

Open Communications: Standards and Integration

Vendors have traditionally clung to proprietary implementations of their voice systems. That's beginning to change, and it will evolve further as open standards prove their worth.

By Eric Krapf

The foundation of the next generation of enterprise communications is open standards and systems integration. This openness will provide enterprises with lower cost of ownership, faster time to deploy new solutions and greater flexibility; it will also enable greater mobility and functionality for end users.

Within the communications industry, there's widespread agreement about the most important standards, and they roughly align with the two kinds of integration that most experts see as offering the greatest benefits moving forward:

- **Session Initiation Protocol (SIP)**—SIP will provide the means for the many and varied elements of a communications system to talk to one another, and hopefully this will be possible regardless of who manufactured the different elements. Originally conceived (as its name suggests) as a way for endpoints to signal one another to begin a call or session, SIP now serves to connect not just endpoints to one another (e.g., telephone to telephone), but also to connect elements within a diverse communications system, including call servers, contact center routing engines, messaging platforms and a host of other applications.

SIP will thus help to unify communications, so that, in the classic example, a single session can start with an instant message, escalate to a voice call and on up to video. And, at the same time, if SIP is implemented by vendors in an interoperable way, customers will be able to implement a best-of-breed network in which the different elements of their communications infrastructure can be provided by multiple vendors.

Though SIP is clearly the most important communications protocol, it's not the only one. XML is often used to drive applications on endpoints such as IP telephones, and variations such as VoiceXML and Call Control XML can carry out specific tasks within the course of a communications session. But ultimately, how easily a multi-vendor system can be built and integrated, and how efficiently it can run, will depend on SIP—or, to be precise, it will depend on how the vendors implement SIP.

- **Services Oriented Architecture (SOA)**—SOA is not a standard itself; rather it's a class of standards or an approach to application interfaces. The goal of a Services Oriented Architecture is to break applications down into discrete elements or services that can be opened up to other services, and these services can be pulled together to create functionality tailored to specific business practices.

The value of this approach for communications is that, if both communications apps and business process apps implement SOA, it will be possible for enterprises to “communications-enable” their business processes without having to undertake extensive integration projects. In the most basic example, an enterprise could add telephony functionality to the exception-handling portion of a supply-chain application, such that a problem in the supply chain triggers the automatic setup of a conference call between the individuals responsible for that business process, so as to facilitate problem resolution. The call setup can be enabled via integration to another important standard, the Lightweight Directory Access Protocol or LDAP, which drives corporate directory access.

Obviously, these standards need to be studied in much greater detail than this article has space to provide. Here are some Web links that can supply you with a much more granular look at the standards:

SIP

- ◆ The IETF’s working groups around SIP and IP-telephony can be found at www.ietf.org and www.softarmor.com
- ◆ Tech-Invite (www.tech-invite.com)
- ◆ SIP Tutorial at iptel.org, (www.ipitel.org/sip/siptutorial.pdf)
- ◆ SIP versus H.323, also at iptel.org, (www.ipitel.org/info/trends/sip.html)

Voice XML

- ◆ Voice XML Forum: www.voicexml.org

Call Control XML

- ◆ W3C: <http://www.w3.org/TR/ccxml/>

SOA

- ◆ Tutorial: <http://tinyurl.com/4rrqto>
- ◆ Open SOA Collaboration: <http://www.osoa.org/display/Main/Home>
- ◆ SOA Dictionary: <http://tinyurl.com/464j7y>

Migrating to SIP

The impetus for deploying SIP would probably be irresistible if most enterprises were embarking on a rip-and-replace program of forklifting out their legacy TDM PBXs and replacing this gear with IP telephony equipment. Without the need to support an installed base, enterprises would most likely demand an IP communications system that offered the highest level of interoperability among its parts. But enterprises that need to support TDM systems for the next several years require workarounds for SIP-enabled elements installed today.

