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UC &

Call Centers

Greater Performance, Customer Satisfaction

Skype Fallout

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What We Learned From the Skype Outage



by Rich Tehrani

Publisher's Outlook

As organizations move to VoIP and other forms of IP communications, it is imperative they realize the world of IP is far different from the PSTN and circuit-switched networks of yesterday. Whereas the Internet Protocol is designed with enough resilience to withstand a nuclear attack, IP networks need proper management to be able to continue operating under a variety of circumstances.

The concept of the "always-up" IP communications network was certainly in the spotlight recently as TMCnet's Tom Keating broke the story of Skype (www.tmcnet.com/1069.1), the world's most popular IP communications software company, having a major network outage. He surmised that a recent Microsoft upgrade to its operating systems was responsible for the outage.

A few days later, Skype explained (www.tmcnet.com/1070.1) that indeed, Microsoft's operating system update coupled with a bug in the eBay division's software was to blame for leaving millions without IP communications.

This outage has made some journalists jump to the conclusion that VoIP is somehow no longer reliable. In reality, a software bug stopped the Skype system from functioning properly and this had nothing to do with VoIP's inherent reliability.

Still, when leveraging the benefits of IP communications you must also be aware of the responsibilities that come with the technology. Yes, you now have some responsibilities you may not have been aware of. Much the same way you now know to put a UPS on your email server, you must ensure that adequate network management and security are in place when you regularly use VoIP.

In other words, take this outage as a learning experience. Learn to test your VoIP network. Learn to monitor your IP communications network. Learn to build redundancy into your IP telephony network. It is far better to be prepared than to be left without your vital communications systems.

For example, do you have redundant broadband connections coming onto your premises? Even the smallest of the small SMBs can afford a cable modem and DSL line to ensure they are always connected and taking customer calls.

But even a network capable of handling myriad conditions cannot solve the problems of a service such as Skype. After all, what do companies do if their primary IM software dies in the middle of a crucial trading day? Or in the middle of an important meeting or conference call? What is your company's backup plan?

Typically, companies have not used a backup plan for IM and VoIP services because, frankly, they didn't see the need.

Skype's recent misadventures show how perilous it can be to rely on a single service provider for anything. If redundancy exists you should be aware of it and ensure your organization is prepared to switch IP communications providers in case one goes out. Such a strategy may not even cost any money but it will cost you some time. But the time you spend to ensure that IP communications is working is critical. After all, if you are tasked with ensuring that your company's communications are working, can you afford not to be prepared? Even if you don't use Skype, you need to be covered in case a similar problem happens to other providers.

One way to stay on top of the happenings in the world of IP communications is to read influential blogs such as Tom Keating's VoIP Blog (www.tmcnet.com/1071.1), Andy Abramson's VoIP Watch (<http://andyabramson.blogs.com>) and On Malik's GigaOm (<http://gigaom.com/>). Additionally, be sure to check in daily on TMCnet and be at *the* IP communications industry event, Internet Telephony Conference & EXPO September 10-12 in Los Angeles, CA (www.itexpo.com) where over 7,000 IP communications decision-makers will be in attendance from around the world.

The communications revolution continues and there is no substitute for a stellar education, which can help your company get all the benefits of IP communications with little or none of the pitfalls. **UC**

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NEWS



www.tmcnet.com/1072.1

Cisco Unity to Use Nuance Speech-Enabled Unified Messaging Solution

Nuance Communications will offer its speech solutions to Cisco Unity 5.0 as an optional component to speech-enable the unified messaging experience of Cisco Unity customers. With Nuance, Cisco Unity users will have a hands-free user interface that uses voice commands to control features of the platform.

www.nuance.com
www.cisco.com



www.tmcnet.com/1074.1

Microsoft Begins Licensing New Voice Codec Software

Microsoft is lining up an impressive roster of companies to license its new voice codec software... Intel Corporation, Texas Instruments, AudioCodes, Dialogic, LG-Nortel, and Polycom all have signed on the dotted line and are expected to immediately begin delivering Microsoft's RT Audio Codec. The software, used to compress digital speech samples into a digital media bitstream, will provide these partners with the flexibility to build customized solutions for customers.

www.microsoft.com



www.tmcnet.com/1073.1

Dialogic Simplifies Unified Communications with New Media Server Line

Dialogic Corporation has announced its latest media gateway line designed specifically for the world of unified communications. The new Dialogic 4000 Media Gateways (DMG4000 series) have been crafted to effectively link existing communications networks (i.e., IP PBXs and the PSTN) to Microsoft's Office Communications Server 2007 (OCS).

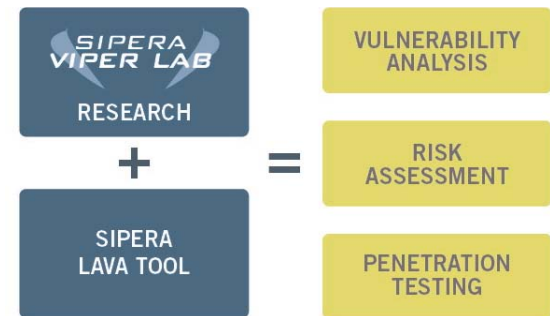
www.dialogic.com

www.tmcnet.com/1075.1

Sipera Viper Takes the Bite out of VoIP and UC Network Threats

Sipera Systems has announced the availability of Sipera VIPER Services, enabling enterprises and service providers to analyze, assess, and test their VoIP/UC networks, to then efficiently apply specific security measures. Based on Sipera VIPER Services reports, OEMs can also test their latest VoIP/UC devices, and proactively secure them prior to general availability.

www.sipera.com





www.tmcnet.com/1076.1

LiteScape Announces Support for Salesforce.com

LiteScape Technologies announced that its flagship product, OnCast, integrates and supports Salesforce.com's sales force automation application. In conjunction with this support, LiteScape has also become a member of Salesforce.com's AppExchange partner program.

www.tmcnet.com/1077.1

LiteScape Announces WebEx Collaboration

LiteScape Technologies is the only application that tightly integrates WebEx's on-demand collaboration services with IP telephony systems to dramatically simplify the process of collaboration. LiteScape OnCast tightly integrates WebEx Meeting Center with IP-PBXs and IP phones, and allows users to seamlessly move between the interface and device of their choice to schedule, launch and join WebEx collaboration sessions with one touch.

www.litescape.com

www.salesforce.com

www.webex.com

www.tmcnet.com/1078.1

Verizon Business Enables Unified Communications

To help businesses with VoIP service more effectively manage their communications and enhance employee collaboration, mobility and productivity, Verizon Business introduced its Integrated Communications Package. The new unified communications service provides a dynamic hub where employees can access voicemail, control incoming and outgoing calls, manage their online presence, send text messages, and synchronize contacts and calendars.

www.verizonbusiness.com

www.tmcnet.com/1080.1

IBM and Excendia Join Forces to Deliver Speech-Enabled Mobility and UC

Excendia announced the availability of Excendia Virtual Assistant on IBM's WebSphere Voice Server. The solution provides mobile workers with hands-free, eyes-free access

to their business information and office communications tools from any telephone as if they were sitting at their desk. Using speech commands over any telephone, users of the solution can access and manage their phone calls, emails, appointments and contacts while on the road, driving or visiting customers, and deliver text content over the phone.

www.excendia.com

www.ibm.com

www.tmcnet.com/1079.1

Communicado Delivers Converged Communications Management as a Service

Communicado, formerly known as SyncVoice Communications, announced it has delivered the industry's only complete solution for guaranteed service delivery for converged communications, Communicado Streamline management as a service (MaaS). The new Communicado Streamline Service Management Platform helps VARs, MSPs and enterprises meet the management objectives for converged communication networks supporting real-time person-to-person communications.

www.syncvoice.com

www.tmcnet.com/1083.1

Quintum Achieves Hardware Certification as Microsoft Partner

VoIP solutions provider Quintum Technologies has announced it is a Microsoft Certified Partner in the Microsoft Partner Program. Quintum Tenors assure seamless interoperability with Microsoft Office Communications Server 2007. Quintum's engineers are assuring that the Tenor products and Microsoft's software perform seamlessly together. Quintum developed a customized configuration wizard to simplify any Tenor's deployment with Office Communications Server 2007.

www.quintum.com

www.microsoft.com





NEWS



www.tmcnet.com/1081.1

AVST Unveils CallXpress Speed Bundles

AVST unveiled an enhanced line of pre-packaged solutions for the SMB market labeled CallXpress Speed Bundles. Scaling from four to 16 IP ports, the CallXpress Speed Bundles are designed and configured to interoperate with all of the leading brands of IP-PBXs and PBXs. Combining AVST's world class CallXpress communications software with industry standard, AVST-certified hardware in simple, single part number configurations, AVST's new "Speed Bundles" make it easier for SMB customers to buy, and for AVST resellers to sell, install and support its solutions in the rapidly evolving SMB marketplace.

