

# The evolution of the Communication Engine

B E Y O N D U N I F I E D  
C O M M U N I C A T I O N S

**1 ABSTRACT**

**2 PART ONE KEY TRENDS IN COMMUNICATIONS**

**3** · Introduction

**4-5** Trend One: · People-centric communication

**6-8** Trend Two: · Value versus commodity

**9-10** Trend Three: · Trend Four: Control versus choice

**11-12** Trend Four: · Delivery

**12 PART TWO SWYX'S APPROACH TO THE MARKET**

**13** · The 'Communication Engine' concept

**14-15** · User-centric

**16-18** · Enhanced multimedia capability through collaboration

**19** · Availability and reach

**20-21** · Control with choice

**22** · The integrated applications approach

**23** · Product delivery mechanisms:  
The software as a service (SaaS) approach

# Abstract

It was arguably the single most versatile, pervasive and effective business tool of the 20th century. For the last forty years or more, the corporate telephone system, locked away in a dedicated room, has been the principal medium of business communication, defining virtually every transaction, process and operation carried out.

But times have changed and, with the dawn of a new millennium, business practice and the methods by which society communicates have moved on. The rapid development of technology in corporate communications will dramatically change as users' requirements for integrated communications become more demanding. Leading technology analysts have already forecast that it will not only be the TDM-based PBXs, but also hybrid solutions such as hardware-based IP PBXs that will be obsolete by the end of this decade.

This paper will discuss how these new trends will impact business communications and explain why leading companies looking for competitive advantage are now deploying a 'people-centric' centrally managed 'Communication Engine' architecture that delivers both premises-based and on-demand services to the desktop.

# Part One: Key Trends in Communications

# Introduction

2006 was a turning point in the history of telecommunications: traditional, switch-based systems that had been prevalent for over 40 years were superseded by new software-based IP (Internet Protocol) solutions (Source: Gartner)

This fundamental technology shift has produced a cataclysmic change in how corporations approach their communications infrastructure.

The drivers come from two distinct camps. The first is from the traditional vendors that have introduced new models such as 'unified communications', which have forced organisations to adopt strategies that combine multiple media types into a single hardware-based gateway. These solutions promise to add new non-telephony functionality to legacy circuit-switched voice products. However, in reality, these solutions add little more in terms of value than the old platforms on which they are based.

The second influence is from vendors such as Google, Microsoft, Oracle and others that, until recently, had no foothold in the lucrative 'voice' market. These companies are focused on increasing their average customer yield by offering their existing customers a voice solution as part of their existing product portfolio.

Trying to predict the future outcome of these two camps is difficult, however, the following four 'holistic' trends can be argued to be the most significant in determining the way that businesses will manage and grow their future corporate network infrastructures.

# Trend One: 'People centric communications'

The communications system of yesterday – the PBX – was a piece of hardware that was fundamentally location-centric. The rollout and deployment of its services was highly dependent on its physical position. Here's why:

- All users were subject to features, functions and changes regardless of whether they needed them or not.
- Upgrades were performed on a site-by-site basis rather than on a community or user-type basis.

This resulted in a very unproductive method of telephony deployment.

The trend toward business productivity processes and a user's demand for more choice means that the model for communications now has to change from being location-centric to user-centric.

The fundamental principle of this paradigm is that communication systems are built around the needs and access capabilities of the user or workgroup. Users will be able to choose their method of contact and have the ability to optimise their contact profile by mixing their media types, including:

- Email
- Voice
- Instant Messaging
- Video
- And others, such as mobile devices

This approach will be as beneficial to an organisation's productivity as it is to individuals. Unlike in the past, improved productivity through communications will be achieved on a 'role-by-role', rather than on a 'site-by-site' basis.

For example: members of a 'mobile' sales team would benefit from a communications process that focuses on keeping them in touch with their customers whilst on the road. Incoming calls from high priority contacts would get preferential treatment, while other calls would be diverted to voice mail. Communications on the road may also include the need for fixed-mobile devices such as PDAs or Blackberry-type devices to keep the sales teams in touch with the latest order information.

When introducing such capability, it is logical to roll out the deployment across all sales teams – regardless of location – rather than on an indiscriminate site-by-site basis to all users at a particular site. Costs are saved and overall productivity is increased.

The concept of 'presence' is one of the key elements of this new approach. In order for it to work effectively the system must have a comprehensive understanding of the user's availability, it must know how a user wants to be contacted by each contact and for what purpose. In order to achieve this, a powerful presence server is needed to collect, store, and pass along presence information about users and/or groups to selected audiences. It must also have the capability to inform where, how, and under what conditions a specific user can be contacted.