The problem, according to Erik Papir, Sr. Director - Global Technical Marketing at 3Com, is that some vendors’ systems provide a gateway to SIP (standalone appliances or part of the IP-PBX), but aren’t fully standalone SIP systems themselves. This means that middleware solutions can tie your legacy TDM equipment to your new SIP solution, but they can’t stand alone as a communications system; they are, as Papir says, “something that sits on the side, but if you pull away all the TDM elements, you won’t have a functioning system at that point.”

Why is that less than ideal? “It’s a few things,” explains Erik Papir. “Certainly it does raise TCO [total cost of ownership]. The other disadvantage is that you’re not really leveraging the applications or the flexibility of a SIP architecture.

This is a common problem for vendors who have to protect installed bases of legacy technology. Even if the vendor wanted to push the new technology rapidly, the incentive is for them to encourage customers to retrofit existing gear, rather than opening up the procurement to competition from all comers, and risk losing that customer account. This has its up side—the customer can make a more gradual migration and doesn’t have to worry about losing existing functionality—but they also don’t gain the new benefits.

In fact, Erik Papir compares the situation to the beginning of the IP telephony industry, when 3Com’s NBX was one of the industry’s first PBXs that was built from the ground up with IP, instead of IP-enabling a legacy system: “Early in the NBX days, we joked that the traditional vendors would insert an Ethernet card in their TDM switch, and then they magically had VoIP. I see these bolt-on SIP solutions being the 2008 version of what was done in the late ’90s,

But what, specifically, are the TCO and flexibility advantages of a pure SIP solution? The original justification for a standard call control protocol was that it enables enterprises to pick and choose endpoints, to avoid locking the enterprise into expensive desk sets that they can only get from the vendor who made the PBX. And that’s turning out to be valid in some instances, where \$40 SIP phones can be deployed in common areas or other locations where only basic call features are required

Yet this is just scratching the surface. The real benefit is that, if your communications system is SIP-compliant at its core—i.e., the call control platform—you can integrate communications with other applications more quickly and with smaller resources required for the effort. Veterans of the CTI industry’s competing standards and proprietary implementations recall that such integrations were hardly a trivial effort.

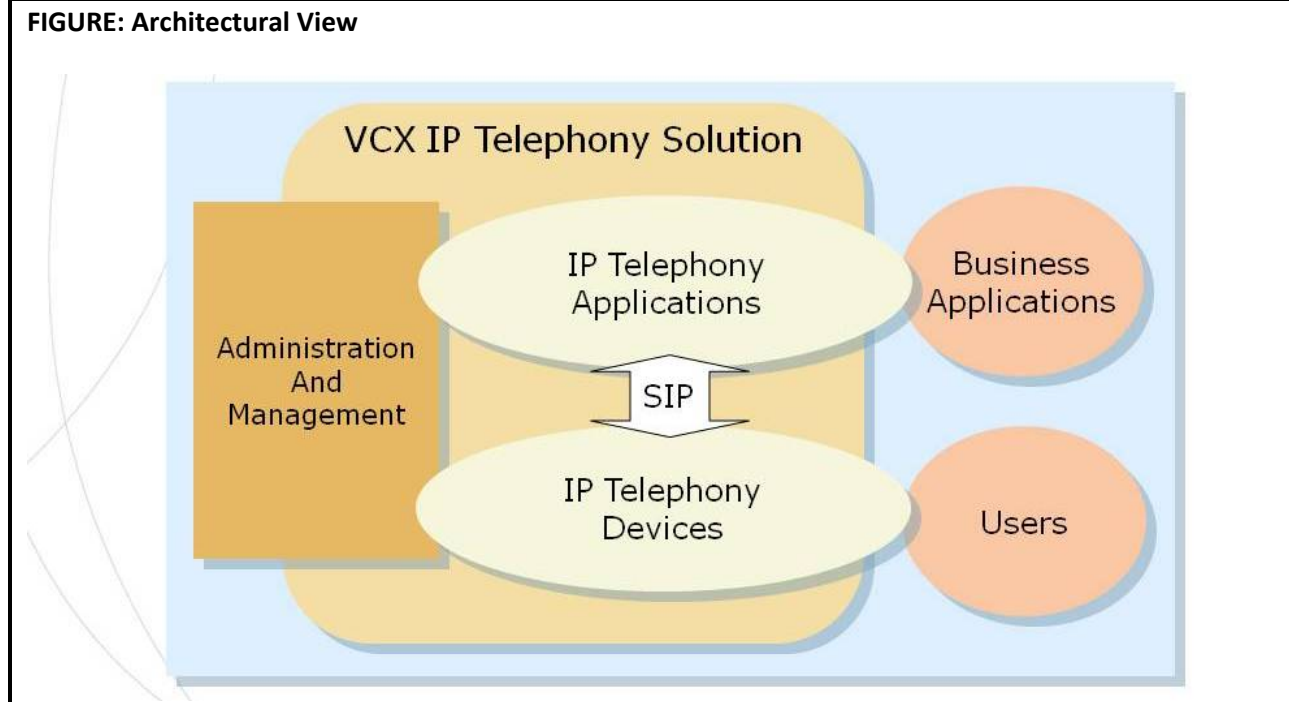
With SIP, says Erik Papir, “If an IT department is trying to solve a business issue or integrate communications with some other part of their business, they can go out and find those applications, and not worry that they have to buy somebody’s branded solution that has been “certified”. A huge premium is paid if the person you’re buying your telecom solution from needs to provide every last connector and hook to get into the other applications and platforms; they’re going to charge an arm and a leg to do that.”

