WHITE PAPER

Unified Communications as Software as a Service

Benefits for Small & Medium Enterprises

by Nigel Sinclair Thomson

Introduction

Small and medium enterprises (SMEs) are seeking ways to improve their margins by providing better service to their clients, improving their productivity and reducing their costs. One way of achieving the above outcomes is for SMEs to improve their communication and collaboration capabilities and integrate these technologies with their business processes.

At the same time and against a backdrop of decreasing ARPU (average revenues per user), Internet and Telecoms service providers are seeking ways to improve the billable value of the services they offer their clients.

There is thus a growing interest in the offering of Unified Communications (UC) services as 'Software as a Service' (SaaS) given the benefits to customers and service providers alike of a UC service offering delivered via a 'Cloud Computing' model from service providers' data centers.

This white paper provides a brief introduction to UC and SaaS. It then explores the benefits of UC in general to the SME market and the benefits to such enterprises and service providers of SaaS UC offerings in particular. A roadmap for SMEs and service providers to migrate SMEs' current legacy PBX environments and (separate) data networks to converged communications architectures with SaaS UC is then provided. The paper concludes with a look at the benefits of CommuniGate Systems' CommuniGate Pro UC Suite for SME's and their service providers

What is Unified Communications?

UC is the integration of communication and collaboration technologies with business applications and processes. Examples of communication and collaboration technologies include voice (VoIP) and video calling, audio or video conferencing, web conferencing, instant messaging (IM), presence, email and scheduling.

These technologies currently operate in silos with separate addresses across multiple devices. UC removes these silos by combining these multiple communication and collaboration technologies into one application with presence at the core, thus enabling one to be contacted via the most appropriate of multiple methods using the same address, device and interface.

The ability to see a contact's presence status, manage one's preferred method of receiving communications and contact colleagues, clients and suppliers directly from one's address book via 'click to call' enables considerable time savings. Furthermore, the storage of email, faxes and voice mail in one inbox (Unified Messaging) facilitates easy access to these messages from multiple locations and devices.

The productivity benefits of UC at the user level (also known as UCU) as described above provide compelling arguments to converge communications in all types of organisations. The integration however of communications with business processes and applications (UCB) in order to reduce 'human latency' and improve those processes provides customers with substantially larger returns on investment than those obtainable from UCU.

The Benefit of Unified Communications to SMEs

SMEs often lack the resources enjoyed by their larger counterparts. These resources include access to affordable capital, human resources and well known brand identities that assist in the development of markets for their products and services.

In addition, SMEs face competition not only from other SMEs but also from large enterprises. It is thus important for SMEs to provide a level of service and responsiveness to their customers that exceeds that offered by large enterprises while at the same time increasing their margins and reducing their costs.

UC assists SMEs to improve their competitiveness by:

- Improving their relationship with their customers, supply chain and other business partners.
  Regardless of where employees might be at the time, UC increases the probability that they can be contacted on the first attempt. If this is not possible, unified messaging increases the probability that employees will receive messages timeously. In addition, the use of real time collaboration tools like instant messaging creates a stronger community between organisations and their business partners than is possible using asynchronous tools such as email.
- Improving internal collaboration amongst staff at headquarters and remote offices as well as home workers and 'road warriors'. Employees working outside of an office environment often complain that they feel 'forgotten' by the organisation. On the other hand, office based workers find it difficult to reach these remote workers. UC reduces the perceived distance between workers in an organisation.
- Improving response times.
  Given that workers are able to be contacted by multiple methods, UC reduces the time spent attempting to contact decision makers and waiting for responses.
- Improving access to knowledge workers and experts.
  The use of presence enables the availability of subject matter experts to be communicated throughout the organisation. This increases sales opportunities as it enables contact centre agents or sales account staff to solve customer queries by instant messaging with available subject matter experts regardless of their location while the customer remains on the line. Should the expert not be able to resolve the issue without speaking to the customer, the contact centre agent or sales account staff is able to escalate the call to a three way conference bridge between herself, the customer and the expert.
- Improving employee productivity.
  UC reduces the time spent by workers trying to contact other workers in the course of their duties. This improves productivity (particularly that of mobile workers) by freeing up time for staff to undertake additional responsibilities and improving the output of a given staff complement if the free time generated is used productively. Given that salary costs are often a large proportion of the operating costs of SMEs, this can have a material impact on the organisation's bottom line.
- Improving business processes and reducing 'human latency'.
  The integration of communications with business processes and enterprise applications enables triggers from the applications to initiate communications automatically. Examples of these include:
    - Automatic notification of the relevant staff if equipment fails
    - Automatic notification of suppliers in the event of inventory shortages or stockouts
    - Automatic notification of the relevant staff if the quality of production deviates from predefined ranges

    - Self-service patient booking systems in the healthcare field with automatic voice or SMS reminders to patients to reduce 'no shows'.

