

Enhanced Services For IP-Telephony

Edwin E. Mier

Application packages reveal the future of IP-based communications. The “killer app” may turn out to be a mix of capabilities.

Ed Mier is the founder of Miercom, a network consultancy and product test center based in Princeton Junction, NJ. He can be reached at ed@mier.com.

You just learned of a big change to the project you're managing. You click a button on your desktop and, in seconds, four of your five department heads come up on a videoconference screen. A message tells you the fifth is out on the road and isn't answering his cell phone. You record the conference and send a copy to the missing member's email inbox.

Or how about this scenario: You sit all day in meetings and then get stuck on a rush-hour train

somewhere between New York and Philly. You dial an 800 number on your cell phone, and kick back. You listen to your unheard voice mail messages, and then a pleasant voice reads your latest unread emails to you. You record an urgent message that your associate in Europe must receive ASAP, and instruct the system to attempt delivery until it is received.

Sound futuristic? Actually, these features are all shipping, along with dozens more you probably never knew about. And based on the enhanced-services packages reviewed in this, the latest *BCR* product evaluation, you'll see a lot more in the months ahead.

Our goal was to see what's coming down the pike that could motivate and propel enterprise deployment of IP-telephony even faster. What new services, features and capabilities are offered that

TABLE 1 Enhanced-Service Products, Packages Evaluated

	3Com	Interactive Intelligence		Mitel
Product, package(s) evaluated, version(s)	VCX 7300 IP Telephony Applications Suite v6.2	EIC (Enterprise Interaction Center) v2.2, and some v2.3	Communité v2.2.1, and some v2.2.2	Your Assistant Pro v2.1, some v3.0, plus Messaging, Speech, Audio and Video Conf Servers
Target customer	Large enterprises	Enterprises	Enterprises and service providers	Enterprises
Underlying IP-telephony environment; required or supported	VCX 7200 IP-Telephony system; required	Provides own call control and IP-telephony features	Connects w/a switch, legacy PBX, or Cisco or SIP IP-PBX*	Mitel IP-telephony system (Mitel 3300 ICP); required
VOIP call control supported	SIP	SIP	SIP, or Cisco CallManager	Mitel proprietary
Number and type of server(s); non-redundant	1 or more Sun Solaris	1 X Win2000	1 X Win2000	2 to 4 X Win2000
Supports 3rd party IP phones	InnoMedia, Pingtel, Polycom	Cisco SIP, Pingtel, Polycom	Cisco SIP, Pingtel, many others	No, only Mitel IP endpoints for adv functions
Supports other 3rd party VOIP equipment	Mediatrix, Cisco and AudioCodes SIP gateways	Cisco and AudioCodes SIP gateways	AudioCodes, Cisco and other SIP gateways	Messaging system (only) can connect to other PBXs
Approximate cost	\$100/seat for software; voice recognition not included	\$350/user, for software; to \$540/user w/server & gateway(s); TTS extra	\$100 to \$125/active user; includes server hardware	Per seat: \$75 to \$200 for messaging; \$150 for Your Assistant client; \$1,800 for videoconf'ing

exploit the unique aspects of IP-telephony—like data-voice convergence and distance insensitivity? Are new “killer applications” waiting in the wings?

Our research turned up a burgeoning number of review candidates, so we adopted a few guidelines for this test:

1. The application packages had to run over an IP-telephony environment.
2. The “services” they addressed had to be new and “enhanced,” going beyond traditional features available on TDM-PBXs.
3. The most intriguing and prevalent new applications, it seemed, were in the categories of messaging, conferencing and collaboration. So we decided to focus on application packages addressing at least one of these areas.

Invitations went out to dozens of vendors offering such packages, and the available review time-slots quickly filled. Table 1 summarizes the seven packages evaluated, from six vendors. They are:

■ **3Com’s** messaging-oriented VCX 7300 Suite, which runs over and requires the vendor’s high-end, SIP-based VCX 7200 IP-telephony system. With the recent sell-off of its carrier-oriented CommWorks division, 3Com has re-oriented the VCX system, and this application package, towards large enterprises.

■ **Interactive Intelligence** brought two different packages: The Enterprise Interaction Center, or EIC—a full-featured IP-telephony system that

bundles in the enhanced-services apps—and *Communiqué*, an advanced messaging system that “back-ends” an existing PBX, IP-PBX or telco switch.

