Unified Communications
Building Blocks

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1. Executive Summary

Unified communications signals the beginning of the convergence of IP Telephony and business applications. It is this convergence that allows IP communications to fundamentally transform existing business processes, and maximize the business value of an investment in IP communications. The largest single value of unified communications is in its ability to reduce “human latency” in business processes.

Unified communications convergences voice and data applications together with presence capabilities. Presence is the cornerstone of unified communications. Presence allows users to be able to automatically tell if team members are available for conversations and what medium they prefer. The key role of unified communications is to enable responsive individual and team communications interactions as a driver to reduce communication friction and improve process efficiency.

Unified communication benefits include:

**Individual Benefits** – Unified communications provides better communication and collaboration management, and the ability to receive timely message notification, as well as functions such as call screening and personal mobility support (find me/follow me).

**Workgroup Benefits** – Unified communications provides better communication among workgroups or collaborative workers who may be geographically dispersed, such as conferencing, presence awareness and collaboration tools, maximizing the effectiveness of employee interactions on campus as well as mobile.

**Enterprise Benefits** – Unified communications provides benefits to the bottom line, through faster first contact resolution and comprehensive business-value reports – reducing costs, improving customer service and enhancing response time. Enterprises faces two challenges in planning to move their voice communications to the converged environment of unified communications. The first challenge is for business management to understand how the migration to unified communications will provide a Return-On-Communications (ROC) in terms of improved operational efficiencies, end user productivity enhancements, and business process improvements. The second challenge is for the ICT (Information and Communication Technology) departments to migrate selectively and cost effectively from legacy technology silos to an open, integrated unified communication environment of telephony applications, messaging, and business process applications that will exploit new IP network infrastructures.
2. Unified Communications Building Blocks

Unified communications is a "Strategy". It is not a single technology or product. Unified communications includes a group of technologies that integrate voice with other features, such as email, instant messaging, presence, and videoconferencing. Using these technologies, unified communications can improve an organization’s workflow by supporting more effective communications.

The five unified communications building blocks are: Converged IP Network, IP Communications, Presence-Enabled Communications, Business Applications, and Unified Communications Applications (UC-U, UC-B).

A migration to unified communications will include all the unified communications building blocks.

Figure 1: Unified Communications Building Blocks

- Unified Communications Applications (UC-U, UC-B)
- Business Applications (CRM, ERP, SCM, E-Commerce)
- Presence-Enabled Communications (Person, Device, Service)
- IP Communications (IP PBX, Mobility, Video)
- Converged IP Network (LAN, WAN, Mobile)
3. Converged IP Network

A converged IP network is the foundation of unified communications. The network must be able to support both real-time and non-real time traffic.

The network infrastructure components include:

- **Local Area Network**
  - Cat 6 wire, Wireless 802.11g/n, and Ethernet (802.1Q/p)
- **Wide Area Network**
  - Broadband Access (xDSL, Cable, Wireless)
  - Circuit Network
  - Public/Private IP Network
- **Mobility**
  - 1xEV-DO, Long Term Evolution (LTE)

4. IP Communications

The primary function of the IP communications building block is to provide voice communications using IP Telephony platforms, wired/wireless clients and video conferencing.

   a. **IP-PBX**
   
   IP Telephony platforms include: IP-Enabled PBXs, Hybrid PBXs, and IP-PBXs. Both IP-Enabled PBXs and Hybrid PBXs are hardware-based platforms and have limited support for unified communications. IP-PBX platforms enable an extensive range of applications and services including: voice and video conferencing; video-enabled IVR (IVVR); contact centers; organizational portals; voice and video messaging; fax services; and application integration.

   b. **Wired and Wireless Clients**
   
   Client devices such as IP phones and smart phones use the network infrastructure to access unified communication services such as unified messaging and instant messaging. The choice of the wired and wireless clients is critical to the success of the migration to unified communications. The clients should be able to support both voice and data applications equally.

   c. **Video Conferencing**
   
   Video conferencing uses both audio and video to bring people at different sites together for a meeting. This can be as simple as a conversation between two people in private offices (point-to-point) or involve several sites (multi-point) with more than one person in large rooms at different sites. Besides the audio and visual transmission of meeting activities, videoconferencing can be used to share documents, computer-displayed information, and whiteboards.
5. Presence-Enabled Communications

Presence-enabled communications provides information about a device or user’s current online availability. By indicating who is online and who is away, provides availability information that can be used to help determine who is available to answer a question or complete a task. One key improvement is the potential to drastically reduce wait time. In every business process, an enormous amount of time elapses because a request is sitting in someone’s voice mail, e-mail, or application inbox or to-do list. By knowing that a user is available right now, a request for information or an urgent task can be responded to immediately.