- Reducing travel costs.
  In a time of rising fuel costs, web and video conferencing reduces the need for car and plane travel. Apart from decreasing travel costs, this reduces an enterprise's carbon footprint at a time when organisations are becoming more conscious of the impact that human activities have on the environment.
- Reducing time to market of products and services.
  UC enables shorter product development cycles and project timeframes thus reducing time to market and value.
- Attracting and retaining qualified staff, particularly those from the tech savvy 'Millennials' or 'Generation Y'.
  Staff entering the workplace participate in online communities and use tools such as instant messaging in their private lives. They thus expect to find these tools available to them in their work places. Given that SMEs often cannot provide staff with the same benefits such as health insurance and pension fund membership that larger employers can afford, it is important for them to be able to offer their employees a stimulating work environment in order to attract and retain their services. UC assists SMEs to achieve this.

In spite of the benefits outlined above, SMEs will require a higher return and quicker payback on their UC investments than those required by larger enterprises given their limited resources.

It is thus important that UC solutions being targeted at this segment of the market should be affordable since SMEs are often unable to afford the cost of enterprise solutions. They should also be easy to deploy and manage given the lack of technical skills available.

What is Software as a Service?

SaaS is a software application which is hosted on a remote server and delivered as a service on demand to users over a network on a subscription basis.

In many cases, the software is delivered over the Internet and is priced on a per-user basis.

The SaaS delivery model is becoming increasingly popular as support for service-oriented architectures improves and speeds of access networks increase, thus providing users with an experience similar to that they would receive if the application were hosted on their local network.

SaaS provides numerous advantages for SMEs. These include:

- Scarce capital that would have been spent upfront to purchase software, licenses and infrastructure is converted to predictable operating expenditure
- Fewer costly technical staff are required given that the application and infrastructure resides in the service provider's data center
- Solutions can be deployed more rapidly than premise-based solutions with a corresponding decrease in time to value
- More sophisticated data center infrastructures are available to SME customers which would be unaffordable to them individually. In addition, the service provider is responsible for ongoing support and maintenance of infrastructure, security and software updates as well as backups. This allows SMEs to concentrate their energies and resources on their core business.

- Better service from service providers given that their revenue stream may be terminated at short notice by the customer
- Freedom from lock-in to vendors, long contracts and old technologies.

Benefits to SMEs of SaaS vs Premise-Based UC

The previous section outlines some of the many benefits for SMEs subscribing to SaaS solutions in general. These benefits also apply to SaaS UC implementations.

Given the complexity of UC solutions however, there are additional reasons for SMEs to consider the SaaS UC model once they have made a business case for the introduction of UC.

One of these complexities is the issue of security.

Given the shortage of IP addresses (the unique address allocated to a computer on an IP network), Internet Service Providers (ISPs) often allocate only one IP address to customers such as SMEs. These IP addresses are assigned dynamically by the ISP when Internet connectivity is provided by a DSL line or cable modems. These Internet access technologies are commonly used by SMEs. A NAT gateway is used to share this single IP address to provide Internet access to an organisation's multiple computers while many firewalls use NAT to hide internal IP addresses from the outside world. These firewalls are not friendly towards Session Initiation Protocol (SIP), the commonly used protocol used in UC for the creation, modification and tearing down of multimedia communication sessions and thus often prevent two-way multimedia communication.

This problem can be best resolved by the use of session border controllers (SBCs) by service providers at the border between access and core networks as well as at the borders between their core networks and those of other service providers. SBCs provide protection for various types of Internet Communications such as email, IM, and VoIP. They also facilitate NAT traversal and protection against denial-of-service attacks and malware while providing Quality of Service (QoS), the prioritization of real time communications such as voice over asynchronous modalities such as email.

Another complexity facing UC implementations is the mobility of employees. Given the inability of SMEs to carry large overheads, a large percentage of employees are involved in revenue generation. This means that they are often away from the office and external to its firewall visiting customers or potential customers.