■ **Mitel’s** new Your Assistant application suite, which the vendor is expanding considerably over the next six months. We viewed the limited version 2.1 that first shipped this past spring, plus many new pieces scheduled for the next version 3.0, due out by year-end. Our evaluation included an assortment of other discrete servers and services, which augment today’s Your Assistant with messaging, voice processing, audio and videoconferencing. Mitel expects to fold many of these functions in with Your Assistant over the next two years.

■ **Nortel’s** impressive new Multimedia Communications Server, or MCS 5100. The Sun Solaris and SIP-based system provides full call control and basic telephone features on its own, or it can add advanced capabilities onto an existing PBX. The MCS connects to Nortel PBXs today via TDM trunks; the next release will feature an H.323 gateway, so the MCS 5100 can connect via IP directly with Nortel’s broad IP-PBX product line, which currently all support H.323. In our evaluation a CallPilot messaging system augmented the MCS 5100 package, providing all the “unified messaging” (UM), “text-to-speech” (TTS) and voice-recognition features.


■ **Siemens’** bold new OpenScope, the only package reviewed that was developed to run on Microsoft’s RTC (Real-Time Communications) Server, a centerpiece of the new Win2003 Server. The OpenScope applications rely on, and exploit, RTC’s underlying SIP infrastructure. As with Nortel and Mitel, OpenScope’s new features and services were augmented by a more mature messaging server, in this case Siemens’ Xpressions.

■ **VocalData’s** VOISS (Voice-Over-IP-SoftSwitch) package, which provides the basis for an increasing number of service providers’ IP-Centrex offerings. Only IP-phones go on the user’s site, everything else runs at the service provider’s point of presence (POP.)

Because of the broad diversity of these packets

We focused on apps for messaging, conferencing and collaboration

Nortel	Siemens	VocalData
MCS 5100 (Multimedia Communication Server) rel 1.1, some rel 2.0, and CallPilot UM	OpenScope v1.0, plus features from Xpressions Unified Messaging	VOISS (Voice-Over-IP SoftSwitch) Feature Server v4.5
Enterprises and, via a diff version, service providers	Enterprises	Service providers only, for ‘IP Centrex’
Provides own call control and IP-telephony features	Provides own call control and IP-telephony features	Provides own call control and telephony features
SIP	SIP	SIP, MGCP and Cisco SSCP
4 X Sun Solaris, 1 X Wintel (IBM)	3 X Win 2003, 1 X Web server	1 X Sun Solaris, 1 + VxWorks
ipDialog	Any Microsoft SIP/RTC certified	Cisco, Pingtel, Polycom, over a dozen more
Mediatrix and Vegastream SIP gateways	Cisco and Vegastream SIP gateways	AudioCodes, Cisco, Covedia, Carrier Access, dozens more
\$335 to \$545 per user; includes all core h/ware (no IP phone, or PC equipment)	\$200 to \$400 per concurrent seat; includes MS RTC server s/ware	\$75 to \$125 per seat for all applications and software functionality



Most vendors support SIP, but that doesn't mean full interoperability

—no two are the same—it was decided that a Best-in-Test scorecard would not be appropriate. Architecturally, the delivery of enhanced and advanced features is addressed in very different ways, as shown in Table 1.

All packages except VocalData's are oriented towards enterprise customers. VocalData's VOISS package is sold to carriers and service providers. A special component is a NAT/firewall controller that also resides on the service provider's POP, and which ensures the IP phones on customer premises directly access IP-telephony features at the POP, with no change required to the customer's NAT or firewall settings.

Interactive Intelligence's *Communité* and Nortel's Multimedia Communications Server (MCS) are also offered to service providers, in addition to enterprises. A special version of Nortel's MCS for carriers and service providers, the 5200, differs slightly from the 5100 offered to enterprises, mainly in terms of server redundancy and messaging system support.

Three of the vendors—3Com, Nortel and VocalData—run their enhanced-service applications on Sun Solaris platforms; the others rely on Microsoft. Our evaluation did not measure capacity performance or scalability, focusing instead on features and functions. But the Sun and Unix-based vendors tend to claim more concurrently supported users, as well as generally more redundant and scalable topologies, than the Microsoft-based packages.

