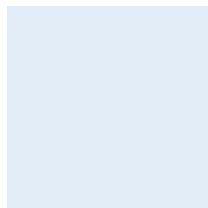


# Unified Communications: Unleashing the Power of Collaboration Gain the Benefits and Avoid the Pitfalls



## Executive Summary

As business becomes increasingly complex and competitive, an organization's ability to help knowledge workers leverage and share information becomes necessary. Indeed, over the past few years the idea of collaboration – both within an organization and with individuals and teams outside the enterprise – has received increasing attention from CIOs, industry analysts and business strategists. As the emergence of the technologies and paradigms collectively referred to as “Web 2.0” unleash the power of collaboration within on-line communities, it is no surprise businesses are looking for new ways to leverage technology to improve the frequency and effectiveness of collaboration.

As savvy businesses increasingly turn to collaborative technologies for competitive edge, Unified Communications (UC) emerges as one of the most intriguing arenas for productivity improvement and transformational change in the way people collaborate. Many industry leaders and analysts believe that we are approaching a communications revolution with UC technology at the forefront.

So what exactly is Unified Communications and how can it affect your business? An accurate yet simple definition of UC is “communications integrated to optimize business processes.”<sup>i</sup> More specifically, UC integrates an array of communication media and productivity tools including voice, video, IM, conferencing, presence, voice mail, collaboration, calendaring, e-mail, and fax. UC enables users to manage these communication streams more easily and effectively, increasing both the quantity and quality of collaboration. Using a concept called Communications Enabled Business Processes (CEBP), UC can reduce process cycle times while increasing organizational flexibility and service quality.

However, with any significant transformation come challenges. For example, CEBP will enable some businesses to achieve transformational changes that establish sustainable competitive differentiation. For others, UC will offer more modest opportunities for improvement. Indeed, some businesses may invest in UC with expectations of transformational change only to find that the nature of their business limits the impact UC can have. On the other hand, organizations that take a “wait and see” approach to understanding how UC can impact their business run the risk of finding themselves behind competitors who leverage UC and CEBP for dramatic competitive advantage. The key for each organization is to assess how to appropriately leverage UC technology. Moreover, UC implementations themselves are complex, and even well-targeted initiatives can flounder according to a number of factors. Business case analysis, technology selection, creation and management of a UC-ready network, security, and end-user change management are just a few of the challenges organizations encounter when undertaking a UC initiative.

There isn't a “one-size-fits all” UC solution, and businesses exploring UC will be faced with many choices. Clouding these critical decisions will be VARs and OEMs in the UC space who can provide critical expertise but also bring a bias for addressing UC challenges “their way.” It's important for organizations to team up with a like-minded business partner that will assist in designing a UC solution that targets specific business needs without bias for a particular vendor's solution set.

With UC emerging as a potential competitive pivot point for many businesses, organizations must consider how a well-designed and deployed UC architecture can provide substantial competitive advantage and a dramatic return on investment. This white paper introduces basic concepts of Unified Communications and explores the factors that organizations should keep in mind when considering a UC strategy.

## A Shift in Communications Technologies

In a world of information overload, it is impossible for any knowledge worker to know everything they need to know to be successful. (And even if they could know it all today, it will probably be different by tomorrow morning!) Increasingly, knowledge workers and the businesses they work for are realizing that the ability to find and use information quickly and effectively is critical to success. Indeed, the very emergence of the term “knowledge worker” underscores the importance of information-related activities.

Over the past several years, knowledge workers have added new tools – from IM and text messaging to blogs and Wikis – to allow them to quickly find, access, manage, and share information. In this world, collaboration (which we define as “two or more people working together to achieve a specific, mutually beneficial outcome”) becomes critical. Businesses are increasingly interested in tools and techniques that can accelerate the flow of information and increase the frequency and effectiveness of collaboration.

Unfortunately, the technologies we use to communicate and collaborate threaten to overwhelm us. Over the past decade technology has come to play a significant role in the way we interact with the world both in the workplace and at home. This decade has seen a proliferation of communication applications including IM, web, e-mail, audio, mobile smart-phones, text messaging, and video conferencing. As illustrated in Figure 1 below, Nermetes research benchmark, “Building a Successful Virtual Workplace”<sup>ii</sup>, confirmed that business adoption rates exceed 50% for most of these applications.

