

Introduction

This white paper describes the growing trend of using instant messaging services in business, and the impact of this trend on those who provide business communications solutions. Instant messaging refers to all forms of real-time messaging including text, voice and video over the Internet. Examples of instant messaging include Skype, MSN Messenger, AOL Instant Messenger, Yahoo! Messenger and Google Talk.

The paper also provides a brief overview of developer tools from PIKA Technologies' for creating business communications solutions integrated with IM. These building blocks will allow application developers to design business communications solutions where text, audio and video Internet communication is used, either on its own, or in combination with traditional telephony networks such as analog, digital and IP.

A New Generation of Communicators

Generation Y, Echo Boomers, and the Millennium Generation are just a few terms used to refer to those people born between the years of 1976 and 1995. This generation is commonly referred to as being "born into the digital revolution" or "integrated into the Internet". The fundamental communication habits of this generation are based on collaborative methods such as blogs, Facebook and MSN which are used to "find friends". In their book *Millennials Rising*, Neil Howe and William Strauss describe the unique characteristics of this generation in detail:

"in a departure from Boomers and Gen Xers, they will apply technology not to empower individuals, but to empower the community"

The key characteristics of this generation that will inherently re-shape next generation communication systems include an insatiable need for information, a culture of collaboration, a natural ability to multi-task, a strong ability to learn, and a strong belief in the right (vs. privilege) to use technology.

To cater to the needs of this generation, communications systems will have to allow for an unprecedented level of collaborative communications including multimedia conferencing and provide easy, instant access to information from anywhere at any time from any device in any media. More intelligent, decentralized and distributed communications systems will be required, as the demands of this sophisticated, technically-savvy group of users continue to grow.

This powerful group is already playing a defining role in how communication styles are evolving. Instant messaging (IM), which had its roots in text chat but now also includes voice and video messaging, has emerged as a very popular way to communicate among friends and family.

Although the major growth to date of IM can undoubtedly be credited to Generation Y's personal use, a shift is beginning to take place. As the first of Generation Y enters the workforce, and as other early adopters expand their style of communication, we are seeing IM being used increasingly in the workplace.

The Growth of IM: Personal and Business Use

Market research shows phenomenal growth in the use of IM style communication in not only people's personal lives, but in business too. This includes chat (text) messaging which is currently the most widely used IM mode of communication followed by voice and video. Microsoft (MSN Messenger), Yahoo (Yahoo Messenger), AOL (AIM), Google (Google Talk), and EBay (Skype) are just a few of the major companies driving IM.

"I learn something new about the way my kids communicate with their friends and family every day. Unless I am face to face with them, I know the best way to communicate with them is via IM. We use a combination of text, voice and video depending on the occasion. There is no doubt in my mind that as these young adults reach the workplace they will be looking to use IM in their daily business activities."

Terry Atwood, Proud Father of 2

- AOL's Third Annual Instant Messenger Trends Survey found:
"Instant messaging (IM) has become an important part of everyday life in the U.S. and around the world. IM usage is up 19 percent year over year for 2005, and is deeply entrenched at home, at work, at school and on the road, with many Americans sending as many - if not more - IMs than they do emails. Among our hottest findings for 2005, IM has taken over as the communications vehicle of choice with 25 percent of users saying they would also like to consume entertainment content within their IM service and 20 percent saying they would like to use IM to make voice calls to landlines and cell phones alike."
- A study by The Radicati Group, Instant Messaging Market, 2005-2009, stated:
"Use of instant messaging amongst consumer and business users continues to increase, and is expected to drive the instant messaging market from 867 million accounts in 2005, to approximately 1.2 billion accounts in 2009. The study shows that the majority of IM traffic in 2005 still exists mainly on the public IM networks (12.5 billion IMs sent per day), where the technology first took hold."
- The popular free PC-to-PC voice messaging product called Skype claims that as of March 31, 2006 over 270,000,000 copies of their communication client had been downloaded worldwide. It is possible to see more than 5,000,000 users logged in at any given time, and that more than 25 billion talk minutes have been served.