SIP Has Arrived

All the packages but one are either based on or support SIP call control. Mitel's *Your Assistant* runs over and requires a Mitel IP-PBX, such as the ICP 3300, on which we evaluated the package. Mitel's VOIP call control is proprietary.

However, just because the rest all support SIP doesn't mean their enhanced services can run over any SIP-based IP-PBX. 3Com's enhanced-services platform, for example, requires a 3Com VCX 7200 SIP-based call controller, although a broad assortment of third-party SIP phones, endpoints and VOIP gateways are supported.

Native, SIP-based call control is performed integrally with most of the other platforms reviewed—including Interactive's *EIC*, Nortel's MCS 5100, Siemens' *OpenScape* and VocalData's VOISS system. In addition to SIP, VocalData's package also natively supports MGCP and Cisco's "Skinny" (SSCP) call control. What's more, these can all run concurrently. We observed that calls could readily, and transparently, be placed between IP phones running Cisco "Skinny," MGCP and SIP in any mix.

VocalData does not sell IP end-point equipment and, consequently, supports the broadest range of third-party VOIP end-stations, soft-phones and gateways of the products reviewed. This includes the full spectrum of Cisco's "Skin-

ny"-based IP phones and SIP-based VOIP gateways. 3Com's third-party SIP-based equipment-support is also fairly broad. Nortel is still building its portfolio of supported third-party SIP equipment, while Siemens says it supports any third-party SIP-based equipment that works with Microsoft's RTC server.

Piecing It All Together

3Com's enhanced and advanced applications are packaged in a modular software suite. Interactive's *Enterprise Interaction Center (EIC)* is a Windows 2000-based IP-PBX package, which contains all advanced functions bundled in with its single software image, along with full SIP call control and basic telephony features.

Interactive's *Communité* is a specialty advanced-services messaging system, which interfaces between virtually any telephony-switching system—PBXs, IP-PBXs, central-office or other telco equipment—and a customer's email system. Most of the services it delivers (Table 2) relate to "unified messaging (UM)."

Mitel, Nortel and Siemens deliver the full spectrum of advanced and enhanced features via two or more product packages. Nortel's mature *CallPilot UM* server augmented the vendor's new MCS 5100 in the configuration we evaluated. Similarly, Siemens' new *OpenScape* had many messaging-related features and functions delivered via its popular *Xpressions* messaging system.

Mitel had numerous pieces to pull together. Besides the vendor's new *Your Assistant Pro* set of Windows client and server applications, viewing the full feature repertoire (Table 2) required Mitel's separate *Messaging Server*, its *Speech Server*, its *Advanced Audio Conferencing* system and its *Video Conferencing* system.

User Interface(s)

As a rule, the more pieces needed to implement a product's full range of advanced and enhanced features, the more discrete interfaces the user must contend with. As with most applications and user interfaces, the vendor community has split between "thick" clients—typically one or more Windows applications that load and run on the user's PC—and "thin" clients—usually a Web interface or "portal," including Java-based applets.

Siemens *OpenScape* users view and access their advanced-feature world via a neat, Web-based interface, including the user's integrated email in-box. However, on the user's desktop, many features and services—softphone, presence, etc.—rely on the PC-resident Microsoft Windows *Messenger*, a necessary component of the *OpenScape* package.

3Com, VocalData and Interactive *Communité* users also access enhanced services via Web portals. Nortel, however, offers options for both Web and PC, which is a definite plus. Nortel's *Multimedia PC Client* is neat and well organized, as is