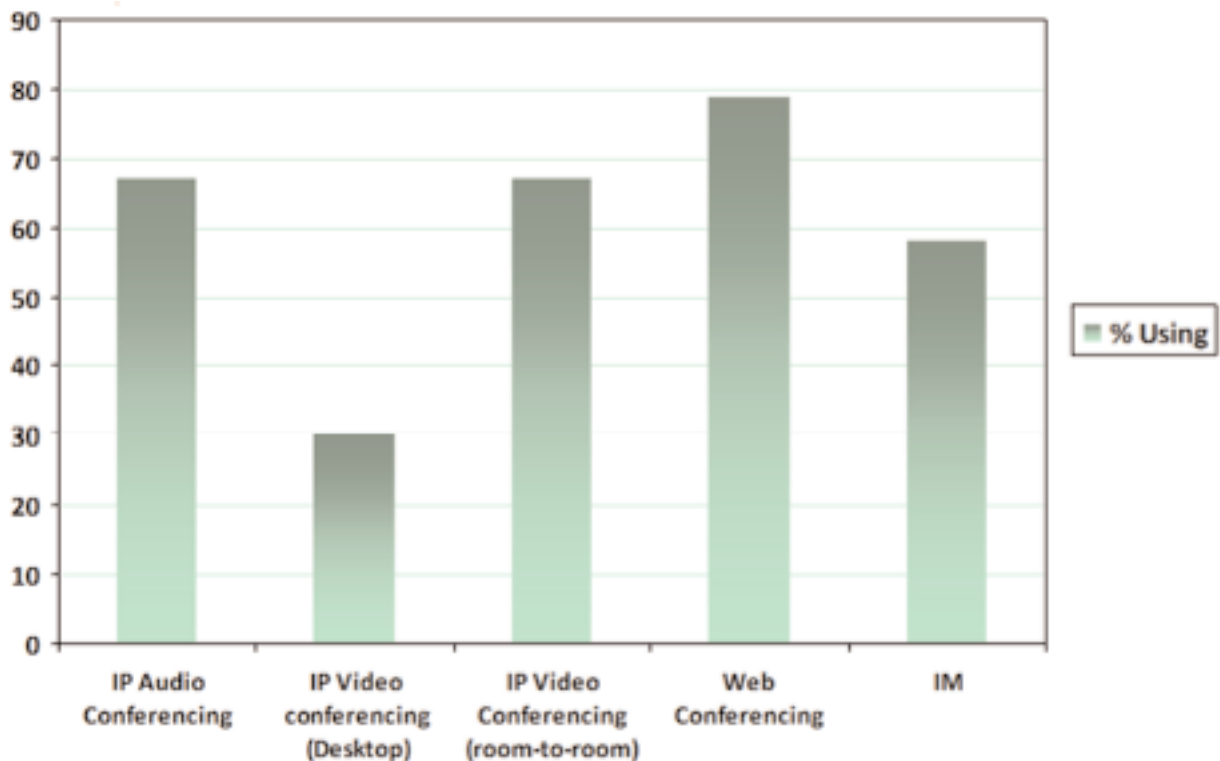


Figure 1: Real-Time Application Usage

In fact, one could argue that today we have too many choices. According to a recent study from Harris Interactive and Microsoft, the average information worker receives 100 messages per day in seven different places. Additional research indicates that people spend about 35 minutes per week in “voice mail jail” or playing “phone tag” – adding up to more than 30 hours of lost productivity per year. People are required to use different means of communicating for different situations resulting in duplicate messages left in different locations. Recipients then have to deal with each of these multiple messages.

In our attempt to facilitate communication, we end up at a point where we have too many options and not enough time to deal with them. The growing variety of applications designed to make communications easier end up making our lives more – not less – complex, leading to wasted time and reduced productivity. Further compounding this complexity is the expanding population of individuals working remotely, from home offices and partner locations to hotels, conference centers, and airports. What is needed is a way of integrating various forms of real-time communications and collaboration applications so individuals can manage all of their communications in an integrated fashion, in both desktop and mobile environments. Ideally, this will not only offer individuals the ability to control how they manage contact with others, but also how others can contact them. Unified Communications promises to bring this often chaotic situation under control.

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the next two years, with more than 17% already deploying at least some form of UC.<sup>iii</sup> A study in June, 2008 by Steven Taylor and Joanie Wexler of Webtorials confirmed the Nemertes research, finding that “of those specifying a timeframe, 78% of respondents indicated they already have deployed or will be deploying UC within two years.” That research also found that the number one reason cited for deploying UC was to “increase collaboration and productivity among employees, customers, [and] suppliers.”<sup>iv</sup> Clearly, the UC wave is beginning to build and it is becoming more and more evident that organizations need to begin thinking about Unified Communications in order to keep up with competition.