There are three types of presence-enabled communications:

1. **Device Presence**
   Device presence supports the presence-based communications with IP Telephones, PCs and software clients such as Instant Messaging. Device presence is supported with a presence server such as Microsoft’s Live Communications Server or IBM’s Workplace Server.

2. **User Presence**
   User presence aggregates presence from various devices, applications, and provides a unified view of an individual’s presence status. This allows users to dynamically select their preferred device or application for real-time contact, facilitating instant access among corporate employees, and their partners and customers.

3. **Group Presence**
   Group presence generalizes the user presence concept across a group, aggregating individual users’ presence into a workgroup. The presence aggregation rules can be set according to the needs of the workgroup. Individuals can use a group presence-enabled application to connect instantly with an available member of a group.
6. Business Applications

Business applications may include: E-mail servers, Web servers, Customer Relations Management (CRM), Enterprise Resource Planning (ERP), and Supply Chain Management (SCM) servers.

A critical component of unified communications is the integration of communications with business applications. This integration provides the means to improve a business process. Most IP-PBX vendors have partnered with either Microsoft or IBM to ensure interoperability between the IP-PBX and the enterprises business applications.

Business applications support an organization’s business processes. Business applications can be obtained by purchasing Off-the-Shelf or developed in-house to meet an enterprise’s specific requirements. The defacto standards for developing business applications are Java (SUN) and .NET (Microsoft).

Business applications have traditionally been developed to support an individual departments requirements such as accounting or manufacturing. Middleware was used to interconnect different applications to allow the reuse of data between systems. Application integration is a key part of business today. Applications allows the sharing and reuse of corporate critical data and helps a business become more flexible and responsive.

Service-oriented architecture (SOA) allows different applications to exchange data with one another as they participate in business processes. SOA separates functions into distinct units, or web services, which are made accessible over a network in order that they can be combined and reused in the production of business applications. These web services communicate with each other by passing data from one service to another, or by coordinating an activity between two or more services.

An integral part of application integration is the Extensible Markup Language (XML). XML was created to structure, store, and transport information. Both IP Telephony and business application vendors have standardized on both Service Oriented Architecture (SOA) and Extensible Markup Language (XML).

Business applications are difficult to integrate with communication systems and are usually managed separately. Both IP Telephony and business application vendors have adopted both SOA and XML which provides the ability to store and share data between voice and data systems. This ability to store and share data is an integral part of a unified communication strategy.
7. Unified Communications Applications

There are two types of unified communications applications:

1. Unified Communications User Applications (UC-U)
2. Unified Communications Business Applications (UC-B)

Organizations may decide to implement one or both of the applications.

**Unified Communications User Applications (UC-U)**

Unified communications user applications are used to improve a user’s productivity. These applications remove the barriers between voice, email, conferencing, video and instant messaging. Once these barriers are removed users are able to reduce the time to make a decision, and increase productivity. User applications provide the ability to provide a simple and consistent user experience across all types of communications.

The five primary application groups for user applications are:

- Contact Management
- Resource Identification and Problem Resolution
- Seamless Information for Mobility
- Collaboration Acceleration
- Communication-enabled Job Portals

**Unified Communications Business Applications (UC-B)**

Unified communications business applications are used to automate business processes. This is often referred to as Integrated Business Communications (ICB). Integrated business communications provides business processes and applications with the ability to sense events, respond, and track real-time multi-channel communications between decision makers. The core idea is to integrate communications capabilities into software-enabled business processes, by providing applications with “the ability to initiate real-time communications”.

The notion is that by combining integrated communications functionality with the insights that can be gained through use of enterprise software, organizations will gain the ability to have their systems “sense events, manage communications and track activity to closure.” When business applications such as customer relationship management (CRM), enterprise resource planning (ERP), and supply chain management (SCM) are integrated with communications it provides the following business benefits:

- Reduce latency in business processes by initiating and tracking real-time communications between decision makers
- Better manage enterprise-wide response to important events through automated communication activity
8. Consulting Services

ViTel Consulting can assist your organization to develop a Unified Communications strategy.

ViTel Consulting has developed a unique Unified Communications strategic methodology that allows an enterprise to sift through the market hype to build a Unified Communication strategy that supports their current and future business requirements. A Unified Communications strategy is rolled out in a series of phased projects implemented over time. Unified Communications provides the ability for a company to be able to communicate and collaborate across locations, time and devices. This ability can lead to significant business benefits, but because each company is unique, there is no single strategy for migrating to Unified Communications.

Let our unified communications experts help you determine your unified communications needs, assess your current environment, plan and design your unique solution, create your roadmap, and navigate this complex migration to unified communications.

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