In addition, there is a need to link this presence information with key business applications, such as an online calendar, to identify times when a user (or a community, for example a sales office or support department) is available and how best to contact them.

Once this integration has been achieved the solution then becomes a powerful business productivity tool.

## Trend Two: 'Value' versus 'Commodity'

Historically the terms value and commodity were synonymous in telecommunications. Price was the most important criteria in the buying decision and the value was assumed as a given. This however, is no longer the case. A gap is emerging between value and price, and this will transform itself in the near future to a two-tier model for communications procurement. Interestingly, businesses will not necessarily choose one model exclusively, and in particular the small business segment is likely to employ a mix of technologies to best suit their needs.

### **The Commodity Model**

This approach, sometimes referred to as the 'free' model, will evolve itself around a new set of vendors or services providers that offer what will quickly develop into a 'free' communications service. The value proposition to the user is one of simple, but cost-minimised capability to communicate, either by voice, video, IM or other medium, to other similarly enabled users.

This will also accelerate the trend towards VoIP (Voice over IP) and desktop communications technologies in the consumer and very small business market. In the next 5 years these applications will be integrated into a variety of devices, such as consumer entertainment systems and gaming platforms. The key business proposition to the vendor however, is the number of users attached to the service, not their average spend. This will allow providers e.g. Skype and Google, to build their business models on advertising revenue and/or improve the market value and attractiveness of their company by owning a large database of customers/users that can be used to market new products and services to.

### **The Value Model**

In contrast to the commodity model, building solutions based on value will drive today's current voice and Unified Communications architectures higher up the value chain, whereby business communications becomes an inherent process and application within the IT business domain. This will transform from a location-based telephony platform to a service or web-based application or 'Communication Services Engine' that will act almost as a 'Virtual Personal Assistant'. So in practice, communication requests to the Communication Engine will be actioned in a similar way to that of a human receptionist who will be aware of the user's location at any point in time, their preference to be contacted (or not), their preferred medium

or device on which to be contacted, and finally their capability or willingness to accept the communication.

The communication will be initially held and subsequently routed (either once or multiple times) across one or a number of media types, through user or community-defined preferences. Again, technologies such as presence awareness will be a key and integral part of this methodology.

### **Availability is Key**

The concept of being 'always reachable by choice' is a key principle in this model. This concept goes beyond that of a Unified Communications platform, that only really brings together a number of disparate

communications systems (e.g. voicemail/unified messaging, instant messaging, telephony, audio conferencing) into a single platform or physical location that may be easier to manage but is effectively still a 'centralised multimedia PBX' device.

On the other hand, a solution based on a Communication Services engine architecture will have inherent characteristics that support such concepts as SOBAs (Service Oriented Business Applications) and CEBPs (Communication-Enabled Business Processes). Initially these may exist as a discrete physical product, but over time they will move towards an application-based service accessible across common 'public' interfaces (for example, a Web 2.0

architecture model). In this case, a pure software design and native IP functionality will be the crucial building blocks.

Key integrated technologies demanded by users and communities will be in the form of multimedia presence awareness and capability e.g. voice communications, video capability, multimedia messaging (including, IM, SMS) and conferencing capability. This will be under-written by a simplistic rules-based method of reaching the intended contact person. This may be through, for example, a 'single contact point' approach or through a group/community contact concept (e.g. "please put me in contact with the UK sales department").

## Trend Three: 'Control' versus 'Choice'

Security, Management and Control (SMC) is a key requirement of any IT infrastructure, but bringing together disparate technologies under an umbrella of 'Unified Communications' can mean that SMC requirements can be overlooked, addressed as an afterthought, or indeed compromised altogether. Another scenario is that they are so tightly integrated to a specific device that it is not possible to embrace the benefits of open systems or the federated interaction with other external sources.

Traditionally, IT departments have been able to effectively control and support their user community through the concept of location-based workforces, using IT solutions that are effectively 'ring-fenced'. However, new technologies are being introduced, such as 'push email devices' (e.g. the Blackberry), that are putting pressure on IT departments to implement more 'open' mobile services. What's more, a potentially more worrying development for IT departments, is the introduction of security and service level threats by users that are starting to install their own technologies such as Instant Messaging and Internet telephony (Skype).

### **Scope of Control**

The concept of a 'Communication Engine' therefore needs to operate within a defined 'Scope of Control' that is managed by the IT department. But this is not easy. Control of an open application structure is difficult if it is built on distributed or disparate SMC elements, or alternatively can be directly influenced by desktop users who introduce their own forms of communication media as they look for more individual flexibility and control.