Papir cites an example that includes the ultimate case of enterprises being able to go it alone, without vendor constraints: A 3Com customer implemented the open source package SugarCRM, and they were able to integrate their 3Com communications platform with SugarCRM: “They basically did it without 3Com having to be there every step of the way, and having to buy some bogus licenses from 3Com. They had the 3Com VoIP in place, and they implemented SugarCRM and were able to integrate with the phone system.

“We provide the building blocks to the architecture. Our customers are implementing some fascinating solutions without requiring us to be there every step of the way,” Papir said.

The Architectural View

The **Figure** on Page 4 shows how a SIP-based system—in this case the 3Com VCX—functions within the enterprise. IP telephony applications—anything from call control to contact center functions and still-to-be-developed applications—run on IP telephony devices. Such devices could be desktop telephones, mobiles, PC-based softphones, or any other end user device. These end devices, running client software, generally will connect with servers upon which the IP Telephony applications are running.



Note also that in the Figure, IP Telephony applications overlap “Business Applications,” which exist outside of the VCX solution itself. These business applications may be the popular office productivity applications that most knowledge workers have on their PCs today, or may be any of the business processes software—off-the-shelf or custom-built—that run enterprises today. Whatever the application, the overlap with IP Telephony means that end users can access their communications capabilities directly out of their business applications, and also that communications can be embedded in the applications so that communications can be initiated automatically as part of the business processes.

Note also that IP telephony no longer means call control in a traditional telephony sense. While voice-call setup will always be a critical element of the applications infrastructure—and while it may act as the core of a given communications session—there will be times in the Unified Communications world where presence, for example, may drive a session. In such an instance, the “IP Presence” engine may take the lead in finding the party who is to be contacted, establishing the necessary connections with the call control or conferencing server(s) to set up the desired type of session, and dynamically changing that session’s characteristic as parties are added to or dropped from the call, and new media such as voice or video is added to a session that began as an instant messaging exchange. This is an especially valuable capability in scenarios that leverage the aforementioned integration with Business Applications.

SOA: Adding Communications to Business Applications

That last point leads us to the importance of SOA in the new, transformed communications world. As mentioned above, SOA standards let portions of applications be exposed to other elements of the IT infrastructure, including (for our purposes here) the communications systems. That means that internal enterprise developers or independent software vendors can create, almost on the fly, new services that combine different elements of functionality into a service that can be tailor-made to a given task or even individual.