The communications needs of these mobile employees are best met by a UC infrastructure with static IP address outside of the SME's firewall.

Finally, depending on the UC architecture and degree of convergence implemented, the only Customer Premise Equipment (CPE) needed by the SME subscribing to SaaS UC might be soft UC clients or (hard or softphone) IP telephone handsets.

Benefits to Service Providers of SaaS UC

Given that SMEs can only experience the benefits of SaaS UC if there are service providers providing such services, a brief look at the benefits of SaaS UC to such service providers is not out of place.

The Telco service provider market is experiencing increasing pressure on its margins given declining average revenue per user (ARPU) as many services become commoditized. It is thus important for these service providers to increase the value of the services they provide in order to prevent their networks from becoming mere bitpipes transporting the traffic arising as their subscribers access third party applications. Apart from the increased revenue to be earned from value add services, these services also increase service providers' stickiness or their ability to retain subscribers in times of increased subscriber churn.

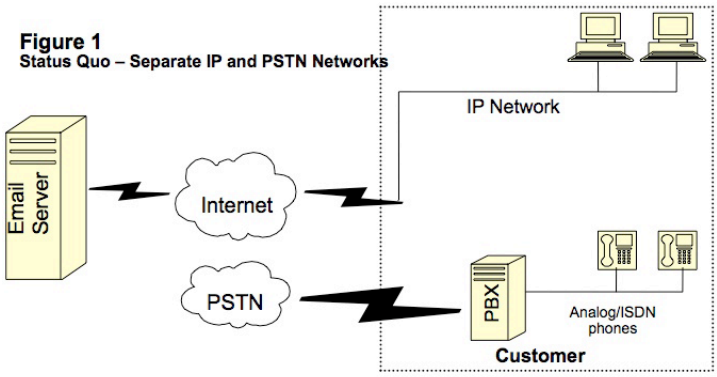
The UC SaaS model provides service providers with an opportunity to offer a stack of value added service offerings. Such offerings might commence with a basic package providing email, calendar, contacts, instant messaging and presence. A service provider might then offer VoIP, IP telephony, conferencing and mobility as additional services on top of this basic offering, thus enabling higher ARPUs and increased subscriber loyalty..

Implementation of UC as SaaS

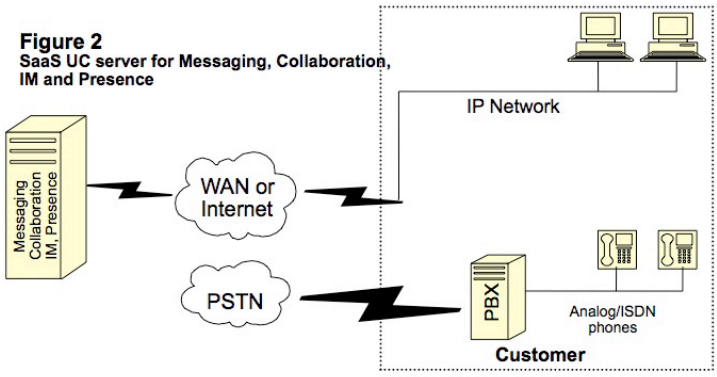
This section illustrates one of many ways in which SMEs can migrate to a SaaS UC offering. It enables the piloting of UC amongst groups of employees such as mobile and knowledge workers where UC will provide the enterprise with the highest returns.

Figure 1 below illustrates the common scenario of an enterprise with separate voice and data networks. In this example, the SME has a legacy PBX while its email is managed from a hosted mail server. This server could of course be premise-based.

Figure 2 shows the replacement of this email server by a SaaS subscription providing messaging, collaboration, IM and presence. This could be offered over the public Internet or over a private IP based wide area network (WAN).