The answer is to move to a solution that has been fundamentally designed around a defined 'Scope of Control', one that can be centralised but also operated across distributed architectures. This is a necessity for future software or application/web-services. This concept brings the centralised control elements that were previously the main strength of the traditional voice PBX into the IT and desktop environment but, in addition, provides the end user with some control over their personal communications mix. For the IT manager this means that a centralised control mechanism is applied to the provision of services, security, applications and interfaces, on a user or user group/community level, with the ability to allow or disallow users from specific actions.

Many users for example, require interfaces to external or public forms of media (IM being a prime example), therefore a centralised and integrated control and provisioning mechanism that allows 'federated' services to these open interfaces or standards becomes viable.

Users of the system need to be able to indicate their preferences for contact in terms of time/date, contact type, media on which to be contacted, and alternative actions or options should they not be able to accept the incoming 'call'. They also need to link these incoming communications requests to applications or systems such as calendars, customer information/CRM systems or order management systems to be able to handle the contact appropriately when it is presented to them.

## Trend Four: 'Delivery'

The final trend concerns the delivery mechanisms for these new forms of business communications.

Traditionally, vendors sold CPE (Customer Premise Equipment) products either directly or through channel sales partners who would then deliver it to the user's physical location.

However, this is changing. As non-traditional voice vendors enter the market they will start to offer an integrated applications approach by basing their business models on areas such as client advertising, subscription services or SOBA (Software-Oriented Business Application) and SaaS (Software as a Service). Plus, many new entrants are predicted to offer voice as a hosted or on-demand software application. This approach is likely to be more favourable to vendors who already operate on this model (for example, Salesforce.com has now moved exclusively to an on-demand model for its CRM solutions), and as more software/applications vendors and traditional Systems Integrators enter the communications market, this is likely to be the deployment model of choice.

However, operating an isolated Hosted Voice service does have its limitations, therefore, customers already familiar with hosted applications models will look to vendors to offer additional integrated capabilities with other productivity applications: for example, direct integration with Customer Relationship Management (CRM) systems or personal office applications (Calendar, Email, etc.).

# Part Two: Swyx's approach to the market

# The Communication Engine Architecture

The Communication Engine works in effect like a human operator/receptionist and personal contact manager. It is based on a set of availability rules that have been determined by the person being communicated to. The system will find the optimal method of connecting the inbound communication to the called party or parties and the preferred media type (e.g. voice, video, SMS, instant message) and device (e.g. mobile phone, deskphone, PC, or voicemail). The called party has the ability to accept the incoming contact request or reject it and apply a set of alternate rules (e.g. to take a message).

# User centricity

From the initial design phase, Swyx's Communication Engine model has embraced the concept of both location and user-centric approaches to communications. This reality can only be achieved through a software and application-based solution.

Users are added as individuals into the system, and are then associated with a user or community group, as well as a location, within the system. The Communication Engine recognises the user's availability for incoming contact requests when they log themselves into the system or onto the corporate IT network – either through attached or remote devices (for example, logging onto any phone in any office with a PIN number), or through logging onto a corporate network through, for example, a Windows domain login.

Users have the option of customising their profiles in a variety of ways, including the ability to define multiple access devices, such as mobile phone number, personal email contacts, etc., as well as links to their desktop applications, including the ability to use Microsoft Outlook or Calendar as applications that can deliver user information to the Communication Engine. Users also have the ability to update or change their user profile information from their desktop client, including changes to contacts/address books, availability and routing information.

This approach of user-centricity is developed further by the concept of groups or communities which can each have their own independent attributes (contact details, phone number, email address, etc.) and into which users can be subscribed so that they become part of a user community as well as, or instead of, part of a physical location

One major advantage of this approach is the capability of 'follow-me' functionality from the Communication Engine. Individual users or groups can assign single contact addresses or numbers if required, and the system will automatically associate this 'follow-me' number/address with the relevant individual or group, using this reference as the primary point for initiating contact wherever the user or group may be located.

# Enhanced multimedia capability

Swyx's Communication Engine will take contact capability beyond that of an individual communications platform, encompassing an open-systems architectural approach to multimedia applications. Swyx has developed its products on a Microsoft infrastructure, therefore it is able to interoperate with standard Microsoft Unified Communications modules and support open standards protocols such as SIP (Session Initiation Protocol) to encourage interworking with other open-standards vendors.