How Business Can Benefit from IM

Instant messaging provides a range of benefits for users and for business overall:

- Lower cost per call - In many cases the cost to communicate over an IM network can be free. In contrast to voice, this could mean a cost reduction.
- Increased productivity - Presence information shows availability and the willingness of a user to communicate. Users can choose when they can be contacted, and limit the number of disruptions.
- Accessibility - The wide adoption of IM has led to an increase in the number of ways to access IM services. In many cases, users simply log on to any computer around the world and use this form of communication.
- Growing number of users - Many individuals have adopted the use of IM as a key method of communication. In addition, the networks that support it already exist. No new investment in infrastructure is required.
- Ease of managing Triple Play communication - As IM services become more integrated, it will be easier for users to handle all messaging and communications, whether it is text, voice and/or video.

"We know from listening to our more than 75 million customers that 30 percent of them are regularly using Skype for their businesses and most of these are small companies. Skype is dedicated to being the champion of these companies by making it incredibly easy for them to be productive, save money and have access to a sophisticated global communications solution that helps them compete."

Niklas Zennström, CEO and Co-Founder, Skype Ltd.

Evolving Communication Networks: Technology vs. User Style

Communication networks are always evolving. We have witnessed the transition from analog, to digital to IP. This evolution has brought with it both technological advancements from an infrastructure perspective as well as the possibility of additional features for users.

What these networks have not introduced is any significant change to the way or style in which people communicate. In all scenarios, one would pick up the telephone and place a call to the person you need to reach.

However, instant messaging networks (consisting of communities of IM users) are evolving for different reasons. Their value is not necessarily based on a particular technology and some end user features. In fact, IM is based in IP communication technology, which many would consider a traditional telephony network at this point in time (albeit somewhat of a newcomer). IM networks provide a change in style of communication, not the underlying technology. It's this preference of style that is driving the rapid adoption of IM use.

Impact on Telephony Application Developers: Challenge and Opportunity

The IM world presents various challenges for business, but also spells opportunities for those who develop business communication solutions.

One challenge is the lack of integration of IM into a corporate communication system or network. For personal use, IM may have all the basic requirements, but using this style of communication effectively for business requires knowledge of how best to leverage the capabilities of IM for the needs of the business and users of the solution. For example, when checking for messages, whether it is in the form of voice, email, or fax, the ideal scenario would be to go to one place to retrieve all messages. To accomplish this, it will be necessary to integrate IM into an organization's corporate communication system.

Traditional telephony solution providers are best positioned to deliver this. With an established customer base, and proven expertise in delivering communication solutions for the workplace, they will be the ones able to implement effective and valued integration to IM networks.

Whether it is an IVR, call center, or PC/IP PBX, developers of communication solutions differentiate their products by understanding the needs of their market, and meeting the communication demands that business requires. This includes catering to the communication styles most appropriate to the users of such systems. To deliver this, they often look to technology providers such as PIKA Technologies to provide the basic building blocks like network connectivity and media processing. Outsourcing these building blocks allows them to concentrate on the development activities central to their products' value.

Technology Overview:

Connecting to Instant Messaging Networks

When using IM for business there is one critical decision that needs to be made at the outset: are the company's needs best met with a closed network of users (i.e. internal corporate users only) or is leveraging existing public IM networks a better approach?

For organizations that have privacy concerns or policies prohibiting the use of publicly available networks, a closed or private IM network may be the way to go. This model allows for communication among people internal to the organization while maintaining corporate guidelines.

On the other hand, if the goal is to communicate internally as well as with customers, suppliers, vendors etc. the choice of an existing IM network or blended approach can be far more appealing. PIKA can cater to either scenario.

At PIKA, we understand that our customers look to us to provide them with the network connectivity they require to deliver top notch solutions. Recognizing the importance of IM in communication solutions, we have undertaken the process to deliver connectivity to the IM world from within PIKA's SDK. The first component of this will be PIKA Connect for Skype."