www.avst.com

www.tmcnet.com/1082.1

AT&T Labs Certifies Cisco Unified Communications

AT&T has announced that Cisco Unified Contact Center has been certified by AT&T Labs for compatibility and interoperability with AT&T's recently announced Internet Protocol (IP) Toll-Free service. AT&T and Cisco will continue to integrate important extensions that will help ensure interoperability with upcoming AT&T IP Toll-Free service feature enhancements.

www.att.com

www.cisco.com

www.tmcnet.com/1084.1

NEC Launches UC for Business to Address Communications Demands of Midsized Enterprises

NEC Unified Solutions launched UC for Business (UCB) to address the needs of small- and mid-sized businesses (SMBs). UCB offers scalability and enhanced communication functionality by combining NEC's world-class call center features with unified messaging, mobility and desktop telephony applications. With these features, UCB can help improve the management of SMB communications through a customizable desktop application that can seamlessly integrate with Microsoft Outlook. Whether used as a stand-alone application or integrated with Outlook, the user interface enables increased productivity and enhanced collaboration across the entire organization.

www.tmcnet.com/1086.1

IBM Taps Polycom to Extend its Unified Communications Presence

Partnering with Polycom, IBM is now offering an integrated solution that combines Lotus Sametime and Lotus Notes with a high quality audio and video telephony solution. With the integration of Polycom's unified collaboration features, Lotus users will be able to launch high quality point-to-point and multipoint voice, video, or converged conferences directly from their desktop applications.

www.polycom.com

www.ibm.com



Ad Name

Executive Suite: Juma Technology



Rich Tehrani's Executive Suite is a monthly feature in which leading executives in the VoIP and IP Communications industry discuss their company's latest developments with TMC president Rich Tehrani, as well as providing analysis on industry news and trends.

Joe Fuccillo,
CTO, Juma Technology

Executive Suite

As an increasing number of businesses look to adopt various forms of unified communications solutions, it is becoming more apparent than ever that one of the greatest challenges is the integration of disparate platforms and network components. Despite the challenge, however, it is critical to ensuring the entire communications network runs at peak efficiency, thus providing maximum value.

SIP (Session Initiation Protocol)-based technologies are an ideal solution, having been developed specifically to connect various communications platforms with a common language. Importantly, they also are an effective means of integrating new IP-based systems with older legacy systems, affording businesses the opportunity to migrate to an all-IP environment at their pace and as their needs demand it. Naturally, once that migration is complete, SIP standards continue to provide an effective means of interconnecting various communication platforms.

Rich recently had occasion to speak to Juma Technology's CTO Joe Fuccillo, who discussed the potential of SIP technology as it pertains to the burgeoning converged communications industry, as well as how Juma Technology has approached the challenge of helping customers efficiently migrate to IP communications.

"We have found that the most common challenge during a transition is the integration with an existing legacy system and, many times, with multiple vendors."

RT: Juma has quickly become a mainstay in the IP industry. With so much competition, what has differentiated Juma?

JF: A clear differentiation is Juma's focus, commitment, and experience in the design, deployment, and support of a converged IP network architecture. Because Juma recognized, ahead of the curve, the great potential of IP technologies, we now maintain a superior technical aptitude when it comes to converging voice, video, and data on a single network.

Based on our experience, we have developed a proprietary Managed Services offering to provide advanced network monitoring in the converged environment, and we have also integrated SIP Trunking services into our IP Convergence platform. This innate understanding of IP Convergence, and all of the components that affect the converged network, is really what sets Juma apart from others in the IT industry.

RT: Juma maintains a strong focus on IP Convergence. For companies exploring a converged network architecture, what would you say is the foremost issue?

JC: Without question, IP Convergence planning is a fundamental component to the successful design and deployment of a converged network.

It is essential for companies to

consider key business factors, such as security, quality, availability, and manageability.

In our experience, many companies lack a comprehensive IP Convergence Plan to deliver all of these key components while preserving investments in current infrastructures. At Juma, we know from experience that the planning and review stages are critical to setting the proper foundation for converged networking. For this reason, Juma offers detailed IP Convergence Planning to

Ad Name

Executive Suite: Juma Technology



Joe Fuccillo,
CTO, Juma Technology

help our customers assess their current architecture along with present and future business needs. By doing so, the Juma team can devise a converged network that truly serves the business needs, while building on existing infrastructure for additional cost savings.

RT: What are the biggest challenges your customers encounter when transitioning to an IP environment?

JF: We have found that the most common challenge during a transition is the integration with an existing legacy system and, many times, with multiple vendors. To resolve this challenge for our customers, Juma invested in SIP technologies to enable the integration of legacy systems with newer VoIP enabled features and

systems. Our SIP platform allows a mixed environment to operate as a unified system, which enables our customers to benefit from the advantages and features of IP technologies while they make the transition from their legacy systems.

RT: How can companies effectively managed such a complex converged network?

JF: We quickly recognized that conventional monitoring products fall short in the converged network environment. With the need for a superior network management tool apparent, Juma commissioned an internal team of top-level talent to develop an application that effectively manages and monitors the complexity of converged networks.



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**Delivering Informed Technology
Secure SIP-Based Solutions**

- One Number Solution
- Lower Mobile Costs
- WLAN and Cellular Call Management
- Seamless "in-call" Handover (VCC)
- Presence - Buddy List
- Multiparty Chat
- Customizable and Portable



MC
Secure Fixed Mobile
Convergence Application

sales@m5t.com www.m5t.com

Our proprietary application is now being used by a number of large, multi-location enterprise customers to effectively monitor the interdependencies of converged networking and apply an assessment of overall system health as well as the operation and availability of each component that contributes to business services. For the first time, our customers can now see the real time impact of communications on their business processes.

RT: Of the new technologies emerging today, which do you believe will have the largest impact on the industry?

JF: SIP is undoubtedly the next "big thing" in technology. In my view, SIP will completely change the dynamics of telecommunications as we know it over the next couple of years. SIP is enabling businesses to maintain a mixed communications environment that allows disparate systems to function as one, integrate IP telephony features to the desktop, and achieve toll bypass for cost savings. Furthermore, the ability to provision dial tones to both VoIP networks and legacy PBX systems via SIP Trunks (IP PRI) in minutes is transforming business processes and facilitating more efficient communications management.

RT: You have referenced an enormous potential that can be attributed to SIP. How quickly will the industry truly embrace all that SIP has to offer?

JF: We have witnessed a shortened cycle for technology adoption where new concepts move from bleeding edge to massive adoption and onto mainstream standard deployment much more quickly than in the past. We expect SIP to be the dominant PBX protocol, in full deployment, within the next two years. We also anticipate SIP Trunks for carrier PRI replacement to lead new orders within the next three years.

RT: How do you think IP technology will affect the future of everyday business operations?

JF: IP technology is already affecting business operations and it will continue to do so. The features inherent to IP are revolutionizing business and its processes

by providing communication resources that are solving real business needs. Features that enable remote workers, such as 'follow-me' calling, SSLVPN, and video conferencing, are helping companies to meet business challenges in an entirely new way. At Juma, we have helped numerous customers to operate their business more effectively through the implementation of communication resources to enable more efficient business operations.

RT: How does Juma manage to stay ahead of the curve with so many new technologies emerging?

JF: Technology is our business; more specifically, IP convergence and the host of technologies that encompass converged networking. As 'techies' (like me), we are naturally inquisitive. For Juma, staying ahead of the curve consists of nonstop reading, ongoing lab experiments, and a think-tank environment for the open exchange of ideas and opinions. We have been successful at being an innovative pioneer in the industry because we are a company of engineers. We love technology and its potential, so we are always looking for ways to make the technology do more and help it evolve into features that have true business value for our customers.

RT: What do you consider to be Juma's foremost strength as a technology partner?

JF: As a technology partner, Juma's preeminent strength is the depth, focus, and dedication of our team. We maintain a superior expertise in the application of technology to improve efficiencies and resolve business challenges. Based on this experience and knowledge, our team develops technology solutions that have the ability to generate real dollars for our customers through substantial cost savings. At Juma, we truly value superior technical aptitude and how that expertise can help fellow businesses. That is why we built our team to include the foremost engineers and technologists to best serve our customers. **UC**

For Juma, staying ahead of the curve consists of nonstop reading, ongoing lab experiments, and a think-tank environment for the open exchange of ideas and opinions.



Developing New Applications for Network Operators with CommuniGate's Pronto!

CommuniGate Systems (www.communigate.com) of Mill Valley, California, is well known for their carrier-class Internet Communications software for broadband and mobile service providers, enterprises and OEM partners. Indeed, over 130 million subscribers (including 47 million voice subscribers) rely on CommuniGate's products.

One of CommuniGate's most exciting achievements of late is a new, extremely flexible, extensible interface client software called Pronto!, enabling network operators, service providers and even enterprises to develop Mobile Rich Media Internet communications

Jon Doyle, CommuniGate's Vice President of Business Development, says, "Today's Pronto! has a user interface with tabs linking to all of the applications you'd expect, such as messaging, Voice-over-IP, scheduling, RSS feeds, managing a website and a blog, pretty much all of the things we do in our daily lives on our PC. But if customers get bored and operators want new applications? We've enabled an ActionScript API where people can write any sort of plug-in and develop these applications to suit or have us help them. If a network operator or service provider needs to extend Pronto! and add some new functionality - for example, a shopping cart to buy MP3s like you do with iTunes - the operator can develop a shopping cart module and insert that into the Pronto! framework. Users logging in would now see their usual tabs and functionality plus the shopping cart tab for music and an offer to subscribe to it. That's why I like to describe Pronto! as probably the first example of a client application server on the market. Most of us are familiar with applications servers inside of a datacenter sitting on a server, but here we're talking about an application server that will be running in client software on a desktop, a mobile device or even in a set-top box or cable modem."

