastructure are typically kept unchanged. Enterprises with strong regional ICT focus can start migration at this phase.
4. *Centralized quick wins*: Fast ways to benefit from a centralized solution – centralized quick wins – transform which uses a VoIP backbone to deploy centralized applications and target the current business challenges.
5. *IP Communications centralization*: Fully centralized IP communications as described in Section 3 and Section 4.

Figure 6. Alcatel-Lucent centralization methodology



5.3 Step 1: Definition of the standards

First, an enterprise needs to define their system migration in terms of the ICT network and select strategic partners to execute the migration. This is a critical step; designing the high-level network architecture and standards guarantee that all the equipment and software fit together. Examples of standards definitions are:

- Choosing a client/server architecture for VoIP with CSs running on standard servers (both blade and appliances)

- Selecting open operating systems (Linux)
- Supporting open IP and legacy communication standards such as SIP, Web services, Q-Signaling (QSIG) and time-division multiplexing (TDM)
- Designing a centralized or distributed communication network
- Defining the type of infrastructure (e.g., LAN, WAN, WLAN)
- Integrating the communication network in the IT security policy (e.g., authentication, firewalling, confidentiality)

This standards definition step also encompasses the desktop environment, where all the communication services must be available on any type of device (PC, wireless devices, desktop phones), communication application (collaboration, mobility) and business application (CRM, ERP).

The resulting set of standards is made available as recommended and certified IP communications solutions. These solutions are acknowledged by both corporate and regional ICT management. In order to improve mutual understanding, these solutions may be comprised of two parts:

- Selected standard architectures (e.g., mono-site, multi-site, site size, security policy)
- Selected user profile-based communication services (e.g., the existing predefined set of devices and applications depending on needs)

These solutions also include the list of certified vendors able to support the selected services and architectures. Alcatel-Lucent provides a standard solution for defining the required service level agreement and best practices to guarantee project success.

This step helps the enterprise smoothly reduce the number of technologies used and ensures that the entire organization agrees on a common smooth migration path.

5.4 Step 2: Quick wins

The investment required to support quick wins is justified by strong business cases:

- Reduce the cost of audio conference services by in-sourcing an audio conferencing application. Enterprises may save up to 75% of the service cost.
- Reduce the cost of mobile communications. Enterprises may save between 10% and 30% of the service cost.
- Reduce purchasing costs of data equipment by referencing a second source. Enterprises may save between 20% and 30% of the purchasing cost.
- Reduce power consumption of data equipment by 30-50%.
- Reduce directory update costs by implementing a single worldwide directory.
- Improve user productivity by deploying highly visible services such as the click-to-call feature.