Moving beyond this, however, the Communication Engine by embracing some key technologies such as;

## 1. Presence and Presence Server capability

This is needed to collect, store, and pass along presence information about users and/or groups together with where, how, and under what conditions a specific user can be contacted. The presence information must also be 'open', in that it needs to be able to deliver presence status not only to the Communication Engine application itself, but also to applications outside of the scope of control of the Communication Engine.

For example, presence status will need to be delivered to other Microsoft users, e.g. customers or suppliers, who may have received an email and wish to respond back through direct contact, and will do so with the knowledge that the sender is online and available to communicate.

## **2. Mobile network/remote user integration**

More people are now 'mobile' workers (whether at home or travelling), so the need to support remote users or organisations with a like-for-like contact service will be key, especially with the increased trend for flexi-working and home-based contract workforces (e.g. contact centre agents).

Mobile users will need to be able to receive contact requests while travelling, have their presence/availability status known from mobile devices and be able to customise their contact preferences wherever they may be. To support this Fixed-Mobile Integration is a key part of the Swyx application. Ultimately,

users will replace their desktop phones, and possibly desktop PCs, with mobile devices such as PDAs or smartphones.

Swyx's approach is to support a mobile device as if it were any other device across the Communication Engine: users can access their profiles remotely (through Web or desktop applications), register their mobile telephone number in their profile, and the Communication Engine will then treat the device like any other on the system, accepting incoming contact requests and status information as well as delivering contact requests to the mobile device in a choice of media (voice, IM, SMS, etc.).

### **3. Instant Messaging and Presence Messaging**

There are numerous IM standards being used in the market today, and unfortunately no single one is pervasive in the Enterprise market to warrant the status of clear Market Leader. Key consumer IM offerings from Microsoft, Yahoo, AOL and Google are arguably the most popular with users but often are prevented from Enterprise usage by IT departments who are worried about security and control. It is therefore inevitable that IM will start moving to an open standard in the near future, and IM system-to-system collaboration will become the most popular method for interoperability across external standards. This is the approach that Swyx will adopt, supporting the two 'rival' protocols (XMPP and SIP/Simple) amongst others for external exchange of IM and presence information, while still supporting the legacy presence capability already deployed on existing SwyxWare installations in the enterprise.

### **4. Desktop Video**

Swyx's Communication Engine will facilitate use of desktop video over IP with the newer H.264 video compression protocol, as well as (but in preference to) the more-prevalent H.263 protocol, since H.264 can reduce bandwidth requirements by as much as 50%.

### **5. Multimedia collaboration and conferencing**

Swyx's Application Sharing and virtual audio/voice conference rooms with unlimited user restrictions allow users to quickly set up an environment to share information in a collaborative style. This means that users do not necessarily need to go to an external party or resourcer to set up these conferences since they can be quickly organised themselves through tools such as calendaring or web booking. However, this functionality becomes more productive when the collaboration service is extended to other types of media, and support for video conferencing, IM conferencing/ chat rooms and Web conferencing (e.g. Webinars) becomes a standard feature of the Communication Engine.

# Availability and Reach

The Communication Engine relies on two fundamental principles. Firstly, the ability for the application to be able to know the location, status and capability of the user to which the contact request has been initiated, and secondly, the algorithm governing how the contact request should be delivered. An incoming contact request will be forwarded through a set of pre-defined rules (set either by the individual user or the administrator) in order to initiate contact with the user.

These rules could be derived from a variety or a combination of sources, for example:

- Presence information
- Calendar information and availability
- Preferred contact method (e.g. mobile phone, IM, video)
- Group or community contact rules
- Individually-set contact rules (for example, through the Swyx Call Routing Manager)
- Multiple device signalling, either in a round-robin or parallel approach
- Enforced scripting rules (for example, in a call centre environment where calls are delivered in a particular order such as 'least idle').

For this to work well, the user needs the facility to update their desired contact information 'on demand'. Swyx has addressed this through a standard client interface or through a Web portal, giving the user as much or as little control as required. The user interface can be tailored for simplicity (for example, based on Outlook-style routing rules) or offered as a more powerful service-building tool (for example, with the Swyx Graphical Script Editor), where customisation can go beyond simple routing or contact profile rules. Complex scripts involving, for example, IVRs, announcements, queuing and re-routing can also be created on an individual, group or business unit level in a matter of minutes, giving full flexibility to the user.

# Control with choice

Swyx's approach to the 'Scope of Control' is predicated on a number of key principles:

## **A centralised management and service delivery framework**

This allows the IT manager the capability to manage all communications and services resources within the framework of the Communication Engine.