CommuniGate's remarkable Pronto! user interface gets its flexibility from the underlying technology used to create it, Adobe's Macromedia Flash-based Adobe®

Flex™ 2. Pronto!, developed in Flex2 is a Rich Internet Application framework, running on any Flash9 player that delivers true convergence by integrating collaboration and messaging with Rich Media such as VoIP, IM and Presence for access by anyone, anywhere, anytime. Users can access all forms of Internet communications as well as all their stored data from business information to video and voicemail from any browser without installing any new software.

Pronto! connects to the CommuniGate Pro Internet Communications platform via the XIMSS API (XML Interface for Messaging, Scheduling, and Signaling), which permits rapid development of lightweight clients and interfaces that can call upon web and XML capabilities or skill sets. XIMSS enables Broadband and Mobile operators to quickly design user interfaces, build portals, interface with broadband modems, or link to external applications and services without the need for complicated protocols.

As Doyle says, "The value proposition behind this is that network operators want to deploy IMS-based applications and it seems it's been taking a long time for one to appear. Many operators boast about their new NGN infrastructure, but what the operators are looking for are very lightweight, flexible applications deployable in large quantity, to various types of subscribers, and we believe that the Pronto! framework is the best example of how to do that."

"Pronto! is written in Flex 2, a cross-platform development environment based on Adobe Flash for creating Internet applications that run identically on all major browsers and operating systems," says Doyle. "The Pronto! API, or what a developer writes to, is called the ActionScript API. A very large developer community writes software in Flex today. For example, look at what MobiTV is doing with Flash; they're a company that's sending IPTV out to mobile handsets. Then there's The ZON Network from Verizon, an ecosystem that brings together Flash developers to deliver content and applications inside of the Verizon network. A third area that has been very strong has appeared in Japan with the KDDI and DoCoMo developer communities. They've produced many games over the past few years using Flash technology."

"Games are just one example," says Doyle, "Another is content, such as ring tones and MMS [Multimedia Messaging Service] movies.

"So, network operators running the Pronto! Flex framework can tap into these large developer communities," says Doyle. "It's similar to what happens with application servers on the server side, where you have three big developer communities working on things that run on application servers from BEA, IBM WebSphere and Oracle. And now we have a technology where people can tap into a client-side applications server and plug in different types of functions accessible by a user like you or I. That's important because carriers want to deliver specific things to users on the client side, via web delivery and they don't want it to matter whether the client is running on a desktop or a mobile handset. They simply want to put revenue-generating applications in our hands without having to endure the bothersome affair of installing things inside our home or business PCs. It's much easier to deliver applications through a web-based framework. They just snap into our Pronto! framework and run."

"Flash-based technologies are very compelling for various reasons," says Doyle, "mostly relating to security and especially portability. You can run a Flex application wherever there's a Flash player, and Flash just happens to be the most ubiquitous software delivery agent in the world today, with more than one billion Flash player installations worldwide. As a delivery mechanism, Flash reaches far more people than Microsoft can with its Office package or new Silverlight™ cross-browser, cross-platform plug-in. So, many developers are working on so-called Rich Internet Applications (RIAs) for the Flash/Flex 2 environment. Our Pronto! is basically an RIA that also has an API so that you can develop your own application and plug them in into Pronto!. We're essentially shipping a foundation."

Aside from operators and service providers, a large enterprise with its own staff could even write site-specific applications for itself, such as things for workflow management or CRM extension, say address books or click-to-call actions.

To get an idea of what you can do with Pronto! and the CommuniGate Pro communications server, go get a free live account from CommuniGate Systems at www.TalktoIP.com. You can then send and receive email and manage media, all using the Pronto! interface. It's free, with no advertising, but that version's storage capacity is limited, at least for now.

"Even so, you can store your music there," says Doyle, "and eventually we'll expand the site to include video capabilities, telephony and many other interesting things."

Richard Grigonis is Executive Editor of TMC's IP Communications Group.

Tap into Flash Application Content

by Jon Doyle, CommuniGate Systems

Many of the operators I speak with are seeking out the mystical "IMS Application" that will help drive new forms of revenues and pay for investments in their NGN technologies of years past. Delivery of Rich Media to mobile handsets and the desktop is very much a tangible and viable strategy today. Many of the operators in Japan, but also Verizon in the U.S. have embraced Flash & Flash Lite technology and developed communities where hundreds of games and other interesting content are available.

Most Mobile operators I talk with have a wide range of subscriber types in their network: consumers, business people, kids, grandparents, etc. They find it quite challenging to test or sample new applications. Our modular client framework provides the best solution on the market today to address these subscriber bases. We leverage Flash technology because of its widespread installed platform, the Flash Player. In fact, this is the most widely-deployed platform in the world, and is ideal for Rich Internet Applications (RIAs) such as our Pronto! framework. Why is this important for operators and IMS? With it, any set of applications can be "snapped" into our framework and quickly deployed on either wireline or mobile networks.

Let's look at some media, Flash Games for example. This type of content is very popular

with consumer subscriber bases, and can drive not just use of the app itself, but also traffic on the network and storage. A simple shopping cart within the Pronto! framework takes care of the games' delivery, but leveraging the chat and communication tools within Pronto! drives usage models, and storage of the games in the libraries drives stickiness to the operator's network. Our framework can handle not only any sort of simple content like Music, or Video, but even more interesting applications like dating services that interact with the core Pronto! services, or sophisticated operator location-based services. All of these applications will now have a very short time-to-market thanks to the flexible nature of the Pronto! framework.

There are many large communities already in the market with applications and content based on Flash. Linkage to the operator's network and subscriber base demands technology that is flexible and can scale to changing needs. CommuniGate Pro is the most powerful communications platform with the right client technology for operators that have adopted convergence of network topologies. Sign up for a free account at www.TalktoIP.com and see how delivery of content and Rich Media can be used in your business to build out a next-generation subscriber base community today.

Is It Really Here?



by Erik K.
Linask

Sounding Off

Now that the first issue of Unified Communications has made its way from desk to desk, several readers have asked why the new landscape format. The gist of it is really to create a like experience for our hard copy and digital readership (check out Zippy Grigonis' Editor's Notes on page one of the July issue for a lengthier explanation). So, I guess you could say it's a way of unifying our communications with our readers. But it got me thinking about whether people "get" Unified Communications and, more importantly, how it impacts their daily lives.

There's no question that everyone is talking UC. The major vendors have all introduced UC product lines or, at the very least, have rebranded existing products to develop a presence in the space. But is it all talk, or are businesses really jumping on the UC bandwagon?

James Messer, director of technical marketing at Network General, was able to shed some light on the situation - Network General recently conducted a survey of 576 businesses regarding their use of UC applications. As James explained, this was not a particularly scientific endeavor, but it provided some interesting high-level insight into the market.

Importantly, nearly seven out of ten respondents are currently using VoIP in their daily work, showing that people have certainly caught onto the voice aspect. In addition, almost four out of ten respondents are using unified messaging solutions, the same number are using integrated voice, video, and Web conferencing, and nearly half are IMing. Perhaps most telling is that only nine percent are not using any UC applications.

In terms of messaging applications, responses were, for the most part, predictable. Email, voice mail, integrated voice mail and email, IM, Web conferencing, email on a mobile, and voice mail on a mobile were, in descending order, each used by more than 44 percent of respondents. A bit surprising was that 14 percent are still using pagers, including more than a quarter of the respondents from companies with more than 5000 employees.

What this tells us is that, though they may not be using all available aspects of UC, each of these companies is still enjoying the benefits of multiple UC services.

However, the survey also clearly indicates that, while businesses are adopting these new services, they are ill equipped to handle the effect on their networks, and their use is having a detrimental impact on their corporate networks. Almost four out of ten respondents said their critical business applications have suffered due to these new converged communications applications. And another 18 percent said they did not know, which means that, more than likely, at least half of the business using UC solutions are not adequately managing their network resources, negating some of the benefits to be gained by adopting the solutions in the first place.

Furthermore, more than three-quarters of the respondents expect traffic from communications applications to increase during the next twelve months - which could create an even greater instance of network resource failures. Only 1.6 percent of respondents expect their communications-related network traffic to decrease.

Two things are patently obvious: First, companies are adopting UC strategies, and second, they need guidance on how to effectively go about it.

That, of course, is where companies like Network General can be a crucial asset, as it is focused on providing information about the health and availability of network resources, including critical business applications. As James told me, the company is single minded in its drive to ensure, as businesses continue to adopt Unified Communications solutions, they are able to maintain peak network performance levels, and in cases where that is not happening, determining the cause.