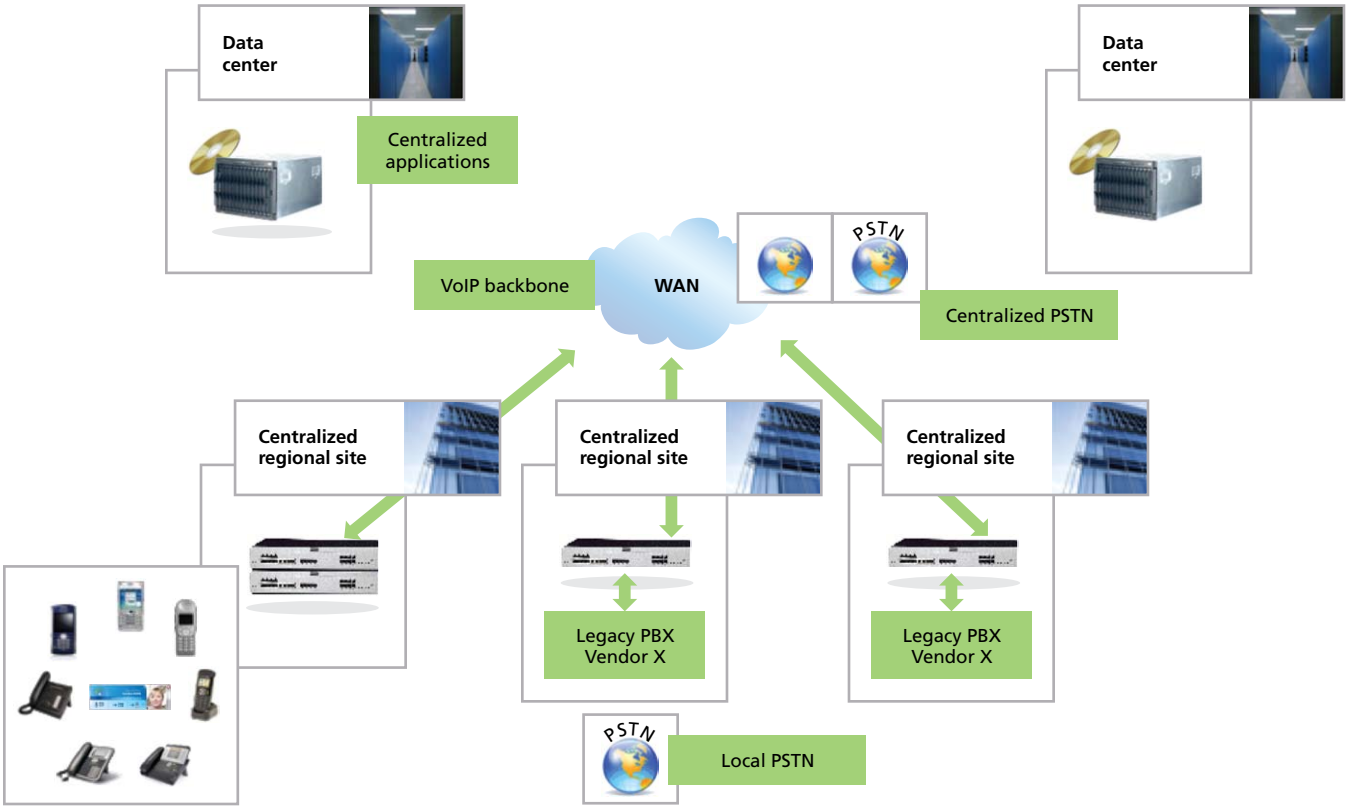
These focused investments help gain business support for the migration.

Note that Alcatel-Lucent recommends IP phones where they make sense (new buildings, expensive MAC, VoIP LAN ready) and recommends traditional digital phones elsewhere to hold down investment costs.

5.5 Step 3: VoIP backbone migration

Enterprises which have a strong regional ICT and a commitment to centralized IP communications want a smooth migration over one to three years with focused strategic deployments to reduce costs and gain productivity. Alcatel-Lucent has identified that VoIP deployments over the WAN bring the best business case and ease technology adoption. In order to succeed in a mixed environment of legacy regionally owned PBXs, the backbone migration is the best solution: A big bang is not necessary in the regional sites! Figure 7 presents an example of such architecture.

Figure 7. Example of a VoIP backbone migration



For every legacy PBX replacement or "refresh," the defined standards must be applied locally. They enable centralized quick wins which reduce costs and help gain support from business stakeholders. Some PBXs are transformed into communication servers and media gateways. Some of these media gateways connect the unchanged legacy local PBXs to the VoIP backbone via IP or TDM.

The backbone may have national or international breadth depending on the business case:

- Cost saving on mobile communications due to a central GSM gateway
- Cost reduction on inter-site communications
- Reduction in internal communication costs due to least cost routing

5.6 Step 4: Centralized quick wins

A smooth backbone migration eases VoIP technology adoption with limited impact on the organization. It also enables telecom bill cost saving. In addition, some unified communication applications can accelerate the perceived value of the centralization at the business and users levels:

- Centralized voice messaging servers provide a high level of voice messaging services for all users. They can be connected to the local sites with a low operation cost. Users have an improved experience with reduced lost calls and easy access to unified messaging services. The servers can be accessed via SIP or via QSIG-GF from local third-party legacy PBXs.
- In-sourced instant messaging/audio-conferencing/data sharing services is a first step in collaboration services that brings the users new tools for better teamwork while saving costs in communications and travels. The servers can be centralized or distributed in the regional sites.
- Centralized fax servers increase productivity across the network and reduce telecom costs over traditional faxing. They also help to eliminate costly analog phone lines, hardware, maintenance and supplies.