TABLE 2: Comparing Enhanced Services, Features, Capabilities

	3Com	Interactive Intelligence	Mitel	Nortel	Siemens	VocalData	
	VCX 7300 Suite	EIC	Communité	Your Asst, and others	MCS 5100, CallPilot	OpenScape, Xpressions	VOISS
User-controlled presence	√	√	√	√	√	√	√
Active presence monitoring	—	—	—	Some	Some	√	Some
Integral softphone w/ client s/w	—	√ (1)	—	√	√	(2)	—
Unified Messaging:							
Integrated email & voicemail	√	√	√	√	√	√	√
Fax integration, too	√	√	√	√	√	√	—
TTS (Text-To-Speech); allowing audio retrieval of email (via TUI)	√	√	√	√	√	√	—
Voice mail play-out on PC/laptop	√	√	√	√	√	√	√
Outlook/Exchange support	√	√	√	√	√	√	√
Lotus Notes/Domino support	√	√	√	√	√	Limited	—
Special features, support for Windows Messenger, MSN Messenger, IM/chat and 'presence'	—	√ Win Messenger	—	Limited, to MSN IM	√ Win Messenger	√ MSN IM and Win Messenger	√ MSN Messenger and IM
Voice mail broadcast via PC-settable distribution list	√	√	√	√	√	√	√
Direct voicemail delivery to off-system phones	√	—	—	—	—	—	—
Call control:							
Via Web-browser portal/interface, or desktop Windows client appl'n	Web	Win appl'n	Web	Web and Win appl'n	Web and Win appl'n	Web	Web
Find Me/Follow-Me, static rules	√	√	√	√	√	√	√
Find Me/Follow Me, with automatic rule-change updates	—	—	—	—	Limited	Limited	—
Relocation of system presence to a "remote" off-system phone	√	√	√	Limited	Limited	√	√
Real-time on-screen disposition of incoming calls	—	√	—	√	√	√	√
Call screening, filtering; actions can be based on calling number	√	—	√	—	√	√	√
Voice recognition, for voicemail, email handling, auto-attendant	√	—	—	√	√	√	—
Conferencing:							
Meet Me audio conferencing; scheduled, via invite messages	√	—	√	√	√	√	√
Audio conferencing; on-demand, <i>ad-hoc</i> , real-time set-up	—	Limited	—	√	Limited	√	Limited
Video conferencing	—	—	—	√ Full multiparty	√ Point-to-point only	√ Point-to-point only	—
Collaboration:							
IM Instant Messaging/Chat	—	√	—	(3)	√	√	√
Document sharing, viewing	—	—	—	(3)	—	√	—
Whiteboard	—	—	—	(3)	√	√	—
Real-time calendar scheduling	—	—	Limited	—	—	√	—

(1) Vendor's client software uses the Windows Messenger SIP softphone.

(2) OpenScape supports the softphones of Windows Messenger and MSN Messenger.

(3) Supported today by MS NetMeeting as part of vendor's current videoconferencing offering. These are being supplanted by new, integral Your Assistant applications (not MS NetMeeting) in the late 2003/2004 time frame.



Most support static “presence” mechanisms; a few are automated

its Multimedia Web Client. The two interfaces look and feel nearly the same, but there are differences: You can't send a file, do whiteboarding or run other collaboration features via the Web interface. That's mainly due to security concerns, Nortel said.

Mitel's new Your Assistant combines multiple desktop applications into a modular and user-adjustable Windows interface. Keep in mind, though, that other interfaces are also still required—some Web-browser-based, some Windows applications—to access Mitel's videoconferencing, advanced audio conferencing and messaging features and services.

Features, Services, Capabilities

Table 2 presents a summary of the most common, most significant and most impressive features and services we reviewed. The table does not include every feature and service supported, and each vendor's enhanced services package offers a few unique twists and capabilities.

Most of the dozens of features in Table 2 are aggregated under the headings of Unified Messaging, Call Control, Conferencing and Collaboration. A checkmark indicates that the feature is addressed by some application in the vendor's portfolio, to an extent comparable to competitors.

While most of the features and capabilities in the table are self-explanatory, a few warrant some additional discussion:

■ **Presence:** All packages let users set and broadcast their availability on a more or less static basis. A user can choose to have his or her status propagated to others in the community as “gone for the day,” “out on the road,” “out to lunch,” “in the office today,” and so on.

But a few packages also use automated mechanisms to determine status changes and then propagate these to the community. As a result, presence information, which determines users' availability for dynamic conferences and phone-call routing, is more accurate and timely.

Siemens appears to be out in front in this area, though Mitel, Nortel and VocalData all show promise in automated presence determination. Siemens can even track when the screen-saver on a user's PC starts, and then propagate a presence update that informs others that the user is away from his/her computer.

■ **Support for “off-system” clients, phones and end-points:** Most packages support full functionality only between and among end-users who are full members of the community, with all the appropriate client software, licenses and permissions. Some vendors, however, are more willing to extend features and functions out to off-system end-points than others. For example, of the packages reviewed, only 3Com's lets an on-system user deliver a voice mail message directly to any off-system phone user, who does not even need a voice mail account. The off-system recipient's

phone rings and a voice announces: “You have a stored message. Press “1” to hear the message.” The off-system recipient can then even send a reply voice mail.