Executed effectively, Unified Communications dramatically impacts the workplace and transforms how business is done. UC can increase operational efficiency by reducing the number of sources from which we retrieve and manage the numerous transactions that are processed each day. By using Unified Communications with identity and presence at the core, workers recapture lost time and productivity. However, it’s not just the recaptured time that is important but the impact on the business process which ultimately affects the bottom line and customer satisfaction.

For example, organizations can streamline contact center communications with features like skills-based routing, Automated Call Distribution (ACD), and integration with CRM databases. These allow for better management, improved control, ease of use for support personnel and – most importantly – a more streamlined experience for the end user and the customer.

Recent developments in UC are going beyond the contact center, applying this holistic approach to provide productivity advantages to the entire enterprise. During the Microsoft Unified

Communications Launch 2007 event, Jeff Raikes, president of Microsoft's Unified Communications business division, stated that over 150 customers have implemented UC solutions and have realized 25%-30% in cost savings. Raikes cited as an example a high-tech manufacturer who uses Microsoft's UC solutions across its entire enterprise of 104,000 users and realized dramatic increases in productivity. Examples like these illustrate the true benefit of unifying business communications.

## Critical Building Blocks of UC

There are many definitions of UC. Taylor & Wexler define UC as "presence-enabled communications that integrates telephony, desktop, and business applications to deliver a unified user experience and to streamline desktop and business processes." <sup>v</sup> For the purposes of this discussion we build upon this definition to consider the integration of specific communication media and productivity tools including voice, video, IM, conferencing, presence, voice mail, collaboration, calendaring, e-mail, and fax. UC enables users to manage these communication streams more easily and effectively, allowing people to access each other better. This increases both the quantity and quality of collaboration. UC is not a specific technology, though it integrates specific technologies and uses some specific technological approaches to do this. This section presents a few of the key technological and architectural components of UC.

### Voice over IP and IP Telephony

Voice over IP (VoIP) is simply the transmission of voice information across an IP network. This entails transmitting voice signal as packets across an IP network, VoIP is the next-generation alternative to Time-Division Multiplexing (TDM), which has been the foundation of voice communication for decades. But to replace TDM, VoIP must provide the same user experience and features expected of traditional telephony. This set of functionality, which requires a complex set of desktop, switching and networking equipment, is what we refer to as IP Telephony (IPT). IPT usually refers to an IP PBX, but "cloud-based" solutions like IP Centrix also qualify as IPT. Most implementations of IPT provide the same feature set as TDM, but use the newer technology.

One may wonder why any organization would go through the time, cost, and trouble of switching from TDM to VoIP only to receive the same set of services. In fact, that excellent question frustrated IPT vendors for the early part of this decade as organizations resisted wholesale replacement of TDM with IPT. While vendors claim rapid adoption of IPT in more recent years, much of this adoption was in reality routine technology refresh by vendors who made purchase of VoIP equipment more attractive than similar TDM technology (in some cases, the TDM version wasn't even made available). But over the past few years, organizations have come to realize that VoIP provides a foundation for future growth and organizations are increasingly willing to make the transition. Increased awareness of UC is helping to fuel this transition. IP Telephony performs ad hoc switching of real-time data streams across a network and that capability is a critical foundation for UC.

### Unified Messaging

Traditionally, voice, e-mail, and fax systems were completely independent systems accessed through different interfaces. Users and administrators use multiple, independent sets of tools and systems to manage their communications. E-mails arrive at the central e-mail server (such as Microsoft Exchange Server) and are accessed through mail clients like Microsoft Outlook. Voice mail is an independent system accessed via a telephone, usually leveraging facilities associated with the telephony system. Faxes come into stand-alone machines, often to be manually sorted and distributed by a clerical staff, or tracked down by the end user.

Unified Messaging (UM) allows businesses to do a much better job of managing these communications by consolidating information across media and sources, allowing users to access communication transactions with whatever tool is most convenient at the given moment. For instance, Microsoft Exchange 2007 now offers the Unified Messaging server role that can replace the legacy voice mail system. Exchange 2007 combines voice mail, fax, and e-mail into one easy to use interface. The result is that all messages are available through whatever tool is most convenient. Users can access messages on the desktop with Outlook, from the web using Outlook Web Access, or from a mobile or traditional phone. Cisco's Unity server has similar features, though it is far less integrated into the Microsoft infrastructure. Avaya and Nortel offer similar UM solutions.

## Sample Building Blocks of UC

- *VOIP and IP Telephony*
- *Unified Messaging*
- *Session Initiation Protocol*
- *Presence*
- *CEBP*

Many people use the terms "Unified Messaging" and "Unified Communications" interchangeably. In fact, they are different; UM is a sub-set of UC. However, UM often provides a "low hanging fruit" opportunity because many organizations can implement UM rather easily by leveraging existing infrastructure.