5.7 Step 5: IP communications centralization

IP communications centralization is the key phase in the migration. With the smooth backbone migration, local sites are transformed so they only require the local media gateways and IP Touch phones. Communication servers are added to the regional or continental data centers. The balance between regional and global centralization depends on the IT/IS organization and business needs. Alcatel-Lucent does not recommend one global data center for all the units but recommends, instead, a 20% to 30% decrease in the number of servers to achieve the maximum benefits from it.

The Alcatel-Lucent five-step methodology is a pragmatic approach to benefit from centralized service architecture (cost reduction, flexibility, user productivity) over a three to five year migration.

6. Execute a successful centralization plan

Once the IP communications centralization project is designed, Alcatel-Lucent Services for Enterprise and Alcatel-Lucent Business Partners provide a phased execution strategy with efficient support services and innovative commercial programs.

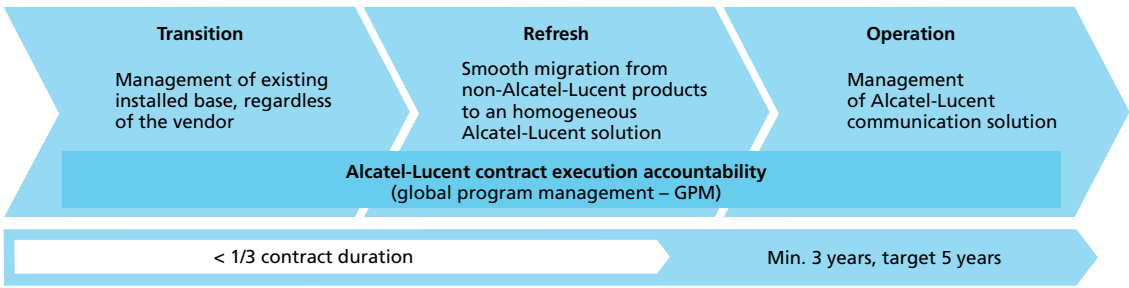
6.1 Proven migration execution methodology for large enterprises

Alcatel-Lucent has designed an execution methodology for multiple centralization deployments in large enterprises (**300+ users**). It includes an initial audit of the current network with a software, hardware and ecosystem inventory, a design phase with identification of customer requirements and resulting future centralized architecture, the quotation and order, and then, finally, an operation plan and project roll-out.

6.2 Comprehensive servicing offer dedicated to centralization

Alcatel-Lucent has developed a complete offer of Managed Services for Enterprises. This offer provides **a single point of contact** and highly skilled personnel to manage all aspects of the centralization — from **planning and design** to day-to-day **operations**. This is all managed through the Alcatel-Lucent advisory services on evolution strategies. Figure 8 describes the phased approach of the Alcatel-Lucent Managed Services for Enterprise.

Figure 8. Alcatel-Lucent Managed Services for Enterprise



In order to deliver both central and on-site services, the Alcatel-Lucent Managed Services for Enterprises offer relies on an optimized combination of highly motivated and qualified Alcatel-Lucent consultants, architects and technical experts along with more than 1,500 accredited **Alcatel-Lucent Business Partners**.

With a presence in **over 130 countries**, the world-wide footprint of Alcatel-Lucent accredited Business Partners network brings benefit to the enterprise; benefits, in terms of quality of service, geographic presence, and the confidence that each Alcatel-Lucent Business Partner is accredited. This allows them to provide the best and consistent level of services required.

6.3 Fully accountable project management

As a key part of the deployment phase of a centralization project, Alcatel-Lucent provides a full set of solution design services delivering high level to low level design. These also include detailed deployment methodology guides to ensure solution design consistency in the actual site deployment.

Fully endorsing the Information Technology Infrastructure Library (ITIL) process framework, this phase also leverages Alcatel-Lucent delivery and reporting process experts. This allows integration, from the beginning, of the project-specific tools and processes for the day-to-day maintenance and operations services.