James and his colleagues, as his data indicates, can rest comfortably, knowing that not only is VoIP adoption increasing, but Unified Communications is here and it is growing. Which also means that businesses will need to rely on companies like Network General to ensure they are not wasting their precious network resources.

Incidentally, James also tells me he may conduct a more in-depth statistical survey in the near future, which should certainly produce even more interesting results. **UC**

Ad Name

Telephony and the Data Center – What's All the Fuss?



by Steve
Grassie

Now UC It

There can be no question that the traditional customer premises equipment (CPE) space as we know it is under attack from the data channel. Even five years ago, VoIP was an oddity only for forward-looking enterprises. Today, new telephony solutions based on generic hardware platforms, standard IT interfaces, the Internet and Session Initiation Protocol (SIP) are displacing costly, proprietary platforms that were once the only alternative in a lucrative, closed multi-billion dollar telecoms market.

Not only are these new solutions easier to manage and upgrade, they're less expensive to deploy and maintain. They also drive productivity in very new, game-changing ways for the SMB market.

The barriers to entry that have long been the characteristic of the PBX industry are being broken down by software that operates, manages and administers your communications as easily as any other application in your network; the evolution to IT Telephony. Today, it's all about your business communications converging with your IT business processes to improve overall business productivity.

These productivity-enhancing applications like Unified Messaging, Unified Communications, conference bridges, enterprise wide presence capability, and phone-based customer service applications (Interactive Voice Response) are not necessarily new to this space. Until now, however, they have been deemed exclusive, expensive and difficult to deploy. Certainly not within the grasp of any budget conscious SMB. Enter telephony in the data center, but more importantly, telephony in your Microsoft ecosystem: IT Telephony.

IT telephony allows your business communications to enter your data center alongside other business applications like ERP and CRM and messaging servers such as Microsoft Office Communications Server and Microsoft Exchange. Business communications leverages your investment in your Microsoft ecosystem and integrates and interoperates using common administrative, identity and policy methods that are made available by Active Directory and the Windows platform. Simple deployment and support by existing IT staff or resource, and reducing training, access management and compliance support to a minimum offer a compelling TCO to any business owner.

Microsoft has announced its entrance into the telcom space with much fanfare and partnering announcements and seems poised to capture as much of the

voice market as it has captured for business applications and services that run on servers and desktop workstations. So, why all the fuss?

Active Directory® is at the heart of the Windows Server ecosystem and comes included with Microsoft Windows Server 2003 and Microsoft Windows 2000 Server. Applications that directly integrate with Active Directory share a common interface for service discovery, application management, and management of users with other applications in the Windows Server ecosystem, and that effectively flattens business process management for IT staff.

Active Directory enables organizations to control access, secure connections, modify access rights and change access capabilities to Active Directory-enabled applications through a common interface. Staff can define policies pertaining to groups of users and computers and assign a new setting to a group as a whole, instead of physically visiting each machine. Many Independent Software Vendors (ISV's) that make accounting, finance and other business application software, already take direct advantage of the capabilities offered by Active Directory.

Doesn't it make sense that your phone system and all of its users should be resident in Active Directory? You bet it does! Applications that directly integrate with Active Directory gain all the advantages available to native members of the Windows Server ecosystem. You share common user definitions, common security attributes and take full advantage of the replication, synchronization, security and delegation which is intrinsic in Active Directory. The result is your phone system can automatically integrate and interoperate without complex integrations.

Most phone systems on the market developed with separate administration gain none of the security advantages and automation that come with Active Directory such systems have no or incomplete access to Active Directory without custom integration via directory protocols such as LDAP. The true value of Active Directory comes not from having access to an LDAP directory but from being a native part of the Windows Server ecosystem. This is best achieved by being a native Active Directory-enabled application running on the Windows platform.

Where deployment costs, complexity and business process improvement are key business drivers, the ability to automatically interoperate with other members of the Windows Server ecosystem through true Active Directory integration, should be a prime concern for SMB's purchasing or considering their next phone system purchase for any business environment. **UC**

Steve Grassie is the Vice President of Business Development and Marketing for Objectworld. For more information, visit the company online at www.objectworld.com.

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SIP SPECIFIC



by Jonathan
Rosenberg

Speaking SIP

Free Lunches

Over the last week, the voice over IP (VoIP) industry has been abuzz about the first-ever networkwide Skype outage. For nearly 36 hours starting on Thursday, Aug. 16, the service was unavailable to almost all of its subscribers. Speculation ran wild about the cause of the outage, with many fearing that a denial-of-service (DoS) attack was in progress. At the end of the outage, Skype issued a press release, indicating that a massive restart of users' computers in a short period of time, a consequence of a Windows update, had caused the outage.

Though many were upset by the outage, the truth is that the Skype service has been operational almost continually since its inception - a credit to its designers. No matter what the technology foundation is, achieving highly available network connectivity is no small feat. In some respects, peer-to-peer (P2P) technologies, on which Skype is based, make the problem simpler. P2P networks move much of the work to the clients, alleviating the network load that centralized servers would otherwise have to handle. This can help improve availability. However, P2P network technologies make high availability harder in other respects. P2P technologies are a tool, and like all other tools, they have their strengths, and they have their weaknesses.

What are these weaknesses? There are three big ones: security, software upgrades, and manageability.

Security

Without a doubt, security is one of the toughest problems in a P2P network. Fundamentally, this is because the service a user is receiving (the ability to make a call or send an instant message) is provided by functionality hosted in computers on the desktops of random people around the world, people whose motives and machines cannot be trusted. This is in contrast to traditional client-server models, where the clients trust the servers that are providing them service and rely only on those servers for the service they get.

Indeed, at first glance, this might seem to make P2P networks unworkable. How can you possibly offer a service in a network where not all of the components trust each other? If all of the computers in a P2P network were compromised, you couldn't. Fortunately, most users in the world are not malicious, only a few. It is possible to design P2P networks that use redundancy and randomization techniques to protect against cases where only a small number of clients are misbehaving. The trick, then, is to make sure that only a small number are misbehaving. One of the best-known attacks on P2P networks, called the Sybil attack, involves a single malicious user starting up many clients on the network in order to obtain control over enough of it to be able to compromise the service. This attack can be prevented only by limiting, somehow, the number of distinct clients a single user or organization can place on the network.

Of course, attacks are also possible on client-server systems. But P2P systems introduce many more potential attack vectors, and thus raise the bar significantly on the amount of work required to deploy a secure system.

Software Upgrades

Any system, whether it is client-server or P2P, needs to worry about software upgrades. How do you upgrade the software on each of the components in the system without disrupting service, especially when the upgrade changes the protocols used to communicate among those components? In client-server systems, this problem is well-understood and, though challenging, readily addressed. Servers can support both old and new clients, and when the clients connect, use the correct technology for each type of client.

However, in P2P systems, the problem is far more daunting. The P2P system will need to operate in an environment where the clients can be using different versions of the software and their corresponding protocols, and any

number of those clients might get used in the processing of a specific call. P2P networks are highly distributed and work only because of a common set of processing functions that happen on each node, and updating them on-the-fly is extremely hard. Indeed, if upgrading a client-server system without disruption can be considered similar to changing the engines on a 747 in midflight, upgrading a P2P system without disruption is analogous to changing the engines, navigation systems, wings, and fins of a 747 in midflight - all at the same time.

Manageability

Software upgrades are just one part of the more general manageability problem. Any system needs to be monitored and maintained while it operates. Problems need to be detected when they happen. There need to be tools to troubleshoot those problems. There need to be mechanisms to change configurations or adjust the operation of the system to address those problems.

In client-server systems, centralized servers can provide interfaces for these management functions. Where do these functions reside in a P2P system? If a user has a problem, and his calls won't connect, where can an administrator go to diagnose what happened? Even simple management functions - like knowing how many users are connected to the system - become

very challenging. In a client-server system, it's easy to get such a count. In P2P systems, getting an exact count is impossible. It's possible to obtain an estimate, but doing even that has challenges (for example, malicious endpoints can disrupt the estimation process).

Don't despair though! These security, upgradeability and manageability issues are not insurmountable. They are just challenges, ones that must be overcome to some degree in order to realize the benefits that P2P systems can provide. The issues are easier to address if they are considered upfront, at the very beginning of the design of the P2P system and its protocols. The Internet Engineering Task Force (IETF) is now beginning the design of the P2P protocols that will be used to provide a standards-based P2P SIP solution, and these are exactly the kinds of issues being considered.

With these challenges in mind, it is impressive that the Skype network has gone this long without seeing a substantial outage. P2P technologies represent a trade-off, making some things easier while making other things harder. There is simply no such thing as a free lunch. **UC**

Jonathan Rosenberg is the co-author of SIP and SIMPLE. He is currently a Cisco Fellow and architect for the IP Communications Business Unit in the Voice Technology Group at Cisco (www.cisco.com).

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SIP SPECIFIC



by Dave Uhlir

Automatic for the People

When's the last time you crank-started your car or chopped wood to heat your house? The answer is, you didn't. Instead, you relied on technologies that have automated those once-routine tasks.