### Session Initiation Protocol (SIP)

SIP is quickly becoming the industry standard for VoIP communications. In simple terms, SIP provides the rules two devices use to establish, maintain, and tear down an ad hoc switched connection, much the way a PBX or Central Office switch did in the traditional telephony world. SIP enables greater flexibility in integrating

devices because the standard plays the role of the middleman, thereby allowing two devices to communicate without really knowing much about each other. This opens the door for rapid innovation in devices and facilitates interoperability of applications. Any organization examining a UC solution should strongly consider incorporating the SIP standard, especially if they are concerned with aligning to the future evolution of the UC marketplace.

### Presence

There are many different types of presence: telepresence, virtual presence, mediated presence, co-presence, as well as just plain presence. Simply put, presence creates an environment that enables users to interact with each other as if they were physically collocated even when they are not.

The overall goal with all forms of presence is to create a fluid virtual meeting space that promotes a collaborative environment in which a sense of togetherness can be felt. Unified Communications technology now makes that possible. For example, Microsoft's RoundTable device allows for a rich and immersive virtual telepresence solution that creates a virtual conference room for collaborative "in person" meetings regardless of participant location. Another example is Cisco's Telepresence; a solution that uses high definition video and spatial audio to create a true face-to-face virtual meeting experience.

Software applications take somewhat of a different approach to presence, but aim to achieve the same result. For example, in Microsoft Office Communicator client, the user's various e-mail addresses, phone numbers, and IM addresses are all captured into one entity that provides a single point of contact to the outside regardless of what back-end communication means are being used at the moment.

In this case, presence is a single identity that captures a user's availability status and location, enabling someone who needs to get in touch with them to track that individual down using the

most effective medium for the situation. Presence allows a user to view a co-worker's availability status to determine how best to contact him/her instead of dialing blind to different phone numbers and ending up in "voice mail jail." This greatly simplifies ad hoc conferencing and collaboration, saving time and encouraging more frequent and effective collaboration.

When a UC solution is built around the concept of presence it facilitates features like call redirection in which users can route incoming calls to their desk phone when they are in the office, to a mobile device when they are in a conference room, or even automatically to voice mail if they are unreachable such as when on an airplane. With unified messaging, the individual can pick up the voice mail as an e-mail between flights and listen to it later on the plane – even if the phone is not connected to the mobile network at that moment. Users can set presence rules that govern who can track them down in various situations. For example, a user might set a rule to forward an after hours call from a peer to voice mail, but send one from his/her boss to their mobile or home phone.

Presence clearly allows businesses to communicate more quickly, reduce travel costs, offer flexibility, and fundamentally transform how they do business. It also enables businesses to draw on collective knowledge and talent that may exist elsewhere within the company. The benefits gained by incorporating presence into a UC solution are vast and as markets continue to globalize demand will grow along with this communications evolution.

### **Communications Enabled Business Processes (CEBP)**

One of the great achievements of computing over the past 20 years is that any consistent and predictable process can be automated. In certain cases, automation and workflow technology can enable tremendous increases in process speed and effectiveness. Many experts believe UC will provide the ability to incorporate multiple communications channels and technologies into the automation/workflow paradigm to dramatically improve communication-intensive and information-intensive processes.

The concept of Communication Enabled Business Processes (CEBP) is articulated by industry analysts as a way of deploying UC technology to streamline or automate communication-intensive applications. Among traditional voice vendors, Avaya has been a leader in articulating CEBP as a strategy. CEBP is a new concept and a still emerging business practice whose promise is likely to be great with some businesses and more modest with others, depending upon whether or not targets for this sort of process automation exist within the business.

The emergence of CEBP illustrates that there are future possibilities for UC that haven't yet been completely understood or conceived. That is why organizations must approach UC not only with current needs in mind, but also keeping an eye to the future. By designing a UC solution on an innovation-ready and future-proof foundation, organizations have the best chance of achieving near term benefit while leaving open options for accommodating longer-term opportunities like CEBP.

## **Defining and Planning the UC Initiative**

Since technology permeates any discussion of UC, it is easy to jump immediately to technology as the critical factor. In fact, the vast majority of UC products are quite effective at what they do; determining what the business needs is the trick. Selection of the right solution must derive from a number of factors related to how the technology will be deployed. The deployment plan, in turn, depends very much on which aspects of UC provide the greatest payback to the business. As with any technology initiative, identifying the business payback is the critical first step.