*Doug Petty, VP Technology,
PIKA Technologies*

"Here at Predictive Concepts we don't want to be bothered by all the intricate details on how to connect to the different types of communications networks available. As new networks arise, or capabilities of existing networks evolve, we look to PIKA Technologies to provide us the connectivity as well as media processing capabilities we need. We strive to keep the development efforts on this front to a minimum in order to concentrate on delivering the best solution we can to our target market"

*Bobby Hymel, Vice President,
Predictive Concepts Inc.*

Private IM Network

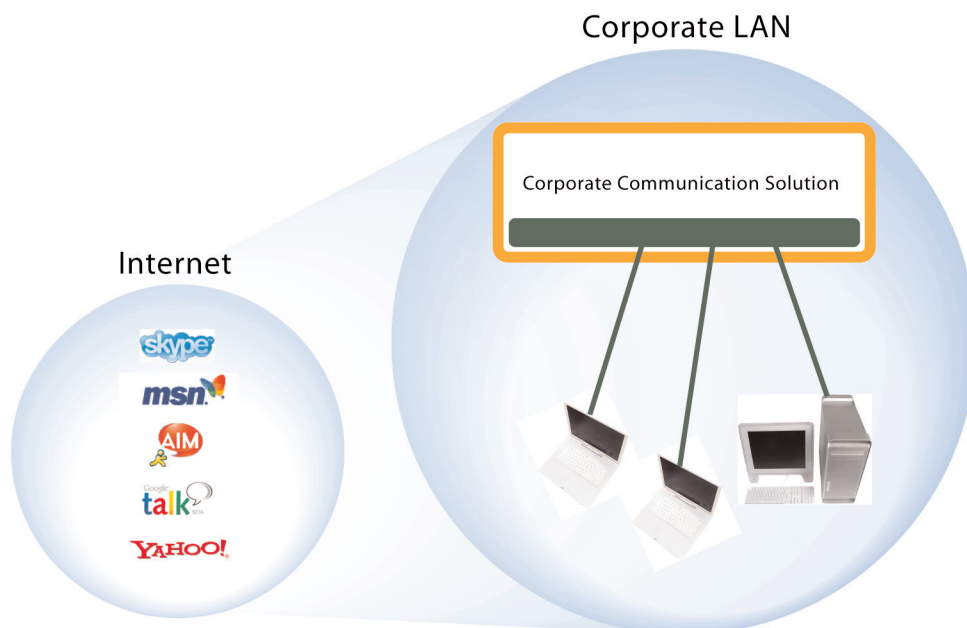
PIKA provides all the necessary building blocks for developers of business communication systems to implement a corporate (private) IM network. In this scenario, PIKA provides a client server architecture allowing real-time audio streaming and control protocol to desktop IM clients. The client may be developed by the solution provider or sourced from a third party.



Public IM Network

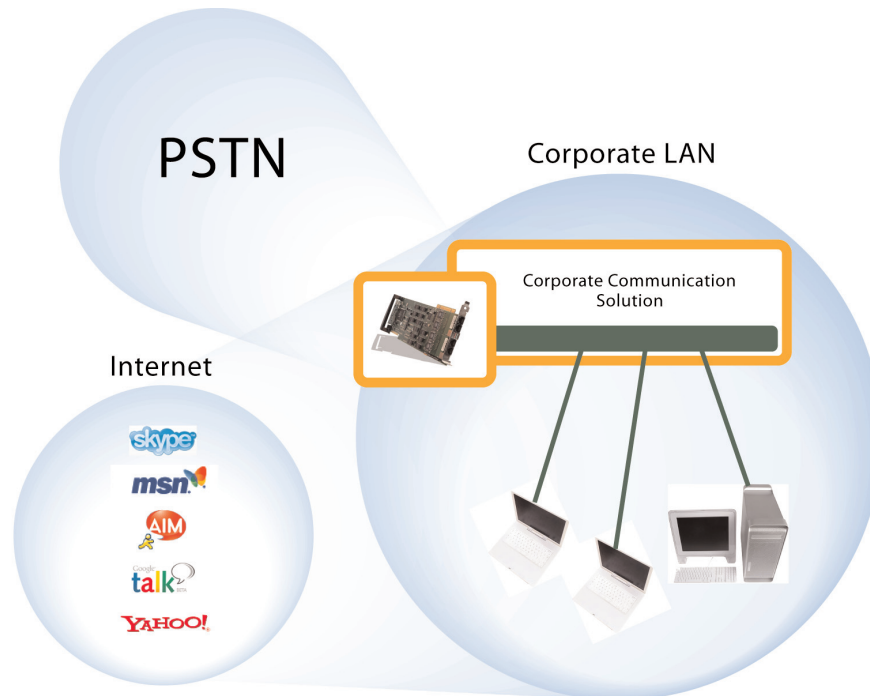
If the goal is to communicate with individuals outside of the business then integrating with existing IM networks is required. Connecting 'arms length' parties or even strangers to a private IM network is a very difficult task.