In Figure 3, a gateway is placed ahead of the PBX enabling outgoing telephone calls to be made to the Public Switched Telephone Network (PSTN) over the WAN or Internet via the SIP trunks of one or more Internet Telephony Service Providers

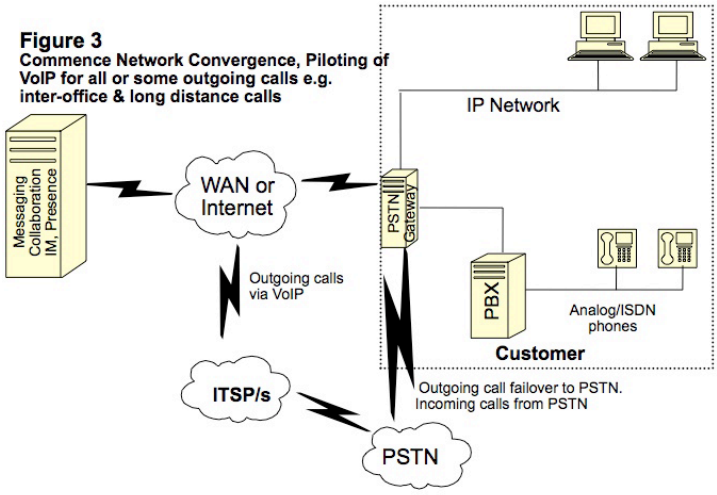


(ITSPs).

Depending on call charges in the region of the world in which the SME is based, the WAN might only be used for international, long distance and inter-office calls. Should VoIP also provide savings on the cost of local outgoing calls, the SME might also place these calls via the WAN or Internet.

This figure assumes that incoming calls continue to be routed to the SME via its existing PSTN lines given that these lines are known or advertised to the SME's current and potential business partners or clients. These PSTN lines provide for failover for outgoing calls in the event of a problem on the WAN.

In regions of the world that have fixed line number portability, telephone numbers originally registered by an incumbent service provider could be reregistered to the ITSP, thus enabling the ITSP to route incoming calls to the SME via the ITSP's



SIP trunks.

Figure 4 illustrates the introduction of IP telephony to the SME's SaaS UC subscription. The diagram assumes that at this stage the SME's Local Area Network (LAN) is not ready for carrying voice and hence shows the use of analog or ISDN phones connected to the IP PBX via the gateway. This gateway might be the same gateway as is used for the local breakout to the PSTN if this gateway supports trunks and extensions (e.g. a FXO/FXS gateway). If the gateway does not support extensions (e.g. a FXO gateway), a separate gateway would be required.

Although it is assumed that the enterprise's LAN is not yet carrying voice, the introduction of IP telephony opens up a new communications environment for the SME's mobile employees by enabling them to connect to the IP PBX using their mobile phones in one of two ways:

- The use of a SIP client on the mobile phone enabling voice over their mobile provider's data network (e.g. Vo3G). It is important to note that not all mobile providers allow voice over their data networks since they fear cannibalisation of their existing voice revenues
- Using voice over their mobile provider's voice network (e.g. GSM) in the event of the service provider providing a plat-

form for mobile phone usage.

These methods effectively convert the employees' mobile phones to full working extensions of the IP PBX. This enables SME's to stop advertising the mobile telephone numbers of their employees to their clients, thus moving all voice communication between employees and clients via the IP PBX. In addition, employees can make all their outgoing business calls from their mobile phones via the IP PBX, thus saving themselves the expense of mobile phone call rates and their employer the hassle of managing business usage of employees' mobile phones.

A further advantage to the introduction of the IP PBX component of the UC solution is that many calls made to or by the SME's employees and business partners need never pass over the public PSTN network if the person being called has an Internet communications URI such as john@example.com. In a UC environment, this URI will be the same for all communications modalities such as email, IM and VoIP. Should an employee's URI be advertised in a ENUM registry database, any call made to that person over the PSTN by a colleague who also has an Internet communications URI will bypass the PSTN and instead be routed via a cheaper if not free IP network.

Depending on the suitability of the SME's LAN for VoIP, this stage might be omitted.