■ **Intelligent Find-Me/Follow-Me:** As with presence, all the packages let users set, more or less statically, where they want their phone calls routed. Oddly, however, none of the packages reviewed apply any proactive measures to ascertain and update the user's actual phone location, such as sending a periodic “ping” to see if the individual being contacted is cell-phone-accessible, although Nortel and Siemens seem to be working in this direction.

■ **“On-demand” conferencing:** All the products let you set up scheduled audio conferences, usually where messages inviting members to participate are sent out with conference details. But only Mitel and Siemens let you set up conferences dynamically—also known as “on demand” and “ad hoc.” In such cases, calls are placed—automatically and concurrently to all members in a predefined workgroup—and a bridge conference is under way as soon as users answer their phone. Interactive, Nortel and VocalData also are moving in this direction.

■ **Videoconferencing:** Of the packages evaluated, only Mitel now offers real, multi-party videoconferencing. Up to four end-user sites can be video-displayed together on a screen. Set-up uses the exact process used to establish an audio conference. It is straightforward, it works and quality is good (using 384 kbps per quarter-screen image), although it gets jerky when there's a lot of motion or movement.

■ **Collaboration apps:** Siemens is the clear winner here with OpenScape. Especially effective is the vendor's real-time document sharing and viewing application. Any number of conferees can view the same document, while a moderator, who has sole “write” permission, dynamically edits it. Nortel is rolling out more in this collaboration space and will soon be a contender. Mitel currently bases its collaboration capabilities on Microsoft's NetMeeting, which is a component of its current videoconferencing package. But the vendor plans to drop NetMeeting and move this functionality under Your Assistant, with equivalent, Mitel-provided applications.

Voice And Fax Handling

In “unified messaging” systems, there is clear movement away from proprietary handling of voice and fax files. As shown in Table 3, .WAV file formats are now used in almost all cases for voice mail storage and transmission. A .WAV voice mail file can readily be stored, transmitted and played out on any PC. Similarly, .TIF is now the format of choice for faxes. A .TIF file can be opened and displayed in virtually any Windows desktop environment without requiring a special viewer application.

Only Nortel and VocalData, of the packages evaluated, still retain some use of a proprietary voice mail format, although their voice files are readily translated to .WAV for voice mails being sent off-system. Interactive uses an 8-kbps compression for its voice mail .WAV files, and Mitel, by default, uses GSM vocoding at 13 kbps.

Our evaluation found that both of these compressed formats provide similar, very good audio quality—perhaps 80 percent of the quality of full, 64-kbps-encoded .WAV files. This being the case, the compressed format is definitely a good deal, as it greatly improves voice mail storage requirements and transmission-bandwidth efficiency.

Only VocalData, of the vendors tested, does not now support Text-To-Speech processing. TTS lets users call in and retrieve their email by phone—via the Telephone User Interface, or TUI.


We came to two conclusions about TTS. First, the quality of the TTS “read-out” varies greatly depending on voice-processing packages. The Loquendo and ScanSoft TTSs were the best we heard, rating them 9 on a 10-point scale. Close behind were Nuance and SpeechWorks, rated 8. (Others, including L&H and Microsoft’s TTS, didn’t fare as well.)

Secondly, TTS is an impressive and valuable feature—as long as all the words in the email are spelled out fully and correctly. The TTS packages all vary in their treatment of words that are misspelled, or abbreviated. In all cases, though, the effectiveness of TTS drops off sharply as the incidence of abbreviations and misspellings increase. And unfortunately, email seems destined to be plagued by misspellings, acronyms, and abbreviations for a long time to come.