The **deployment includes the installation, configuration and integration services** provided by Alcatel-Lucent technical experts on central infrastructures hosted in one/several data center(s). These services and experts combine with the onsite installation of devices by selected Business Partners. Both groups are controlled by the Alcatel-Lucent Project Manager.

Alcatel-Lucent fully supports the enterprise in the building and deployment of a global communication/training plan—by leveraging the experience and tools developed for communication, training modules, e-learning solutions and help desk services to provide permanent end-user assistance.

6.4 Flexible outsourcing and hosting offers

Alcatel-Lucent provides outsourcing opportunities for maintenance and operation services from the Alcatel-Lucent NOC. The service desk and NOC are provided via a partnership with NCR. Field operation is provided through Business Partners. Figure 9 shows the resulting worldwide presence of Alcatel-Lucent managed and hosting services.

Figure 9. Worldwide managed and hosting services

The Alcatel-Lucent NOC is responsible for engaging local Alcatel-Lucent Business Partners whenever necessary to complete a customer's service request raised by the outsourcer. The Alcatel-Lucent NOC includes the SLA management service and the associated reporting documents.

A single outsourcer reduces costs by optimizing the resources, and eliminating multi-supplier contract follow-ups. A worldwide service level agreement provides a unified quality of service across all locations. The contract duration may be up to five years, thus reducing the risk of unexpected upfront investments.

6.5 Innovative financing models

Global businesses resources are constantly evolving requiring a communication solution that is flexible. A flexible pricing model, based on the "per user" principle allows global businesses to change and adapt their communication solution during the period of the contract to provide a predictable and committed price.

In addition to its standard pricing model based on equipment and services, Alcatel-Lucent delivers both CAPEX and OPEX **price per user** (PPU) models.

In the **CAPEX-based PPU model**, a PPU is guaranteed for the duration of the contract. It enables global businesses to precisely budget future network evolutions. The PPU includes the equipments and services for an operational managed communication solution.

In the **OPEX-based PPU model** with financing, the enterprise purchases a managed communication service on per-user per-period (PPU/p) basis. The PPU/p includes the equipment and services for an operational managed communication solution.

6.6 Looking ahead

Alcatel-Lucent IP Communications centralization is an important approach in a long-term IP Multimedia Subsystem (IMS) or cloud computing IT strategy.

The execution of an IP communications centralization project brings immediate cost savings and productivity benefits to the enterprises in a way that is open to future developments in services and software.

The outsourcing opportunities that Alcatel-Lucent IP Communications centralization provides are also fully in line with the future deployment of enterprise cloud-computing software in the data center. This enables large enterprise IT departments to integrate communications in future software as a service strategy.

7. Conclusion

IP communications centralization is the most efficient IP transformation strategy for large and extra-large enterprises to decrease operational expenses and to prepare for the unified communications of tomorrow.

Centralizing Alcatel-Lucent IP Communications allows immediate savings by sharing multi-purpose communication equipment, decreasing local management and upgrade costs of the infrastructure—all this, with no compromise on quality, security and communication cost control.

Centralized IP communications is also a tremendous opportunity to quickly roll out new user productivity enhancements. These enhancements, with mobility and business process integration, serve digital natives but also business specific needs through User Profiles.

It is possible to implement the centralization at your own pace through the Alcatel-Lucent flexible infrastructure and proven in-sourced, network operation center operated or hosted migration strategies

In addition to these built-in capabilities, Alcatel-Lucent relies on the field-proven operational expertise of its Business Partners and innovative business offers for a successful transformation towards your centralized IP communications.

8. Abbreviations

CS	communication servers
FMC	fixed-mobile convergence
ICT	information and communication technologies
IMS	Internet Protocol multimedia subsystem
IP-MG	Internet Protocol media gateways
ITIL	Information Technology Infrastructure Library
MACD	move, add, change, delete
NOC	network operation centers
PPU	price per user
QSIG	Q-Signaling
SIP	Session Initiation Protocol
SLA	service level agreements
SP	service providers
TDM	time-division multiplexing
UC	unified communications
VoIP	Voice over Internet Protocol

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