Assessment of the business case must take into account several factors. The most critical is to understand where the business payback will come from. Is there a specific process that is a strong candidate for CEBP? What community of users is most likely to be impacted by improved

collaboration? What is the business impact of that collaboration? For the sales force, we might translate the impact into increased time for customer activity, reducing sales cycle time or increasing pipeline. For product development, it might be reduced time to market, or inclusion of more features in the product. In any event, the nature and degree of payback will vary widely from business to business. For this reason, organizations considering UC should be wary of vendors who make broad-brush ROI claims (though benchmarks of user productivity – e.g., “15 minutes of time savings per day per user” – have some validity).

The UC market is in a rapid development phase, with various companies devising new offers on their own or in partnership with other companies. In this sort of environment, it can be difficult to determine the best strategy. Industry analyst Blair Pleasant of COMMfusion has developed a “UC Continuum,”<sup>vi</sup> that describes different stages of UC development within an organization. This model is very helpful in defining different UC deployment strategies.

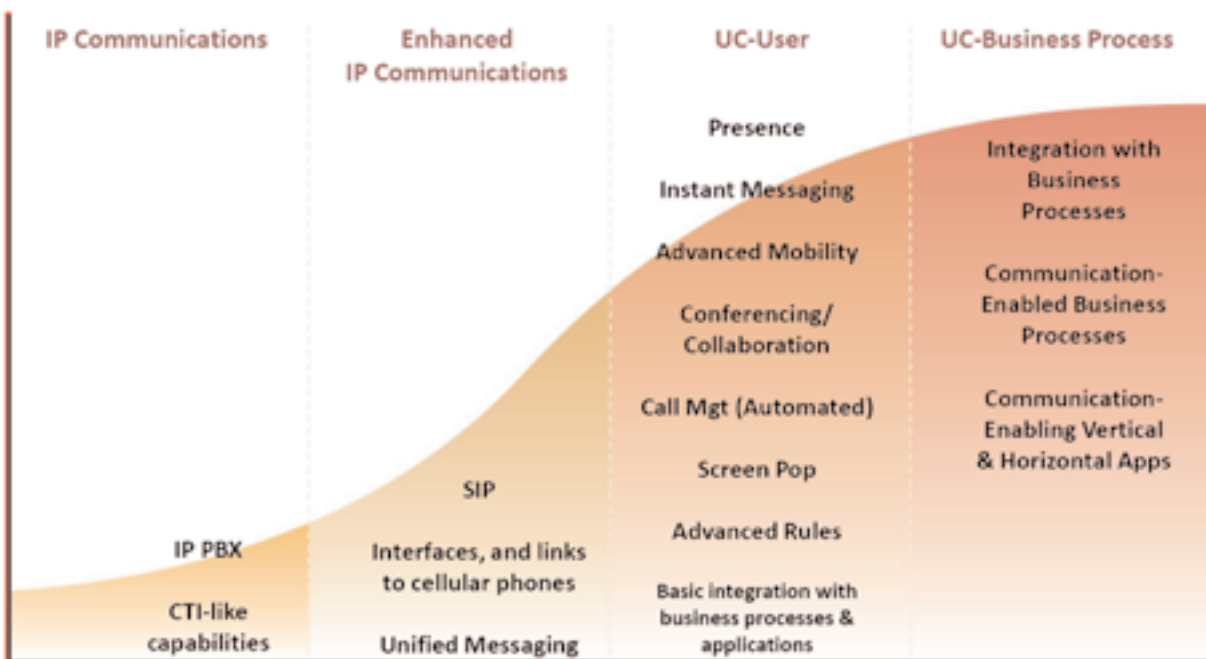


Figure 2- The UC Continuum

This model is useful for defining ROI strategies, for defining where a given organization is in its UC development, and for establishing a phased approach to a UC initiative. It describes the level of complexity and maturity of various UC approaches, and identifies technologies and capabilities associated with each.

At the very bottom of the curve is basic “IP Communications.” This may include many of the IP-based PBX systems like those provided by Avaya, Cisco, Interactive Intelligence, Nortel, ShoreTel, etc. As described earlier in our discussion of IPT, the solutions in this category provide the business communications infrastructure that is the foundation for UC. These solutions may also deliver

attributes typically associated with Computer-Telephony Integration (CTI), but solutions in this category do not necessarily offer true UC capabilities.