TABLE 3 Speech And Fax Handling

	3Com	Interactive Intelligence		Mitel	Nortel	Siemens	VocalData
	VCX 7300	EIC	Communité	Your Asst, and others	MCS 5100, CallPilot	OpenScape, Xpresssions	VOISS
Voice mail file format(s)	.wav	.wav	.wav	.wav	.wav or proprietary	.wav	.wav or G.729
Voice mail encoding bandwidth (storage requirement)	64 kbps (8 kB/sec)	8 kbps (1 kB/sec)	8 to 64 kbps (1 to 8kB/sec), settable per system	13 kbps GSM (1.8 kB/sec) is default; settable	8 to 64 kbps, settable; automatically converts proprietary to .wav format for delivery off-system	12 to 64 kbps (1.5 to 8 kB/sec); settable	8 kbps (1 kB/sec) G.729; 64 kbps (8 kB/sec) .wav for off-system delivery
Fax file format(s)	.tif	.tif or .gif	.tif or proprietary, which requires vendor’s fax viewer	.tif	.tif	.tif or .gif	n/a: fax supported only via 3rd party pkg
Unified Messaging maintains a separate message store (for voice mail, fax)	Yes	No, all messages stored on email server	No, all messages stored on email server	Yes, in most cases, but not necessarily	Yes, client unifies all messages at the desktop	All messages stored on Exchange server	Yes
Unified Messaging installation changes customer’s email server or client configurations	No change to server or client	Minor change to server and, optionally, to client	No change to server, optional Outlook and Notes appl’ns for Windows clients	No change to server; client is modified	No change to server; client is modified	Package is tightly entwined w/ Exchange server and Outlook client	No change to server or client
TTS (Text-To-Speech) processing vendor implemented, evaluated	ScanSoft (1)	Microsoft (provided free); and Loquendo (optional)(2)	Microsoft (provided free);and Loquendo (optional) (2)	L&H	L&H	SpeechWorks	n/a; TTS not supported
Relative TTS quality, effectiveness (using Miercom 0 to 10 scale, where 10 is a “perfect read-out”	9 for Scansoft; excellent	3 for Microsoft TTS; 9 for Loquendo	3 for Microsoft TTS; 9 for Loquendo	5 to 6	5 to 6	8	—

(1) Also optionally offers and supports SpeechWorks TTS.
(2) Also optionally offers and supports SpeechWorks and Nuance TTS.



**Only Mitel
supported
video-
conferencing**

Profiling The Participants

The following are summary profiles of the enhanced-services packages reviewed, in alphabetic order by vendor.

■ **3Com's VCX Suite:** 3Com's VCX 7300 application suite, as well as the underlying (and, for now, required) VCX 7200 IP-PBX, is aimed at large enterprises, although 3Com is working to enable the lower-end NBX line to tap these messaging applications, and for the NBX to also operate over SIP, 3Com's strategic direction for its IP-telephony.

As Table 2 shows, most of the key features and functions of 3Com's package are oriented towards call handling and messaging. These include user-controlled Find-Me/Follow-Me, a very effective unified messaging display capability and impressive Text-To-Speech (TTS) processing for audio retrieval of email.

We also reviewed features in late-beta and/or under development, including: Virtual Calling Card, where calls can be placed or returned from within the voice mail system by remote users; Message On Demand, an IVR enhancement, where often-requested information is delivered automatically or via auto-attendant prompting; Message Alert, where notification of message waiting is issued to various endpoints in any combination of formats; and voice recognition.

3Com touts the fact that its Sun Solaris-based VCX package was developed for carriers and service providers, claiming that a high-end Solaris server can handle 50,000 concurrent callers. Especially well done in the 3Com package are the user-settable aspects of call control, and for scheduling and automating delivery of voice mail messages.

■ **Interactive Intelligence's EIC and Communité:** Interactive Intelligence showed two enhanced-services platforms—the Enterprise Interaction Center (EIC), a full IP-PBX with native advanced features and Communité, a standalone unified-messaging system.

On the IP-PBX side (EIC), using a thick-client Windows application, the Interaction Client supports and drives the SIP-based softphone of Windows Messenger. Interactive expects to offer a Web-based interface, too, by year-end. The client supports its own Chat/instant messaging and presence mechanisms, features that some other packages deliver via Microsoft client software.

One of EIC's advanced-feature strengths is unified messaging. Voice mail and fax are well integrated with email via the Outlook client interface, especially if the vendor's plug-in is applied, which adds some options and icons to the Outlook client interface. The user can select, via the client software, to launch a pop-up whenever a new phone call comes in. This enables a variety of innovative call-disposition options, like sending the caller to voice mail while you listen, or answering and recording the ensuing conversation as a voice mail.