“This is similar to the My Yahoo! service,” explains Erik Papir. “When you go to My Yahoo!, you sign up for an account, you point your browser to My Yahoo!, and very easily build your own menu of services. So if you want news, weather and sports, you go to My Yahoo! and add those services. Now, if I want to add another service, such as movie listings, the ability to just click on a module and be able to get movie listings, as another option, is something that’s easily accomplished in the My Yahoo! world.” Similarly, in the communications world that we’re evolving to, you start with the application platform and add services. “So initially it might be telephony or messaging or presence, for example,” Erik Papir said. “But down the road you may want to add conferencing. It’s just that building blocks approach of being able to add additional applications. There’s many applications that haven’t been created yet. Certainly all the UC/UM [unified communications/unified messaging]-type applications with integration to e-mail, and all of the Lotus Notes/Domino type of integration, and the Microsoft integration is obviously a part of that.”

Obstacles and Prerequisites

So how do we get from where most enterprises are today, to the environment that Erik Papir pictures, where adding communications functions isn’t much more complex than adding elements to a My Yahoo! page? There are prerequisites to making the systems work, and of course there are obstacles standing in the way of them actually coming to pass.

The most obvious prerequisite is that vendors actually have to deliver standards-compliant systems. “When it comes to implementation, it still is a very closed and proprietary implementation that most vendors are going to propose,” Papir said. “So I think the one key part of it is actually having a community of vendors or an ecosystem of vendors that truly support the open standards push and really not only talk about it, but practice what they preach.”

The second key piece is support for enterprises once they start building multi-vendor systems. “Who do I call?” becomes the key problem, according to Erik Papir. “This is probably one of the things that is preventing some IT departments from branching out and doing a lot of this today,” he said. “Especially when you’re talking about telecommunications and business management software packages as arguably the two most critical applications in a corporate network, and it’s starting to not go through the traditional, old-school ways of having one vendor with a massively expensive maintenance contract, and figuring out ways to actually support the entire solution .”

So who *are* you going to call? Papir says that the model IBM built around its move from being a mainframe supplier to a company that packages software and services into an offering that can support the customer, is likely to be one prevailing model. Other customers, he believes, will choose to go the open source route, potentially working with support providers in this market.

Finally, he believes a significant number of enterprises will attempt to support the entire model themselves, though he adds that, “in some of the larger IT departments, they’re not going to be willing to support an eighth-grade science project. That’s just not something a major company’s going to do. Because then they’ll be on the front page of every headline when they go down.”

The final, and perhaps the most important prerequisite, is that customers have to *demand* openness. Plain and simple, interoperability just won’t occur without this kind of pressure, which Erik Papir concedes isn’t quite there yet. He attributes this to the relatively slow rollout of IP telephony and the fact that the first generation of IP telephony systems aspired to be little more than a like-for-like replacement of TDM systems.

“Arguably, from a user experience, they’re not getting that much more than they had before,” he said. “Until you start really getting into the mobility and the unified communications part of it, they’re basically getting the same functionality as they had. However, in the next years—and Microsoft will push this more, just because of their software approach and the OCS [Office Communications Server] client—the more software and mobile approach with Windows Mobile—I think Microsoft will help force this. And as you get people away from the desk phone and the traditional TDM features that everyone’s used to and move into the 21st century, really, I think that’ll be the key point where some of these open standards and open services type approaches start bearing fruit.”

Papir also believes that the new model will force the incumbent vendors’ hands. “The two things that are starting to tip the scales are Microsoft and Open Source. Asterisk obviously from the open source side, presents the fresh view and the other side of the world. And Microsoft, for no other reason than they dominate the desktop and everybody knows Microsoft and they’re a viable player. And they’re still early in their story and their game, but it’s one of those things that everybody knows is coming.

“I think in the next few years that the open source story, as well as Microsoft’s growth in the telecom space, will force people to take a look at some alternatives and thinking more about open standards.”

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