Figure 4
Commence introduction of IP telephony using SaaS server

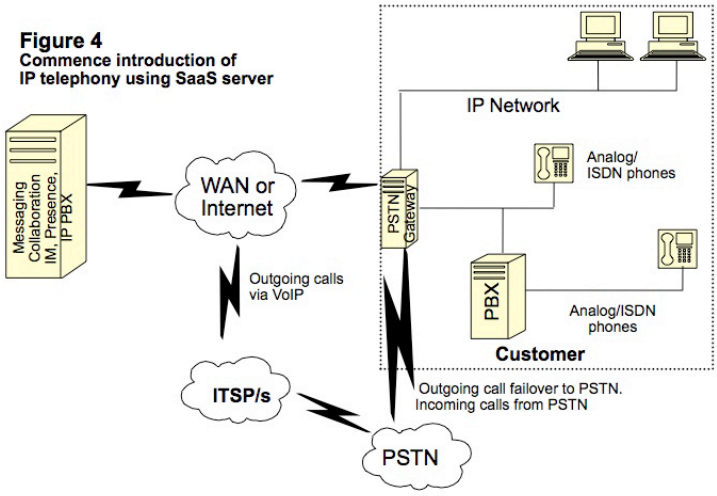


Figure 5 shows the introduction of voice over the SME's LAN with IP endpoints connected to the LAN. Depending on the needs of the SME and the profile of its staff, these endpoints might be full UC clients, hard- or soft IP phones or analog telephones connected to the LAN via analog telephone adaptors (ATAs).

It is also assumed that at this stage the legacy PBX has reached end of life and is removed. All call control is now provided by the IP PBX component of the SaaS UC solution.

Figure 5
Introduce voice over LAN

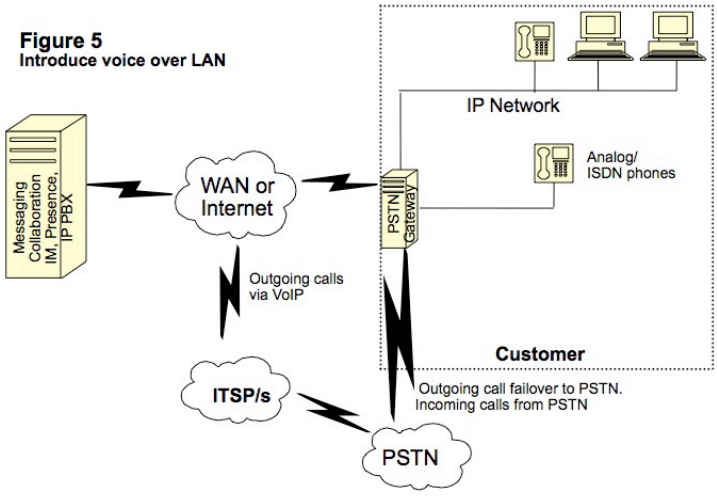
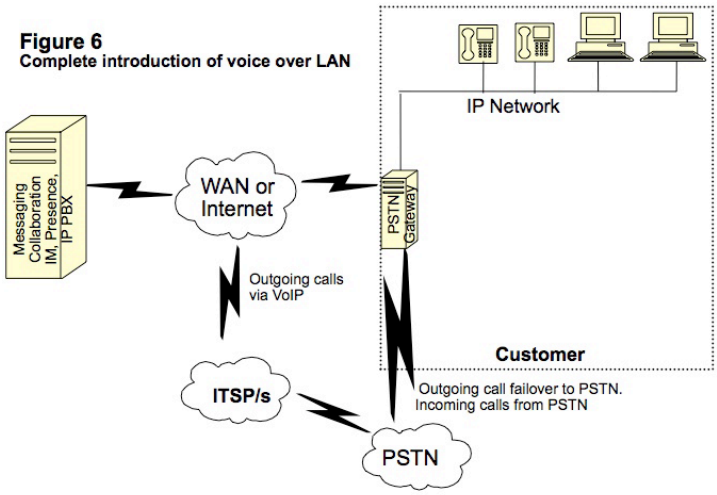


Figure 6 assumes that the SME's LAN is suitable for handling the voice requirements of all employees. All analog and ISDN phones connected to the gateway are now removed and all endpoints are now IP based.

Figure 6
Complete introduction of voice over LAN



In Figure 7, SIP trunks replace the PSTN lines for outgoing calls. Any calls made to the PSTN are now connected to the PSTN not at the SME's premises but via interconnects at the SME's ITSP. Although many calls need never travel over the PSTN (as has been explained above), the wholesale rates negotiated by service providers for interconnects with other carriers should provide SME's with further savings.

Given that the PSTN lines are no longer available for failover, this scenario assumes sufficient redundancy at the access network and ITSP core network levels.