A big-brother version of EIC, called CIC, which was not evaluated, adds ACD/call-center applications and features including formal audio conferencing. With EIC, conferencing is limited and *ad hoc* only: The user calls intended conferees and, if they answer, that connection is then dragged and dropped into a conference window.

We also evaluated Interactive's Communité, a unique unified-communications package. Based on a Win2000 server, the product nestles ingeniously between a telephone switching system and a customer's email environment, and delivers full unified messaging—email, voice mail and fax integration. What's unique is that the server supports most leading email and telephony or PBX environments, yet it stores no email or voice mail, and it requires no changes to the customer's email server, storage or directory.

The Communité server includes SIP call control, and can either drive a network of third-party IP phones and VOIP gateways, or “back end” a telco switching system or customer PBX (via TDM/PRI links). The package can even work with a Cisco CallManager VOIP network, and is reportedly a major competitor to Cisco's own Unity package. Communité does not need to “talk” Cisco “Skinny” to IP end-points; rather, it obtains all necessary Cisco call handling and call-control info needed to provide its messaging services to CallManager users via the TAPI/TSP software interface that Cisco supports.

■ **Mitel “Your Assistant Pro”:** Mitel has its work cut out to successfully incorporate all the features and functions into Your Assistant Pro that it said will be completed by the end of this year. The version of Your Assistant Pro we reviewed, which has been shipping for only a few months, delivered about one-fourth of the features and functions shown under the Mitel column of Table 2. Another quarter of the features we viewed—including videoconferencing and advanced audio conferencing—were fully functional but still needed to be integrated into the Your Assistant software structure.

Fully half of the features shown in the table are delivered by other discrete, currently shipping Mitel application packages, including the Messaging Server and Speech Server products. The former provided unified messaging and real-time call handling; the later delivered TTS and voice-recognition services.

Mitel is shipping full multiparty videoconferencing today, the only one of the packages we reviewed that is. It works well and, at \$1,800 per desktop set-up, is affordable. You will need up to a T1 of bandwidth to each videoconference location: A single video image is allocated the full T1 and delivers excellent video, or up to four images each get 384 kbps, and quality is good.

While the Your Assistant software features a thick desktop client, including a very solid softphone, all the messaging features are accessed and

controlled via a Web interface. This seems incongruous, but Mitel said it is transferring selected features and functions from the old to the new Your Assistant.

Some other noteworthy gems of the Mitel package, most expected to be incorporated by year-end: Secure, encrypted Chat/Instant Messaging; auto-attendant-type services front-ended by excellent, speaker-independent voice recognition; and a hot new “knowledge management” application, where all information about a caller is collected via a super-fast indexed search and delivered in real-time as the call comes in.

■ **Nortel Multimedia Communication System 5100:** Nortel offers both a thick Windows client and a thin Web client for users to access the features and services of the MCS 5100. The two have the same neat look and feel, but there’s a few features—collaboration stuff like file transfer and whiteboarding—that require the Windows client applications.

The Nortel package is a full-function, SIP-based IP-PBX in its own right. The vendor expects, however, that users of traditional TDM PBXs also will want the MCS 5100 to back-end their PBXs to deliver the added features. Nortel’s video support is clearly a priority. However, when reviewed in July, videoconferencing on the MCS 5100 package was still only point-to-point.

Our review included a Nortel CallPilot messaging system, which provided unified messaging features and Text-To-Speech handling. The mature CallPilot package supports many email systems and is deployed over just as many non-Nortel PBXs. Nortel emphasizes that the MCS 5100 is not wedded to CallPilot, and indeed the MCS has already been deployed with other messaging systems, including third-party Comverse’s unified messaging. Notwithstanding, CallPilot provided fully half of the features and functions delivered under the Nortel column in Table 2. One of them is an excellent pop-up application for handling incoming voice mails, which lets you readily call back, text-message back or respond with a voice mail.

CallPilot aside, MCS 5100 has a number of noteworthy aspects, too. These include support for PCs running Windows Messenger as off-system voice or point-to-point video clients; excellent call screening and filtering, including a rich array of selectable actions based on who the caller is; very nice whiteboarding; and ongoing, automatic monitoring and adjustment of VOIP calls in real-time, based on QOS conditions.