Unfortunately, presence technologies are still at the early-adopter phase, when manual intervention is often needed to let your contacts know that you're away from your desk, in a meeting, or online and available for communication.

What people need is the equivalent of an automatic transmission for presence. Approximately 95% of new cars sold in the United States come equipped with an automatic transmission, so that you never need to think about shifting gears while making your way through traffic. This frees your hands for more important tasks, like drinking coffee, talking on the phone, and gesticulating at your fellow drivers.

But seriously, presence technologies will never really take off if end users must manually set their availability every time they want to "switch gears" by going to a meeting, accepting a phone call, or wandering off to lunch.

Yet there are significant challenges involved in automating presence. Let us count the ways...

1. Ubiquity. Automatic presence will require presence to be embedded into more devices and applications. If your presence will automatically be changed to "busy: on the phone" when you are on a call, then your desk phone, softphone, and mobile phone all need to be part of the presence conversation. The same goes for applications as diverse as spreadsheets and gaming consoles.

2. Granularity. You may want to be in "do not disturb" mode when completing important tasks (e.g., interacting with an enterprise resource planning application) but not unimportant tasks (e.g., catching up on RSS feeds). But how are important and unimportant defined automatically, especially when these days so many tasks are performed in the same application (i.e., your web browser)?

3. Scalability. Automatic presence will probably be rich presence that incorporates information about location (you're unavailable because you're on a plane), activity

(you're busy because you're in a meeting), device state (you're on the phone because you just picked up the receiver), and the like. This indicates that presence states will change more often - instead of four or five primary "gears" you will have an infinite variety of intermediate states. It also indicates that presence servers will need to be even more robust than they already are.

4. Usability. The emergence of ubiquitous, granular, rich, frequently-modified presence information could be difficult to handle for both presence producers and presence consumers. For presence producers, the aggregation of nuanced information from multiple sources could result in unintended presence states (do you really want your boss to know that you're on the phone when you call your spouse from your mobile phone)? Presence consumers might be confused by a large number of presence updates rather than an intelligent aggregation of presence states.

Some industry observers claim that these challenges will be overcome through powerful rules engines managed by end users themselves (e.g., "feed presence from my mobile phone into my presence aggregation only during work hours"). This seems unlikely. Replacing the drudgery of managing multiple devices with the drudgery of managing multiple presence rules simply moves the problem around, with the added downside that abstract rules are harder to understand than physical devices.

More useful would be devices that intelligently react to how they are being used. If you pick up the phone receiver or dial a number on your mobile, then you are mostly likely "on the phone." If you have not interacted with your keyboard in half an hour and your calendaring application knows that you are scheduled to be in a meeting for the next hour, then you are probably "in a meeting." If you are typing in a word processing application at the office, then you are probably working. If your car is running and your GPS location is changing rapidly, then you are probably busy driving. (Probably: there are always exceptions.)

Shared devices and multi-purpose devices pose a special challenge for designers of automated presence systems. The answer may be more information, not less. Which application are you using on your mobile device, the phone or the video player? Are you really working on a memo to your boss or writing a letter to a friend? Which person is driving, the husband or the wife?

Clearly there are privacy concerns here. People generally like to receive presence information from their friends and colleagues, but don't especially like to share information about themselves. However, the benefits of more effective communication will tend to outweigh concerns about privacy - as long as the end user has effective control over who may view their presence. These benefits will only increase as presence shifts from manual to automatic. **UC**

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FEATURE

by Richard
"Zippy" Grigonis

Feature Article

Interoperability Among UC Suites and Devices

Back in 1990, an X.400-like standard called AMIS (Audio Messaging Interchange Specification) appeared; these protocols enabled analog and digital voice messaging systems from different vendors to exchange messages. AMIS was more reminiscent of an email system than an interoperability protocol, and indeed its 1996 successor, VPIM (Voice Profile for Internet Messaging, also known as Voice Profile for Internet Mail), is based on SMTP/MIME (Simple Message Transfer Protocol / Multipurpose Internet Mail Extensions). Unlike AMIS technology, VPIM can route fax messages along with voice messages between voicemail systems, and over the Internet to boot. At the time of its appearance, Yours Truly wrote that "VPIM is felt to be better suited for more sophisticated applications such as Unified Messaging (UM)". Well, UM has evolved into UC, and the idea of interoperability among communications systems has many more aspects to it than simply exchanging voicemails and faxes, as it did 10 years ago.

The very term "unified communications" suggests interoperability, and the idea is somewhat plausible, given that many UC systems are based on the same well-known, underlying components - The Session Initiation Protocol (SIP), Microsoft Exchange, Office Communications Server, Linux, Java, Flash, and so forth. Even so, one would suspect any given vendor desires customers to buy all their equipment

from one vendor (themselves). Is there any real interest in interoperability of suites and devices?

Christopher Thompson, Senior Director, Solutions Marketing, Unified Communications Solutions, Cisco Systems, says, "Well of course vendors would like customers to purchase all of their IT solutions from a single vendor, but this is an unrealistic expectation. No vendor, anywhere, offers a complete IT solution for customers. For Cisco it's about choosing where we can add value and where we intend to compete. We recognize the increasing plurality of our customers' workspaces and IT infrastructure and are committed to unifying these environments through the use of open standards - including Web 2.0 capabilities - and interoperability. Where we compete, we will offer best of breed products to our customers, while also offering interoperability when customers choose competitive alternatives. However, we would be remiss if we didn't acknowledge our go-to-market partners, our distribution, systems integration, and value-added reseller partners that enable customers to work with a single 'seller' to secure and integrate products from multiple vendors. Arguably, this is more important to customers than a single technology supplier."

How is Cisco tackling the problem of interoperability among UC suites and devices?

"Cisco Unified Communications Solutions are architected to be open to ensure interoperability from the physical infrastructure to the application layer and secure to protect users and organizations," replies Thompson. "Cisco's network-based approach towards UC is also inclusive, resulting in a media-rich collaboration experience that may be realized by all users in an organization using any device or operating system: Mac, Blackberry, and Nokia dual-mode handset users are also entitled to the workspace communications experience, in addition to Windows PC users."

Thompson goes on, "Additionally, we provide integration with Oracle [Siebel/Peoplesoft], Salesforce.com, Microsoft CRM, and Remedy through CRM connectors as part of Cisco Unified Contact Center. Cisco Unity [unified messaging] extends functionality to third party IP PBX products including Avaya and Nortel. Cisco is also planning to make Cisco Unified Presence interoperable with Avaya and Nortel IP PBX products in the future. Both the architecture and the available levels of integration with third party products and applications demonstrate that a network-centric architecture and approach to unified communications is a significant benefit to customers."

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Interoperability Among UC Suites and Devices

"The various components of a Cisco UC Solution, ranging from Cisco Unified Communications Manager, Cisco Unity, Cisco Unified MeetingPlace, Cisco Unified Presence, Cisco Unified Contact Center to the unified clients, all use SIP as the communications protocol," says Thompson. "Further, we have industry leading interoperability with IBM and Microsoft products using SIP/SIMPLE and CSTA/SIP. Specific to Microsoft, our solutions deliver complete solutions to customers who may be using Office Communications Server/Live Communications Server, Office Communicator, or Exchange/Outlook."

"With Cisco Unified Application Environment [CUAE], an open services-oriented software development platform that came to Cisco through the Metreos acquisition, developers and customers have the ability to design and deliver unified communications applications from an easy to use and flexible application environment," says Thompson.

"As a market leader in enterprise network routing and switching, security, storage and wireless," says Thompson, "Cisco is committed to ensuring that Unified Communications applications leverage customers' existing investments in these areas while pursuing and open and interoperable design philosophy. This is in the best interests of our installed base customers for a broad range of solutions, including Unified Communications."

Thompson then made an interesting side comment: "Generally Microsoft's entry into the Unified Communications marketplace is good for the market in that it will raise the interest and viability of unified communications across a greater variety of customers and workspaces."

Time for Everybody to Play Nice

"We're seeing companies finally beginning to understand the need to pull back the reigns and gain more control over the communications devices their workers are using," says Theron Dodson, Director of Sales and Marketing, Ascendent Systems (www.ascendentsystems.com). "But, when I speak with telecom managers, they are hesitant - and rightly so - in administering a full 'rip and replace' of the existing IT infrastructure. It can not only be expensive, but also time-intensive. As the old saying goes, *'if it ain't broke, don't fix it'*. Most of us are so used to the inconveniences associated with traditional communications systems, such as multiple phone numbers, limited conferencing capabilities and separate work applications that we see no need to change the status quo."

"However, enterprises are finally giving unified communications the attention it deserves," says Dodson. "An office synched to mobile collaboration tools such as

voice messaging, conferencing, email, data applications, instant messaging, and presence is where the future is taking us. We're seeing enterprises asking more and more for standards-based solutions that not only support existing investments in traditional technology, but can also interoperate and 'play nice' with others."