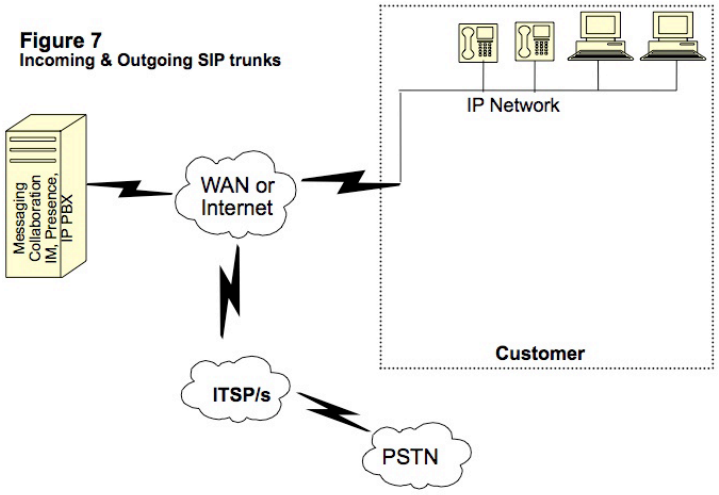


Figure 7
Incoming & Outgoing SIP trunks

CommuniGate Systems' CommuniGate Pro Unified Communications Suite

Headquartered in Mill Valley, California, CommuniGate Systems has over 12,000 customers worldwide, ranging from the largest broadband, wireless and wire line service providers, to enterprises of all sizes. Over 130 million end users including 47 million voice customers rely upon CommuniGate Systems products for their voice and data communication needs.

The company's flagship product - the CommuniGate Pro UC server has become the acknowledged leader in scalable carrier grade technology. Its' unsurpassed scalability and feature set have won more industry awards than any other communications product on the market.

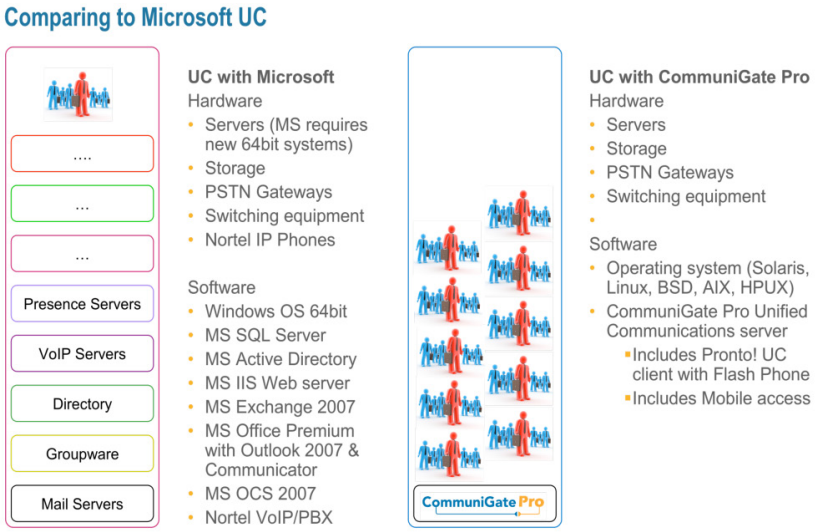
There are numerous advantages for service providers and SME's alike using CommuniGate Pro in a SaaS UC offering. These include:

- Density

  CommuniGate Pro maintains the world record for density and performance from Spec.org. One of the challenges of deployment of a large scale UC solution for hosting providers is power, management and equipment expenses. By virtualization, a single system image and high density per server, many of these issues can be mitigated.

  CommuniGate Pro has a unique architecture, providing all services from one platform that is Dynamically Clustered. The clustering technology is an all active architecture allowing nodes to be added or removed while the system is hot while providing administration though a single system image.

  With this architectural concept, CommuniGate Pro needs less hardware and less administration than other UC solutions and requires fewer components in comparison to competitive offerings.



- Multi Tenancy

  As a result of CommuniGate Pro's performance under ultra-high density traffic and the integrated-in-one software platform, one server can power thousands of domains and host several thousands of users. Each domain or company can have a separate user base and administration UI. Users in one domain can however share folders with other domains, so partner companies or subsidiaries can leverage the power of CommuniGate Pro's ACL management sub-system.

- Reliability

  CommuniGate Pro is known for dial tone quality and 99.999% uptime with its unique Dynamic Clustering. CommuniGate Pro has time and again proven its reliability in benchmarks with HP and IBM (10 and 25 million voice users).

  In addition, in a test undertaken by independent CT Labs, not one single call was dropped in a configuration supporting over 200,000 active users.