For this reason, components of the PIKA Connect product family provide integration to publicly available IM clients. The first release is PIKA Connect™ for Skype.



Interconnection with Traditional TDM and VoIP Networks

It is unlikely that any business communication solution can rely solely on IM communication. In almost all cases some connectivity to traditional TDM and/or VoIP networks will still be required. Fortunately, PIKA Connect is fully integrated with the AllOnHost features available through the PIKA MonteCarlo SDK . By doing so, calls being handled from IM, VoIP, or TDM networks can be handled simultaneously and in combination with one another providing real-time switching and transferring of calls between any of these networks.



Technology Overview:

PIKA Connect™ for Skype Components

Server Side Components

PIKA AllOnHost™

At the core of this solution is PIKA's patent pending AllOnHost (AOH) technology. Based on over 18 years of inhouse digital signal processing (DSP) development, PIKA's AllOnHost provides a PC processor (host) based engine that can handle real-time audio switching, call transfer, and media processing functions. As a media processing engine, it can process audio from TDM, VoIP and now Skype. This allows the application to manage calls in whatever way is needed, while using PIKA's AllOnHost to deal with latency, echo and other issues that can negatively affect the quality of a call. Supporting both Windows and Linux operating systems, AllOnHost is a key to the successful development of high audio quality business communication solutions.

(see www.pikatechnologies.com/products/media.htm)

PIKA Connect for Skype API

As a part of PIKA AllOnHost, a set of APIs is provided to control the remote Skype clients. This message based API communicates with a client side application that in turn controls the Skype client directly. All functionality provided via the Skype API is supported (see www.skype.com for details of their API).

" When PIKA looked at the challenge of connecting to Skype and similar instant messaging services we recognized two main issues to overcome. The first, was to get connected to the client, gaining access to both audio and call control. The second and more difficult is providing a solution that allowed developers to switch, transfer, and do media processing of this audio without adding noticeable delay. PIKA's AllOnHost is designed for that exact purpose and is the key differentiator of our solution from basic gateway approaches. "

David Clarke, Business Development Manager, PIKA Technologies

PIKA AllOnHost provides the ability to make real-time connections and transfers between remote Skype clients and server side T1/E1 and VoIP (SIP/RTP) channels.

Client Side Component

PIKA Skype Gateway

The PIKA Skype Gateway resides on the client machine and is responsible for transferring audio as well as call control information between the remote Skype client and application server. It is installed on the client machine and appears as a Windows audio device for use by the Skype client. Using a proprietary audio transfer mechanism, the PIKA Skype Gateway is able to send and receive audio and call control info from a PIKA AllOnHost equipped application server.