Dodson elaborates: "Enterprises looking to jump into the UC foray may want to start by choosing one or two 'must have' technologies that will offer the most immediate improvements to company communications. For most companies, enterprise voice mobility solutions are at the top of the list because an increasing mobile workforce has made it challenging to stay connected and thus has started to affect the bottom line. Using cell phones disconnected from the corporate telecom infrastructure makes it more difficult to be reached or collaborate immediately in order to do things like solve customer problems or close deals immediately. And there are solutions that are easy to implement and can be integrated into existing systems - legacy TDM or IP - without a forklift upgrade. Because UC is still going through its growth spurts, staying open and not locking to one vendor will help an organization be more flexible to choose and deploy solutions that make the most sense for the organization without having to compromise later due to proprietary systems."

One key to interoperability is to make sure that a popular interface is taken into account. Since the Apple iPhone is destined to be a force to be reckoned with among users, it's not surprising that various vendors are scrambling to incorporate it into their communications plans. I recently spoke with Tony Terranova, Vice President of Product Marketing at Genesys Conferencing, who told me that, "We're the first company to bring full virtual meeting capabilities to participants with the Apple iPhone. Our Genesys Meeting Center, launched in 2002, now at version 4.0, runs on standards-based AJAX technology and we can leverage that to effortlessly join a voice and web meeting through the Safari browser on the iPhone. The iPhone will now have access to the industry's only integrated voice, web and desktop video conferencing solution that has global support."

"Another major aspect of all this is the fact that the iPhone is a mobile communications device," says Denise Persson, EVP Global Marketing of Genesys. "Businesses are becoming increasingly decentralized and dispersed. In fact, about 20 percent of all participants now attend meetings from a cell phone. Coupling the iPhone hardware with our software technology allows mobile professionals to collaborate wherever they happen to be; they can attend virtual meetings without having to carry a laptop." **UC**

Richard "Zippy" Grigonis is Executive Editor of TMC's IP Communications Group.

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FEATURE



by Richard
"Zippy" Grigonis

Does UC Improve Call Center Performance and Satisfaction?

At first glance, the combination of unified communications and contact centers should make for a potent brew, both in terms of streamlining operations and boosting the all-important "first-call resolution" metric carefully monitored by all call/contact centers, that powerful indicator of both performance and customer satisfaction.

As it happens, call centers were attempting to achieve some of the functionality afforded by UC, long before full-blown UC ever officially existed.

Ross Sedgewick, Director, Global Marketing for Applications at Siemens (www.siemens.com), says, "When you think back about five years ago, when companies started to integrate front-office CRM applications such as Siebold or mySAP CRM into the contact center agent voice call control desktop productivity tools such as softphone dialers, that was a form of unifying the communication tools with the line of business applications used by the agent. So using UC in call center operations isn't entirely a brand-new concept. It's just becoming a more conscious decision now to extend that from the four walls of the contact center agent population out into the enterprise to help resolve calls more quickly and efficiently. It also includes the virtual, mobile enterprise users that may be using wireless devices. It touches other media such as instant messaging, as well as voice."

"In fact, when I joined Siemens in 2002," says Sedgewick, "I wrote a white paper called 'Beyond the Contact Center'. It concerned this topic of extending the presence and collaboration model across media and across the boundaries of the organization, even to suppliers, business partners, mobile workers, and so on, to drive higher levels of first-contact resolution and thus provide more efficient levels of customer service."

"We at Siemens were the first company to presence and collaboration into our products," says Sedgewick, "particularly our agent desktops. Those efforts spanned multimedia presence, webchat as well as email and voice presence and collaboration. We created three 'tiers' of desktops for what we call the Super Agent, which is basically a supervisory console, as well as the Agent Desktop. There are part-time agents working in something like accounts receivable, an overflow call handling group, or a second level support group. To that end we created a special streamlined, downsized version of the desktop client called the Associate. We also support voice users and can connect them to the enterprise even if they are mobile, and tie them all into a presence and collaboration model so they all can be 'visible' in real time to an agent, and they can be sorted by scale, by department, by job role, and even by media - so you can ask, 'Who is available to assist me with the resolution of a call?' at the moment of need. That's all of what we launched in 2004 as an integrated part of our product line."

"Presence and collaboration tools are thus a core piece of the UC solutions we've been building into the HiPath ProCenter agent desktops and the three different desktop levels I mentioned earlier for different types of users," concludes Sedgewick.

Getting Things Right on the First Call

At Mitel (www.mitel.com), Stephen Beamish, Vice President, Business Development and Strategic Alliances, says, "Mitel has been a long-standing provider of Microsoft-based contact center solutions. A term we constantly use is 'first-contact resolution'. That's the key, to develop solutions that are not 'cookie cutter'. Customers can benefit from a contact center solution where the time to resolving an issue is as short as possible. We realized that, within a contact center environment, we had an opportunity to partner with Microsoft to provide an integrated solution specifically around their Live Communication Server and now

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their Office Communication Server for unified communications. The best way to describe it is to walk through an example. . ."

"My wife was traveling to Europe and was using my travel points," begins Beamish. "Her question was, 'When I get to London, am I allowed one luggage bag or two under the new security measures?' So I called Air Canada and I asked them, and because I'm a frequent flyer I can get through to a faster line, but they put me on hold anyway. Seven minutes later they picked up and said, 'Yeah, you can take two bags.' So I asked them, 'What took you so long?' and they replied, 'First we had to call Heathrow, then we had to find the correct department, then we had to find the correct agent to tell us about the baggage restrictions'. So I said, 'You're lucky that I stayed on the line'. This is exactly the kind of morass that our contact center solutions can prevent. With our integrated customer interaction solutions in the contact center, we've integrated LCS. What happens now is that when my call comes in, the agent sees a screen pop, which would be on Office Communicator. You click to answer and it pulls up the CRM of me, the client. It will display, 'Stephen Beamish, travels X number of times a year. He has Super Elite Status and is a Very Preferred Customer.' And so when you ask the question, 'What can I do when traveling through London?' through unified communications we are now able to federate data with other departments. So in this case you could federate with Heathrow, and see the presence and availability of subject experts there. The agent can then see that under baggage questions there are three agents that can answer those and one person is available, and he or she can start chatting with that person through the instant messaging of Microsoft Office Communicator."

"The agents can now bring the customer into a three-way conference call," says Beamish. "So you've now brought together the subject expert in London, the agent at Air Canada and the customer, and have a three-way conference call using Microsoft and Mitel solutions to integrate and have all three parties talking at once. That's how we got together the multimedia contact center solution with Microsoft LCS to create a real unified communications experience. At the end of the day, the key to all of this is once again first-contact resolution. And that information goes into the CRM system, so the next time I make an inbound call, that information is retrieved and provided to the agent."

The tantalizing possibilities afforded by an amalgam of UC and contact center solutions, along with FMC (Fixed-Mobile Communications), has attracted the biggest players in the IP communications space.

Ross Daniels, Director, Marketing, Contact Center Solutions, Cisco Systems (www.cisco.com) says, "Cisco has a full line of Unified Customer Contact Solutions that specifically target contact centers. For mid-market contact centers, we have Unified Contact Center Express, which scales to 300 agents and includes automatic contact distribution [ACD], interactive voice response [IVR], computer telephony integration [CTI], and a sophisticated agent and supervisor desktop application in a single, integrated package. Unified Contact Center Express customers can add a number of different application options, including Cisco Unified Web Interaction Manager for text chat and web-based customer service, Cisco Unified Email Interaction Manager for email-based service, and Cisco Unified Workforce Optimization for scheduling, workforce management, and quality monitoring and recording."

"For enterprise contact centers, we have Cisco Unified Contact Center Enterprise, which scales to thousands of agents and is optimized for highly distributed, virtual environments with requirements for high availability and redundancy," says Daniels. "Providing intelligent contact routing, computer telephony integration, a variety of agent and supervisor desktop options, integration to CRM systems, as well as email and web-based customer service options, Cisco Unified Contact Center Enterprise meets the needs of the most sophisticated customer interaction environments worldwide."

"All of Cisco's customer contact solutions are optimized to work with the full suite of Cisco Unified Communications solutions," says Daniels, "including Cisco Unified Communications Manager. The tight integration across Cisco Unified Communications makes integration of video, unified messaging, presence, or mobility a very straightforward process."

Like Cisco, other vendors look at this market in terms of contact centers falling into two or three size categories, just as they did with non-UC contact centers.

Jeff Ridley, Director of Product Management at ShoreTel (www.shoretel.com), says, "We have three tiers of contact center

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solutions, ranging from an informal group product called Workgroup which is for a smaller, less structured organization, through a mid-tier Contact Center product designed for groups with a bit more formalization, and then up to our Enterprise Contact Center, which is a much more advanced solution. That's where you encounter some of the unified communications and some of the multimedia aspects of interacting with customers."

"Typically, after a function gets started and you soon end up where you need several people teaming up to do one thing, our ShoreTel Workgroup product is a great fit because it assumes people are peers and are working together on something," says Ridley. "As that group or function gets bigger, and it becomes more important to the enterprise, somebody will be appointed as the group's supervisor. Now, a supervisor needs to know what's going on. They need reports, metrics, and measurements of performance. That's where you move into our Contact Center product line. As that operation continues to grow, more things are happening inside it; there are more agents, and it becomes more strategic to the organization. At that point you should move up to our Enterprise Contact Center product."