- Security

  CommuniGate Pro includes a software based SBC (Session Border Controller) that requires no additional SBC hardware. It provides near-end and far-end NAT traversal and media proxies, seamlessly interoperating with any VPN or firewall.

- Feature Set

  - From the Administration and integration side

    CommuniGate Pro allows easy administration via a secure web UI and delegated granular rules for remote admin.

CommuniGate Pro has a rich set of APIs for integration into BSS/OSS or provisioning and monitoring technologies. CommuniGate Pro provides:

- CLI API
- Perl API
- JAVA API
- SOAP API
- Parlay X
- Radius
- CDR Engine
- XML
- API

Unlike traditional Enterprise class solutions, CommuniGate Pro is a platform with a powerful development language CG/PL for creation and extensibility that is limited only by one's imagination. The programming environment allows network operators to provide new VAS (Value Added Services) solutions like pre-paid calling applications or integration with external data or application sources.

- Wide range of Platform support

CommuniGate Pro runs on all major Unix platforms like Solaris, AIX, HPUX, Linux and BSD as well as on Windows and Mac OS X for Enterprise class deployments. CommuniGate Pro is probably the only UC solution on the market today with such a wide choice of platforms.

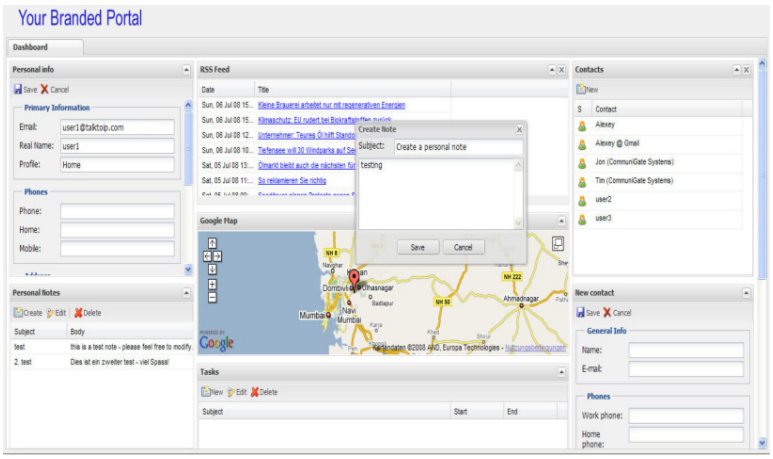
Client support also ranges from Mac, Linux and Windows to Mobile devices like the iPhone, Nokia and Windows Mobile.

- From the User side

The unique Web 2.0 client Pronto! provides single sign-in for all UC applications including voice, presence, IM and calendaring. No other vendor has more experience in building Web 2.0 applications with Flash and Flex. As a result of its partnership with Adobe, CommuniGate Systems delivered one of the first applications on Adobe AIR.

In cooperation with CommuniGate Systems, operators can create Mashups with widgets for all UC applications. Any design in Ajax or Flash is possible, with all applications powered by CommuniGate Pro.

CommuniGate Pro offers a customizable webmail client with a choice of multiple skins and support for 19 languages. It also provides the user with freedom of client choice. As CommuniGate Pro is standards based,



users can select which client to use. e.g. Outlook, Thunderbird or Apple Mail for messaging, or iCAL for calendaring.

CommuniGate Pro includes 'AirSync' for full two-way over-the-air ActiveSync synchronization of E-mail, Contacts, Calendar, and Tasks. Exchange ActiveSync compatibility is built into Windows Mobile–based devices using Windows Mobile 5.0 or 6.0 as well as a variety of non-Windows Mobile ActiveSync-enabled devices.

CommuniGate's new MobiConnect Mobile PBX application brings dial tone and business class PBX services like call transfer and conferencing to mobile handsets.

CommuniGate Pro supports a wide range of IM clients for SIP/SIMPLE and XMPP (Jabber) such as Windows Messenger 5.1, Apple iChat, Trillion and Pandion and can link into services like gTalk.

CommuniGate Pro provides support for most SIP based IP Phones such as Polycom, Cisco, Thomson and Snom.

Nigel Sinclair Thomson is CEO of Zwana Unicom (www.zwana.net), a unified communications consultancy and reseller/partner of CommuniGate Systems in South Africa. His special interests are unified communications/VoIP in the African enterprise, ISP and telco markets with a particular interest in unified communications in healthcare.