PIKA Connect for Skype Scenarios

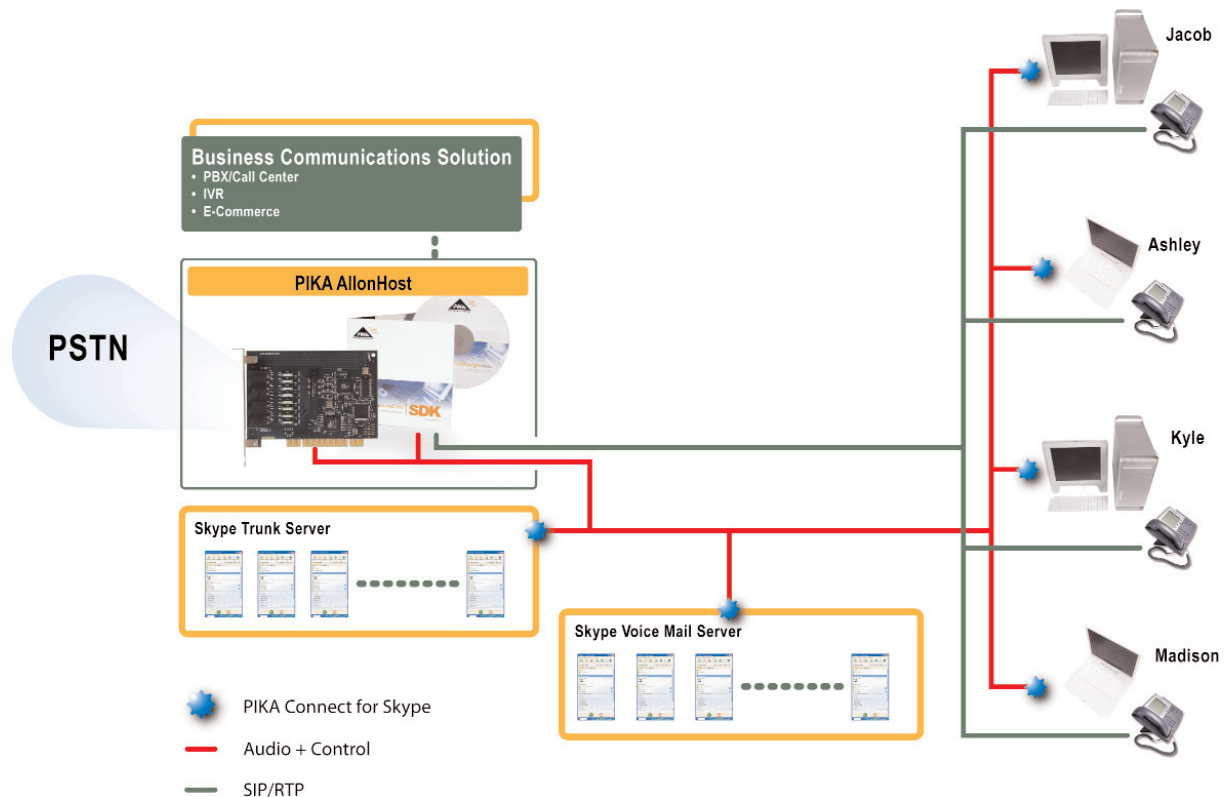
The following scenarios demonstrate some of the powerful features that can be realized using PIKA Connect for Skype in your business communication solution.

Scenario 1: (Integrated Voice Mail) If someone were to call Jacob at his desk using Skype but he chose to ignore the call, your business communication solution could answer that call and take a message.

Scenario 2: (Persistent Voice Mail) Madison is traveling for business and not online with her laptop PC where she normally runs Skype. However, with a duplicate Madison client running on a local machine (running on the Skype Voice Mail Server) your business communication solution can still answer her incoming Skype calls, deliver her out of office indication and take a message. Madison can collect these messages in the same way as she would for calls she missed to her regular desktop phone.

Scenario 3: (Call Transfer) - Someone calls Kyle at his desk using Skype but his Skype presence information indicates he is away. Your business communication solution could decide to transfer the call directly to his cell phone via PIKA AllOnHost.

Scenario 4: (Skype Trunking) - Your business communication solution can provide inbound and outbound Skype trunking capabilities. In the case of an inbound call center, calls from Skype to a call center Skype client (running on the Skype Trunk Server) can be answered and processed in the same manner as any call from a traditional TDM and/or VoIP network. If necessary, the call may be transferred to Ashley, the internal call center agent, to handle the call.



Riding the IM Wave

Whether it is connecting to Skype or other IM services, it is clear that businesses will continue to increase their use of instant messaging. As Generation Y makes up more of the workforce, they will play an increasing role in the shape of communications. All of these changes provide new and exciting opportunities for those who develop business communications solutions, since there will be more and more need for integration of these services.

The tools to help jumpstart this integration are the software and hardware building blocks available from PIKA Technologies. PIKA's first IM focused offering, PIKA Connect for Skype, provides the components that will help developers to create innovative solutions to address new requirements for business communications.

About PIKA

PIKA Technologies designs and manufactures computer plug in voice cards and software that connect a computer system to both TDM- and IP-based networks to provide advanced voice services. For almost two decades PIKA Technologies has been serving companies around the world that require media processing software and hardware building blocks to design sophisticated phone services for recording systems, voice services applications, fax,, and PC-PBX systems. The company has built a reputation for delivering innovative products and exceptional technical support by working closely with its customers. Headquartered in Ottawa, ON, Canada, the company has ranked in The Branham300, an authoritative ranking of successful Canadian high tech firms, for five consecutive years. Visit www.pikatechnologies.com or call +1-613-591-1555 for more information.



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PIKA Connect for Skype uses the Skype API but is not endorsed or certified by Skype.