This principle is similar to the structure of control for traditional PBX systems that allow a centralised approach to service delivery and operational maintenance across a network of devices. This scope, however, expands to encompass the support and control of services delivered through the Swyx Communication Engine, but without necessarily having to bring these services or applications directly into the product itself. For example, a collaborative approach to Instant Messaging allows IT managers or end users to define their 'external' IM preferences within the Swyx framework, and will allow connection to, and interaction with, the external IM service through an integrated software server, effectively 'fire-walling' the Communication Engine from negative external threats while still allowing open, external services to be part of the communications delivery vehicle.

### **An open and collaborative approach to user customisation**

IT Managers can allow their users or user groups as much or as little freedom as possible to customise their contact management profiles. This will help to take the burden off IT services for basic support for user requests such as 'changing call forwarding numbers', 'adding new users' (which can be done in a matter of seconds with a simple-to-use Wizard) or setting up 'Out of Office' announcements. With permissions, users can access their profiles and add devices and media addresses (e.g.

email addresses, IM IDs, mobile phone numbers), change routing configurations and rules (whether as defaults, as on-demand customised rules or through applications such as Microsoft Calendar) and be able to set up centralised collaboration resources such as Web conferences or Audio conferences. Since these resources are allocated in software and do not need associated hardware, there is no danger of users over-allocating or fully-utilising the physical resources typically needed for these features in traditional PBX or Unified communications platforms.

# The integrated applications approach

In most organisations, voice (mobile or desktop), video and messaging (e.g. IM) networks are rarely integrated with the IT infrastructure, since they have evolved separately. As a result they cannot be integrated into the business process workflow which is fast becoming a critical factor in businesses looking to improve productivity of processes, individuals and teams within a unit.

Because of this lack of integration, the most efficient collaborative processes and systems can break down when people have to switch to a separate, cumbersome and time-intensive communications channel. In an integrated business communications environment, all types of media should have the option of being linked with core business applications such as personal productivity tools (e.g. Microsoft Office) or business productivity tools such as CRM (Customer Relationship Management) or ERP (Enterprise Resource Planning).

Integration with a number of applications, such as CRM, ERP and Contact Centre applications, is relatively easy to achieve because of Swyx's architecture and application approach, and the ability to create custom interfaces or designs with the SDK development toolkit allows businesses to further integrate Swyx into their bespoke productivity applications.

In addition, future integration with Microsoft Unified Communications products as well as enhancements to productivity tools such as Dynamics CRM (CRM) and DynamicsNAV (ERP) as they become available, will allow for an integrated business productivity environment for Swyx customers.

# Product Delivery Mechanisms: the software service approach

The Swyx Communication Engine as a pure software/application platform or service, ideally lends itself to future delivery trends for businesses and service providers.

As multimedia communications move away from a physical sale and towards an integrated IT application offering, Swyx is ideally positioned to be deployed in a number of scenarios:

- As a physical CPE product (deployed on standard industry-server hardware)
- As a software/IT application across an IT infrastructure
- Or as a hosted or on-demand software or web application that can be deployed across service-based architecture (e.g. SOBA or SaaS type architectures).

The user-enablement mechanisms for Swyx-based services take the form of adding a user-based software licence (rather than a physical connection) for software services or system users. This means users can be added quickly within a matter of seconds, and can access the services offered immediately from any location on an IP or mobile network either directly into the system, or through a Web portal.

For enterprises, the provisioning of users and services becomes a simple and centralised task, the majority of which can be automated through integration into existing processes. For Service(s) Providers, there are major opportunities with the ability to deploy Swyx models quickly as a hosted or on-demand service to customers of all sizes, delivered in the same way as any other IT-hosted applications across a private or public IP infrastructure. Furthermore, because of the modularity of the software packaging within Swyx products, it is also possible to offer a Swyx Service on a bespoke charging basis to a client.

For example, one possible market proposition may be to offer customers a model that charges for a service on a 'per user, per month' basis for a basic PBX or fully featured communications service. Another option may be to offer a subset of these features (e.g. Audio or Video Conferencing capability only) on a pay-per-usage or pay-per-user basis. This makes Swyx an ideal hosted application for both the traditional voice service provider market, but also for the IT applications/Web-hosting market.

### **Swyx Solutions AG**

Joseph-von-Fraunhofer-Str. 13a

44227 Dortmund

Tel.: +49 231 4777-0

Fax: +49 231 4777-444

E-mail: [office@swyx.com](mailto:office@swyx.com)

### **Swyx Solutions UK Ltd**

100 Longwater Avenue

Green Park, Reading

Berkshire, RG2 6GP

Sede centrale: +44 (0) 118 325 0110

Vendite e marketing: +44 (0) 118 945 0418