Moving up the curve we enter into the “Enhanced IP Communications” category. These solutions will introduce things like Unified Messaging with legacy PBX or IP PBX integration built around the Session Initiation Protocol (SIP). They may include connection to other devices such as smart-phones, a capability sometimes referred to as Fixed-Mobile Convergence. As mentioned previously, Unified Messaging is also a sub-set of UC that may offer a “quick win” opportunity using existing infrastructure and tools. Implementing a solution with UM or using SIP to facilitate a basic VoIP implementation can be a great starting point for many organizations looking to begin deployment of UC while leveraging existing infrastructure.

More sophisticated capabilities are added in the third step on the Continuum, titled simply “Unified Communications.” This is where we cross the threshold into true UC capabilities and basic application integration, unleashing the full power of UC as a facilitator of collaboration. A good example is Microsoft OCS which uses Office Communicator, Roundtable (a 360° video cam for conference room video-conferencing), and collaboration to deliver things like presence, IM, identity, click-to-call, SharePoint integration, and click-to-conference among many other features. Using presence and identity at the core of a UC implementation can have a dramatic effect on the business by empowering people.

The top of the curve is what Pleasant refers to as “Enhanced UC.” This is the integration of communication technologies to support specific processes or applications, including what we earlier described as Communication Enabled Business Processes. Many enterprises will get tremendous value from UC capabilities in this space. A basic example is “skills-based routing” in the contact center. This technology will route incoming customer support calls to a group of support staff with the specific skill-set required for that given call. As it routes the call to the support person it may also execute a screen-pop of customer information in a CRM database.

It could be argued this example is in many ways an extension of ACD and CTI capability that has been available for a while, but it is a basic example of how UC technology can be deployed to improve a business process. In this case, it cuts down on the time the customer has to spend waiting to get to the right person and the time it takes for the support person to look up the customer information. It can also prevent customers from repeating to the call agent information already entered into an IVR menu (a frequent customer frustration with contact centers). The result is a better customer experience, a more productive call center, and a dramatic increase in response time. This is just one example of how Enhanced UC can be leveraged for substantial ROI.

The UC Continuum model helps to make sense of what can be a confusing process for organizations considering UC. The model can help organizations understand where they are with their UC implementation and where they ultimately want to end up. It also identifies what sorts of capabilities and technologies an organization will require to achieve its interim and long-term visions.

At first glance, the UC Continuum seems to imply that the greatest ROI is to be found at the top of the curve. This may be true for organizations where business process transformation can be enabled by UC, but organizations must keep in mind that such transformation may not fit every organization; in some cases, more modest interventions will provide the greatest ROI. Either way, organizations that choose to traverse more than one step in the Continuum are likely to use a phased approach. It would be rather risky for an organization with a basic IPT foundation to immediately chase after a fully integrated CEBP solution without first focusing on the fundamental

stops in between. More likely, they would start with a UC deployment that lays the foundation to scale into a more complex solution over time.

Whatever path an organization decides upon – whether it is an “Enhanced IP communications” solution with UM or a full blown CEBP “Enhanced UC” solution – the key is to align the initiative to specific objectives and goals first, decide which approach best fits the needs of the business and, finally, select and deploy standards, technologies and specific products that will meet the need.

## Technical Trends & Considerations

There are many different ways to design and implement a Unified Communications solution. Different vendors have different approaches, and vested interests in those approaches. Microsoft built its UC solutions on a software foundation while Cisco argues UC functionality is best addressed in the network. Then again, Exchange 2007 UM is fully compatible with Cisco Call Manager so a hybrid solution is possible.

In reality, selection of the best solution should always be according to organization-specific business requirements. For example, the best IPT solution for a large, centralized company with a big call center might be very different from the best IPT solution for a mid-size, de-centralized company with a large number of small satellite offices.

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UC is both powerful and complex because of the breadth of technologies it integrates. In this way, UC is different from many other technological arenas, where it is desirable to get a turn-key solution from a single vendor. Because of the number of technologies

involved in UC, it is very unlikely any single vendor will produce a best-of-breed, end-to-end UC solution. More likely, multiple vendors will vie for best-of-breed status in each of several areas (i.e., IPT, Conferencing, Messaging, etc) and organizations will piece together components from multiple vendors to create integrated solutions carefully tailored to meet the organization’s needs.

Recent developments in the industry underscore that the vendor-centric era is coming to an end and the business model has changed to more of an ecosystem comprised of a myriad of choices from many different vendors. Existing vendors will be faced with decisions on how to provide solutions to their customers. For example, switch vendors such as Nortel and Mitel are entering into partnerships with Microsoft to provide new UC solutions; LG is providing new SIP phones; Siemens is entering the UC space with its OpenScape UC server; and IBM is currently promoting their UC2 strategy. Even Cisco and Avaya – long regarded as monolithic vendors whose architectures are based upon single-vendor integration – are establishing important partner relationships.