"I'm not sure it's exactly correct to say that when you move up into multimedia with respect to UC interacting with customers, that scenario automatically leads to a productivity-winner," says Ridley. "I'm more productive chatting than speaking with a customer. However, that situation does tend to more influence customer satisfaction; your customers can interact with you the way your customers want to, as opposed to presenting them with a single option. We've seen that most organizations move in that direction because they want to be able to differentiate themselves to their customers as offering superlative service, and it's less about getting every last drop of productivity out of each agent."

"As for UC interactions with people inside the business, we have a product called Converged Conferencing which does web collaboration, audio conferencing, as well as secure instant messaging inside the enterprise," says Ridley. "That application is more about interaction. I believe there's a trend forming, and it's less about making the whole enterprise look like it's a contact center where everybody logs in and their time is measured. After all, many people don't have functions that can be mentioned in such a formal manner. But presence is

obviously a key part of instant messaging, and there are multiple ways of communicating with people such as text messaging via our Converged Conferencing Bridge, and to some extent people may be using one of the public services. Those are some technologies that have impact, because they reach from the knowledge worker into the contact center. They focus on the notion of reaching the person who has the answer. At times you need to escalate a call to talk to an expert inside my company. A couple of people may know this answer. Via presence, I know which of these people is available for me, I can reach them and more quickly resolve the call - and that is a productivity booster. That's where enterprise UC starts to reach into the contact center and really begins to drive productivity."

Bolting on UC

As mentioned previously, some companies have been working with various forms of UC-like functions, both in conjunction with and independently of contact centers. Since 1994, for example, Zeacom (www.zeacom.com) has developed solutions that provide UC and contact center solutions to SMBs for the NEC, Avaya and Cisco telephony platforms.

Recently Zeacom released their Communications Center v 4.1 with enhancements for executives, agents and knowledge workers as well as Outlook and Microsoft 2007 support. Zeacom brought together its contact center and messaging solutions under its new Communications Center Brand. The two solutions have always been developed as one platform, providing a total UC package. Among other things, the Microsoft Outlook 2003/2007 application supports the Zeacom 'Executive Outlook' plug-in, providing presence, telephony, fax and voice messaging inside Microsoft Outlook.

Ernie Wallerstein, President of Zeacom, says, "Every contact center vendor wants to 'break down the walls' of what a traditional call/contact center is. We want to sell more licenses and bring more value to an organization. Unified communications is, with its homologation of all of the different media types, yielding some visibility of what other people are doing within a specific peer group. Call centers have been trying to do this, as well as just doing it, for over 10 years. But we haven't been doing it for an entire enterprise. So call centers have been trying to pull off some kind of UC scenario for some time now, first with ACDs then UCDs, then CTI. Screen pops

Does UC Improve Call Center Performance and Satisfaction?

were an early big advantage; that's how we would sell the ROI to companies. Call transfers were a lot faster."

"Now, we've always had only one product and only a single code base since Day 1," says Wallerstein. "We sold them as two separate products: as a contact center solution under Zeacom Communications and a messaging application which we called Chorus, but they were built with the same code base. We sold the platform as two separate products because we saw two separate markets at the time. Our customers have done both and they then began doing what we are now repositioning ourselves as, which is a single unified communications platform. Our current release, 4.1, the Zeacom Communications Center, contains many changes that are cosmetic (graphics, user icons). In particular, the 4.1 Desktop for Agents, Knowledge Workers and Executives underwent a cosmetic transformation. It now has new XP/Vista-type icons and wizards and a revamped desktop screen and toolbars. The new 4.1 Call History screen provides flexible handling of missed and recent calls. Queued multimedia items such as chat, fax and email can be previewed from the call history screen even after deletion, and all calls are logged in the Desktop even when the application is closed."

Executive users of the Zeacom Communications Center will discover manager/assistant options so that if an assistant doesn't answer, the caller is returned to the executive's mailbox with an appropriate new set of options rather than getting stuck in "voicemail jail" or the assistant's mailbox.

"We did some integration with the latest versions of Microsoft and Lotus platforms to bring it up-to-date," says Wallerstein. "The low-level code, however, remains the same executable for all intents and purposes. Fortunately, the market is talking up UC."

Convergence, of course, is an ongoing, ever more encompassing process. Recently, for example, Intervoice (www.intervoice.com) announced a new unified platform capable of serving both the enterprise contact center market as well as network subscriber services. It has multimodal capabilities based on SCXML (State Chart Extensible Markup Language), a flexible state machine language designed for building voice and multimodal interfaces, and which combines concepts from CCXML (Call Control eXtensible Markup Language) and Harel State Tables. The idea is to create an amazingly flexible next-gen call center and messaging services system that will enable providers to rapidly deliver new services based on changing consumer trends, and to provide a clear migration path from IN to SIP to IMS environments, thus protecting current investments in technology.

Unified communications will extend advanced call control and call center features as far as users can take their mobile devices, all in an effort to boost productivity and make customers happy. **UC**

Richard Grigonis is Executive Editor of TMC's IP Communications Group.

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FEATURE



by Krishna
Kurapati

Feature Article

Protecting Dual-Mode/WiFi Users from Attack

To take advantage of mobility and cost savings, enterprises are deploying dual-mode phones, which automatically switch between WiFi and cellular networks. By leveraging internal IP PBXs to handle calls using VoIP, rather than using the cellular network alone, enterprises can decrease costs, especially roaming charges, and provide improved mobility. Yet, many enterprises have yet to fully review the potential security implications of using dual-mode phones over public or home-based WiFi networks.

To effectively deploy WiFi/dual-mode phones securely, enterprises must address firewall issues when the user is outside the enterprise network. Besides encrypting the signaling and media traffic for privacy, and authenticating the phone and user, enterprises need to provide measures to not only simplify firewall rules but also block rogue devices and unauthorized users attempting to register.

In addition to enforcing unified communication policies that control who can talk to whom using which device, network and application, enterprises must also monitor for signatures and anomalies. These can

arise from legitimate endpoints that might have been compromised or spoofed by Internet-based VoIP scripts and bots that can exploit vulnerabilities in the VoIP infrastructure and devices.

In fact, over the past four years, the Siperia VIPER Lab has identified thousands of device specific and general VoIP vulnerabilities, most of which are not addressed by traditional data security measures. These vulnerabilities can allow remote attackers to carry out spoofing and denial-of-service attacks, unwanted reboots, uninitiated toll calls, and, as recently demonstrated at Black Hat 2007 by Siperia, allow hackers to take over the device and either steal or delete data.

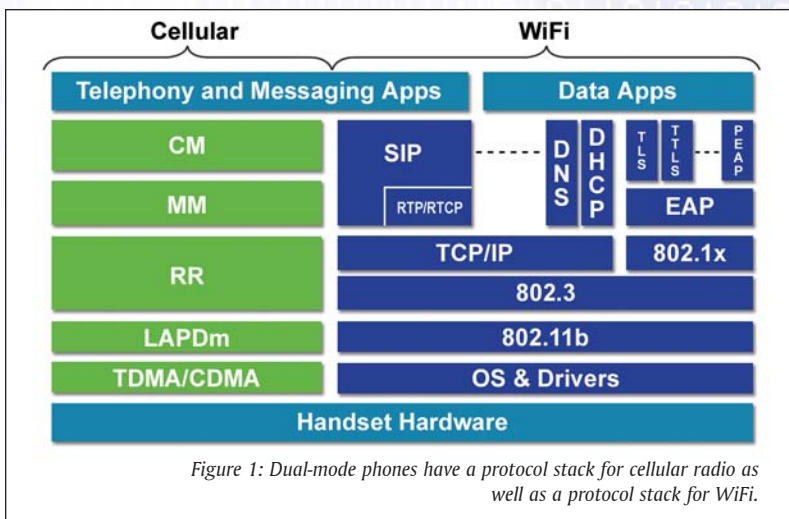
This article will examine some WiFi/dual-mode phone vulnerabilities and explore how these might be exploited by hackers. Once identified, we can explore security best practices and the requirements for a comprehensive VoIP security solution.

WiFi/Dual-Mode Phone Architecture

Dual-mode phones generally use either an IEEE 802.11 (WiFi) signal or cellular radio, such as GSM or CDMA, to transmit and receive voice and data. WiFi only phones, on the other hand, use WiFi signals only. Both types of phones can automatically detect a WiFi signal and connect to the access point, using a configured security profile. Figure 1 (on opposite page) shows a sample protocol stack in a dual-mode phone.

When connected to a WiFi access point, such phones are assigned an IP address, typically using DHCP. In addition to the standard TCP/IP stack, these phones have implemented one of the call setup protocols such as Session Initiation Protocol (SIP), Unlicensed Mobile Access (UMA), H.323, or Cisco Skinny Call Control Protocol (SCCP).