■ **Siemens OpenScape:** As with a few others, the evaluation of Siemens’ package also employed a standalone messaging system, Xpressions. But OpenScape was ahead of the others in the completeness of the user interface for access to, and wizard-based set-up of, the broad spectrum of features and functions. That may be partially because the main OpenScape user interface is a Web por-

tal, rather than a complex set of integrated Windows applications.

OpenScape is screwed more tightly into the Microsoft world than any of the other products evaluated—it has tight integration with Exchange, Outlook and Windows Messenger, and reliance on the RTC server component of Windows 2003. That’s good news for heavy Microsoft customers, but others need take care—support for Domino/Notes, for example, is minimal.

And OpenScape is positioned to exploit the SIP, VOIP, security/authentication, directory and multimedia capabilities that the underlying Microsoft infrastructure offers. These provide the basis for OpenScape’s presence management, videoconferencing (still just point-to-point when evaluated), USB camera and other peripheral device support, contact-list support and overall system management.

With all this put together, OpenScape delivers the most advanced automated-presence management of the products reviewed, as well as document sharing and viewing. Not surprisingly, mainly Microsoft applications and document formats are supported, along with Adobe PDF.

OpenScape has taken an early lead in areas of collaboration and presence management, which competitors will seek to beat. There is collective calendaring, whiteboarding; you can even conduct a WebEx session from within the document viewer of a collaboration session.

■ **VocalData VOISS:** The VOISS package, a fully functional IP-PBX, includes a broad set of basic- and enhanced-services applications, including a fully functional Contact Center. VocalData offers its system to carriers and ISPs, and some two-dozen service providers now are delivering IP-Centrex service based on VOISS, according to the vendor.

The key components all run at an ISP’s POP—IP phones are the only equipment on customers’ sites. Call control runs on a fully redundant, high-powered, Sun Solaris server pair, which the vendor claims can support hundreds of calls per second and can handle over 100,000 subscribers. The enhanced-services applications run on redundant VxWorks-based servers.


A special VocalData server transparently handles firewall traversal for all VOIP calls, requiring no changes to customers’ firewall or NAT set-ups. And the system’s Java-based management server can be partitioned so that each individual customer can monitor and manage their own IP-PBX configuration.

The system supports SIP, MGCP and Cisco’s “Skinny” (SSCP) protocols, and can run all of these at the same time. Not surprisingly, the package interoperates with a broad array of third-party VOIP equipment.

During our evaluation we placed calls between Cisco, Pingtel, Polycom and IP Blue phones that collectively were running all three VOIP call-con-



**Siemens’
OpenScape
is tightly bound
to the
Microsoft world**



**A suite of
“killer apps”
will deliver
productivity
and ROI**

trol protocols. Over a dozen different third-party IP phones are supported, along with dozens of media servers, VOIP gateways, integrated access devices, cable modems, etc.

All feature access by users is via a standard Web browser interface, which rates very high on an ease-of-use scale, along with a separate pop-up application for real-time call disposition. Other notable pluses with the package include client software that tightly integrates with MSN Instant Messenger, including presence support; and on-demand audio conferencing.

Conclusion

Today’s “advanced-services” packages and platforms vary considerably in market focus, platform base (server hardware and operating system) and feature function support. Among the widely supported features are unified messaging for voice mail, email and fax, scheduled audio conferencing and rules-based voice-call routing, like Find-Me/Follow-Me. The applications and features that are being readied for market include on-demand conferencing, multiparty videoconferencing and collaboration capabilities like whiteboarding, IM/Chat and document sharing.

The success of these packages may put to bed the issue whether VOIP has a “killer app.” It may

turn out to be not a single application, but the right mix of applications that deliver clear productivity gains and return on investment, which propels us into an IP-telephony future□

Companies Mentioned In This Article

- 3Com (www.3com.com)
- Comverse (www.comverse.com)
- Interactive Intelligence (www.inin.com)
- IP Blue (www.ipblue.com)
- Loquendo (www.loquendo.com/us)
- Microsoft (www.microsoft.com)
- Mitel (www.mitel.com)
- Nortel Networks (www.nortelnetworks.com)
- Nuance (www.nuance.com)
- Pingtel (www.pingtel.com)
- Polycom (www.polycom.com)
- ScanSoft (www.scansoft.com)
- Siemens (www.icn.siemens.com)
- SpeechWorks (www.speechworks.com)
- Sun Microsystems (www.sun.com)
- VocalData (www.vocaldata.com)