A multi-vendor approach also allows organizations to build a UC infrastructure on a “future proof” platform, ensuring that the environment can flourish as the UC ecosystem continues to mature. For most organizations this approach will enable much greater effectiveness and flexibility as well.

Establishing the right set of requirements and selecting the right tools across the whole array of UC-related technologies are the most difficult – and most important – aspects of a UC initiative. This is why many organizations look to outside, vendor-agnostic partners to help establish and execute their UC strategy.

## Keys to Success & Pitfalls to Avoid

The path to Unified Communications can be a rocky one with many hurdles along the way. In an effort to ensure the success of a UC implementation, it's important to recognize these hurdles and address them before deployment into the production environment.

Experience in the industry shows that problematic UC implementations have floundered; not because of product flaws, but because of inadequate planning and poor integration. Before deciding on any vendor's product, it is always a good idea to talk to existing customers of that vendor about their implementations – what worked, what didn't, why they selected the particular vendor, etc. This can be a great way to avoid pitfalls in implementation and help anticipate issues that might emerge within your particular environment. This section identifies some specific issues and challenges that might arise during a UC deployment.

### Network Considerations

UC necessitates introduction of new data streams (particularly voice traffic that previously travelled on a separate network) to the data network, and this poses challenges. Many organizations that deployed IP Telephony – without the even greater demands of UC – encountered significant user experience issues after underestimating the impact of migrating voice traffic into the core infrastructure. IT should clearly understand how UC will impact the network before the deployment phase of any UC project.

Preparing the network for UC is essential to a successful implementation. Many UC applications – particularly those that involve voice and video – are real-time streaming applications, so a momentary “traffic jam” on the network that would be undetectable for most applications can be a major problem for UC users. End users expect flawless voice service with virtually no downtime. With IP communications, issues like jitter, latency, and echo can severely impact the user experience. Most such issues are due to network deficiencies. Likewise, video conferencing has been around for well over a decade without widespread adoption because users don't like the artificial choppiness of the video image. UC video can deliver a much better experience – but only if the network can accommodate the traffic.

A pre-deployment analysis of the data network is critical to any UC project. Organizations must test and evaluate their network prior to a UC/VoIP rollout with a comprehensive pre-production configuration analysis that includes testing, analysis and recommendations. Some IT managers choose to implement UC and address problems as they arise. This is a risky approach; any organization that moves forward without proper network analysis is on perilous ground and likely to encounter time-consuming issues and end user resistance.

### Hardware, Server, and Storage Requirements

There are many different UC solutions available in the market today with more being introduced all the time. The impact of these on the overall IT infrastructure can vary widely. Some approaches will allow organizations to leverage existing switches, handsets, servers, and infrastructure, while others will require more upgrades and new technology purchases. Some products work only with a particular vendor's switches, which may not be optimal in a mixed or heterogeneous environment. Most organizations want to leverage as much existing infrastructure as possible, so understanding how various solutions under consideration can integrate with the existing environment is critical.

Hardware requirements will depend upon which path you choose to take with your implementation. For instance, a Cisco Unified Communications solution in a homogenous configuration may require more investment in the networking infrastructure than a Microsoft/Nortel solution that uses SIP for VoIP communications. New storage requirements will also surface as voice data migrates to the network and as voice mail migrates from the PBX to a standard server. Data usage will vary depending upon the codec used, system usage, format and other factors.

Depending on the size of your UC implementation, your requirements may go beyond servers alone; you may have the need for an iSCSI or Fiber channel SAN to store voice mails, or multiple VoIP gateway devices for numerous branch offices. In addition, you may be faced with the need to backup and replicate this data for disaster recovery, high availability, and regulatory compliance.

### Security Considerations

Among the many considerations that must be addressed in a UC project plan is the need to ensure the security of the UC environment and supporting infrastructure. There are many potential concerns including Denial of Service (DoS) attacks, buffer overrun vulnerabilities, port security, snooping prevention, elevation of privilege attacks, impersonation attacks, protocol exhaustion attacks, ACLs, ARP poisoning, VoIP spoofing and port scans. There are also many things to consider when securing the UC infrastructure including VLAN configuration, Firewall rules, user access, encryption and remote management.

The approach to security depends in part upon which solution is being implemented. For example, a UC solution from Cisco requires a different security approach than an application layer, SIP-based solution from Microsoft. Cisco Security Agent (CSA) is a host-based intrusion-prevention system (IPS), and is now an integral security component in Cisco CallManager IP telephony servers. It's also on Cisco's Unity voice mail server and can be deployed throughout Cisco's network topology. The CSA agent runs automatically and unattended, and provides some powerful safeguards at the server level.