It is now obvious that the traditionally closed cell phone using the operator is wide open to Internet-based software and connectivity. While this offers tremendous value and ubiquitous connectivity, it also makes the phone prone to attacks similar to other Internet-based devices. More importantly, unlike other Internet applications, the phone acts like a server in that it is always ready to receive calls, enabling anyone to send unsolicited messages to the phone and either activate the ring tone or initiate denial of service attacks.



Attack Vectors

Unlike servers, though, WiFi/dual-mode phones have limited processing resources. Many enterprises that have adopted WiFi/dual-mode phones deploy thousands of these devices with various software loads. Unlike laptop and desktop PCs, which are standardized, enterprises generally find it difficult to control the software images on these devices, which creates more opportunities for rogue devices to exist on the network.

Consequently, while connected to the WiFi access point, phones can be exposed to the following threats:

- 1. Reconnaissance:** Unlike email and web only enabled devices, SIP-enabled phones act as a server and open well known UDP/TCP ports (5060 for SIP) to receive calls, making it easy to discover them as active endpoints on the subnet. Simple tools, such as SIPScan (www.voippsa.org/Resources/tools.php) can be used to perform this scanning and discovery operation. Subsequently, such a discovery may help in sending specially crafted packets directly to the phone.
- 2. Wiretapping:** VoIP calls made over WiFi connection may be tapped if the wireless connection is not secured enough, or if the phones do not support strong encryption and authentication algorithms.

3. Spoofing: Phones using UDP and, in some cases, TCP, as their default/primary SIP transport, and not properly authenticating callers, are exposed to Caller ID spoofing. In many instances, when the user is in a different domain, Caller ID cannot be tied to authentication credentials. It is easy to hide behind a SIP server and spoof the Caller ID for many users. This can result in well known phishing and identity theft scams. More importantly, some voice mail systems blindly depend on Caller ID based access, making them an easy target for voice mail theft.

4. Replay attacks: SIP servers using digest-based authentication are vulnerable to replay attacks where the SIP message, with user credentials, are replayed but use a different user identity. It is possible to alter or delete user records from the server, causing denial of service to the legitimate user.

5. Supplementary services: SIP phones use DHCP and DNS services, followed by TFTP/HTTP for configuration and firmware download. These services can be manipulated to cause attacks on the phone and the infrastructure.

6. WiFi to Cellular hand-off: Availability of both WiFi and cellular protocol stacks in a dual-mode phone exposes the cellular network to threats from WiFi. A buffer overflow vulnerability in a WiFi/dual-mode phone can be exploited to execute arbitrary code, allowing the phone to be used as an entry point into a cellular network.

At the same time as phones are exposed to the generic protocol threats above, implementation flaws can creep into released versions of products as a result of programming mistakes that are not identified beforehand. The probability of these flaws being present in the released software increases with the complexity of the software. With that in mind, it is important to note that the SIP protocol specification, unlike binary protocols, is very flexible, making it extremely challenging, if not impossible, to write robust SIP message parsing implementations.

For example:

- SIP protocol messages are ASCII based, containing several headers and sub-headers separated by several delimiters.
- Lengths of headers and fields inside the headers are not fixed and are only parsed using delimiters.
- SIP also supports optional headers and proprietary extension headers.

Protecting Dual-Mode/WiFi Users from Attack

- There are several standards specifications used by VoIP applications, apart from SIP specification, which adds to the complexity of implementation. (Most of them can be found at <http://www.iana.org/assignments/sip-parameters>.)

Specific Threat Advisories for WiFi/Dual-Mode Phones

When combined, the attack vectors and implementation flaws can be used to launch exploits against WiFi/dual-mode phones. Table 1, from Siper a VIPER Lab, is but a sample of specific Denial of Service vulnerabilities that have been identified for WiFi/dual-mode phones.

Summary	Type	Severity	System Affected
Format string vulnerability in Blackberry® 7270 SIP stack implementation may cause the phone not to be able to accept or make calls	Mobile Device Denial of Service	High	Blackberry 7270
HTC HyTN using Windows Mobile™ 5 PPC and AGEPhone SIP soft phone are vulnerable to malformed SIP message	Mobile Device Denial of Service	High	HTC HyTN
Samsung SCH-i730 phones running Windows Mobile 2003 and SJPhone SIP soft phone may be vulnerable to buffer overflow vulnerability	Mobile Device Denial of Service	High	Samsung SCH-i730
Dell Axim™ running Windows Mobile 2003 and SJPhone SIP soft phone are vulnerable to denial of service	Mobile Device Denial of Service	High	Dell Axim
D-Link™ DPH-540/DPH-541 WiFi phone is vulnerable to malformed SDP header	Mobile Device Denial of Service	High	D-Link DPH-540/ DPH-541

Denial of Service vulnerabilities affecting WiFi/dual-mode phones.

Comprehensive VoIP Security for WiFi/Dual-Mode Phones

So far, we have discussed some vulnerabilities already discovered in WiFi/dual-mode phones, described the challenges in building robust SIP implementations, and shared some specific exploit examples. But, to truly secure enterprise VoIP networks, enterprises must also adopt and

enforce security best practices for VoIP and WiFi/dual-mode phone users, including:

- Keeping security patches up to date.
- Enforcing strong authentication and encryption wherever possible.
- Securing WiFi access points.
- Using VLANs to keep voice and data traffic separate and police the bridges between the two VLANs.
- Applying VoIP intrusion prevention techniques.

Sitting at the edge of the enterprise network, usually within the DMZ, a dedicated, comprehensive VoIP security box can address many of the issues raised above and ensure best practices are followed. Such a purpose-build appliance must solve firewall/NAT traversal, terminate encrypted traffic to the enterprise when the WiFi/dual-mode phone is external to the enterprise, and offer fine-grained policy enforcement to apply different security and call routing rules for the same dual-mode phone, depending on whether it is inside the enterprise or outside the enterprise. But, most importantly, any dedicated VoIP security solution should protect against signaling and media vulnerabilities through sophisticated VoIP-specific security methodologies.

When evaluating a VoIP security device, enterprise should look for those that are aware of the complex nature of VoIP protocols, and can conduct detection, mitigation and prevention in real time. Further, such a device should also be able to understand user behavior, as this is the most effective method of analyzing and eliminating false positives/negatives, which can be extremely damaging to the VoIP service and user experience. Together, these practices proactively protect the VoIP service from attacks, misuse and service abuse which networks and end-users face today and in the future. **UC**

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60 Seconds with Steve Kowarsky,

Co-Founder and EVP, CosmoCom



Steve Kowarsky,
Co-Founder and EVP

CosmoCom

CosmoCom's Steve Kowarsky directs the company's rapidly-expanding, worldwide marketing efforts. Its flagship product, CosmoCall Universe™, is now said to be the most selected hosted contact center platform by tier-one service providers in the world. Previously, the Harvard-educated Kowarsky was the second U.S. employee hired by Comverse Technology, an Israeli/US startup that grew to \$300-million-a-year in revenue by the time Kowarsky left for the fledgling CosmoCom in 1997.

Richard "Zippy" Grigonis recently spoke with Kowarsky about CosmoCom, UC and contact centers.

RG: One of our big topics this month is UC and call/contact centers. I know CosmoCom has extensive offerings in this area.

SK: We have the original IP contact center technology. Furthermore, our contact center has always been a unified communications system, but it's been applied not just to internal communications such as most UC platforms, but to communication between customers and the enterprise. We call our technology 'Unified Customer Communication'.

UC means a lot of different things. It depends on who you're talking to and what vested interest they have in the industry. The whole concept of unity can be applied in many different ways and on many different levels. For example, we think that one of the most important parts of UC when it comes to the call center, is unifying an enterprise's workforce as part of the mission of customer service, support and satisfaction.

In other words, the call center is not just 200 people who work in cubicles all day. If that's what the call center is, then you don't have Unified Customer Communication; instead, you have 'Separated Customer Communication' - essentially a 'dis-unified' customer communication. So in order for customer communication to be unified, it has to be something that addresses a much broader selection of knowledge workers and people in the enterprise, who are somehow involved in the process of supporting and fulfilling what customers want and need in their business relationship with the enterprise.

RG: So any enterprise employee, anywhere, can be drawn into a call center event?

SK: We think that the call center is evolving and expanding to include the whole enterprise. That's what it all comes down to. The intelligent routing capabilities of ACDs [Automated Call Distributors] are starting to go way beyond just 'how to route the calls among the 200 people who live in cubicles'. Now we've got to be able to route calls among the 2,000 or 20,000 people that live in the enterprise, most of whom don't spend their day taking calls in a so-called call center. But

many of these people are, at some point and in some way, the right person at the right time to meet the need and resolve the issue of a customer.

Call centers want first-call resolution - it's their Holy Grail. To achieve a high rate of first-call resolution, you need real Unified Customer Communication, in the sense of having your customer communication and intelligent routing up and running, and giving that access to all knowledge workers in an enterprise. When you do that you improve call center performance and customer satisfaction. We think that's an important idea, and it should be part of the whole concept of unified communications. **UC**

The intelligent routing capabilities of ACDs [Automated Call Distributors] are starting to go way beyond just 'how to route the calls among the 200 people who live in cubicles'.

Q & A

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