Whatever UC solution is chosen, organizations should address security before rolling out to production. Unfortunately, many companies have disregarded security when implementing a VoIP/UC solution, overlooking potentially dangerous vulnerabilities in the process. Organizations should include security as part of their Unified Communications strategy.

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### End-User Considerations

As mentioned earlier, a well-planned, phased deployment is essential to any UC initiative. This includes addressing change management issues within the user community. UC-enabled collaboration is as much a technological change for the enterprise as it is a cultural change for users. User

resistance can turn a promising business case into an expensive failure. When considering the UC budget, many organizations consider only IT-related expenditures such as servers, devices, telecom, IT staff and systems integrators – forgetting that end user training and support are the critical final pieces needed to ensure a successful deployment and adoption. It is not unusual for end users to cite “technical issues” as an excuse for their natural resistance to change (this further underscores the importance of ensuring the overall infrastructure – especially the network – is ready to handle the load UC introduces). Again, leveraging the existing infrastructure (to the degree

possible) can help – resistance is likely to be lower when users are able to venture into UC while using tools and interfaces they already know. It is always a good idea to conduct an initial pilot focused on an end user community that is likely to realize significant productivity improvement with the new system. This gives the deployment a good test and, hopefully, an early success story. Some organizations may, in late stages of the pilot, extend capabilities to executives (including the CIO) and key department heads. This gives these critical users the ability to provide feedback prior to final deployment and – as importantly – to prepare them to be evangelists of the UC solution once full roll-out begins.

Many organizations delay “locking in” the final deployment plan and configuration until after the pilot. This allows them the flexibility to address hardware, software, network, and security requirements that emerge during the pilot. It also allows the team to incorporate lessons learned during the pilot into the broader roll-out plan.

We articulated earlier how important it is to evaluate the impact of UC on the technical infrastructure (especially the network) before building the solution. It is just as important to re-evaluate this analysis as the pilot winds down, as it is possible that real-life data generated during the pilot will uncover flawed assumptions in the initial infrastructure analysis. While on occasion this results in some unpleasant findings, it is better to understand additional technical and budgetary impacts before full deployment than to discover them during roll-out!

## Summary

We live in a hyper-connected, just-in-time world. Advances in technology allow us to send, receive, and share information in more ways than ever before. We want to find information, receive information and send information when and where we see fit, from and to a wide variety of audiences. Technology today can support this world, but the proliferation of these technologies threatens to hurt, not help, productivity. Businesses that figure out how to leverage this technology effectively will reap benefits while their competitors do not.

Humans are social beings and doing business today is a social exercise, with collaboration emerging as the new competitive differentiator. Unified Communications is aimed at empowering people to collaborate more frequently and more effectively. It gives us the tools we need to respond to that important customer issue, to rise to the critical competitive challenge, or simply to satisfy the customer or partner request in the most effective way possible. Unified Communications lets people leverage each other to make more effective, faster decisions and conduct better business.

There are many options for deploying UC. New, ever more powerful technologies, products and applications are easing the adoption of Unified Communications at the same time they increase the imperative to do so. But adopting UC is not easy, with many considerations in a variety of arenas including business case assessment, technology selection, infrastructure preparation, security, and end-user change management.

Organizations that successfully deploy UC often turn to a partner for help with everything from evaluating how UC can impact the business to selection and deployment of technology. As you begin developing a UC strategy, it is important to determine who can help you with the process. We believe the best approach is to select an objective, vendor-agnostic business partner who can help determine how and where UC can impact your business, and how to best integrate UC into your existing infrastructure – all with an eye on reducing risk and maximizing ROI. You need a partner that can help you Optimize, Secure, Manage, and Support your critical IT infrastructure to meet your business needs.

## Resources

i Pleasant, B. (n.d.). Retrieved from <http://www.ucstrategies.com>

ii Lazar, I. (2007). Unified Communications. Retrieved from Nemertes Research: <http://www.nemertes.com/>

iii Taylor, S & Wexler, J (6/2008), Unified Communications Pervades the Enterprise, distributed by Webtorials: <http://webtorials.com>

iv Lazar, I. (2007). Unified Communications. Retrieved from Nemertes Research: <http://www.nemertes.com/>

v Taylor, S & Wexler, J (6/2008), Unified Communications Pervades the Enterprise, distributed by Webtorials: <http://webtorials.com>

vi Pleasant, B. (n.d.). Retrieved from <http://www.ucstrategies.com/detail.aspx?id=2210>