Computer Telephony Terms & Technologies

by CHRIS BAJOREK and ALEX POURNELLE

Asynchronous transfer mode (ATM): A communications standard that includes hardware and signaling (such as Ethernet and Token Ring) at speeds ranging from 25Mbps to more than 655Mbps. Among ATM's features is the ability to dedicate bandwidth to particular conversations. Although touted as a replacement for Ethernet, ATM is much more important in the interconnect market. ATM drivers are available for Windows NT but currently use LAN emulation, so they can't directly reserve channels for individual conversations.

Automatic Call Distribution (ACD): A system that answers incoming calls to a call center and transfers them to live employees generally in the order in which the calls came in. Often, the ACD system can interpret caller ID or ANI information and route calls to the appropriate employees after retrieving the callers' records from the corporate database.

Automatic number identification (ANI): Information that comes in at the beginning of each call, usually with in-band Multifrequency Digits (MF) or digitally on an Integrated Services Digital Network (ISDN) D channel. ANI provides terminating CT equipment with the calling party's phone number, so that you immediately know the caller's identity. Companies often use ANI with 800, 888, and 900 phone numbers.

Automatic speech recognition (ASR): A feature that lets computers interpret and respond to spoken commands. A popular PC-based ASR application is the talking typewriter (e.g., IBM and Kurzweil). CT applications let you control voicemail, auto attendant, and interactive voice response (IVR) systems using the spoken word instead of a touch-tone phone. Generally, when a large number of people use the ASR system, it supports a limited vocabulary of a few dozen words. When only one person uses the ASR system (i.e., speaker-dependent ASR), you can train it to recognize a much larger vocabulary.

Channel: A dedicated or apparently dedicated unit of bandwidth. The bandwidth of analog phone calls, for example, is 56Kbps or 64Kbps. The communications industry often aggregates analog calls into T-1s. LANs, WANs, and the Internet are packet-based, and therefore, have no way to dedicate bandwidth to a particular conversation.

Component Object Model/Distributed Component Object Model (COM/DCOM): A protocol for program and data objects to communicate either inside a computer (COM) or over a network (DCOM). DCOM originated from Network Object Linking and Embedding (OLE) and is Microsoft-centric, although it's based on the Open Group's (formerly the Open Software Foundation) Distributed Computing Environment—Remote Procedure Call specification. Some CT applications use DCOM for interprocess communications. DCOM's competitors include Common Object Request Broker Architecture (CORBA) and the almost dead OpenDoc.

Computer telephony (CT): A technology that applies computer intelligence to the making, receiving, and managing of phone calls. In other words, CT systems automatically handle and process phone calls. CT systems often let you use a touch-tone phone or spoken commands to control various aspects of calls. CT products include voice and fax messaging, auto attendants, fax-on-demand (FOD), fax servers, and IVR. Core technologies include voice recognition (ASR), text-to-speech conversion, and the Internet.

Computer telephone integration (CTI): A class of CT systems that interconnect a local PBX or ACD system to a computer system. With CTI, you can control calls by clicking controls on a computer instead of pushing buttons on a touch-tone phone.

Dialed Number Identification Service (DNIS): A feature that sends the dialed phone number to the terminating CT equipment. DNIS lets CT systems use the same equipment to handle different called numbers with different greetings and applications. Companies often use DNIS with 800, 888, and 900

Direct Inward Dialing (DID): A special trunk phone line that passes the last two to four digits of the dialed phone number to the terminating CT equipment. DID requires special hardware to read these digits.

Fax-on-demand (FOD): A system that lets you use a touch-tone phone to receive stored documents on your fax machine. Documents can be data sheets, spreadsheets, scanned pages, or any other printable material. Some FOD systems support faxing Web-based documents, which theoretically lets you maintain only one set of documents instead of two (one for the Web and the other for the FOD system).

Fax over IP (FoIP): An emerging method of sending faxes over the Internet, either to an IP fax server or another phone line. FoIP is different from traditional organizationwide fax solutions in that it sends the much smaller source material (e.g., cover sheet and Word document) over the Internet to the fax server nearest the dialed number.

Fax server: A LAN-based server that manages all incoming and outgoing fax traffic for an organization. A fax server provides centralized management of corporate fax functions. It also enables desktop faxing without your installing a fax card or fax phone line at each desktop computer. Companies often integrate a fax server with Microsoft Exchange or Outlook so that employees visually manage incoming faxes in their inboxes.

First-party call control: The ability to control calls that come to your phone. Microsoft's Telephony API (TAPI) defines a set of commands that let you answer, transfer, park, and forward calls.

H.100: A standard for a physical CT bus interface layer for the PCI computer chassis card slot. H.100 will drive new applications and open new markets.

H.323: A group of International Telegraph Union standards for packet-based videoconferencing. (Previously, the standard for circuit-switched video teleconferencing was H.320.) H.323 is applicable to Internet video because it's based on the Internet Engineering Task Force's Realtime Protocol/Realtime Transport Control Protocol. LAN and WAN teleconferencing often uses H.323, but people often experience significant setup and interoperability problems with it. These problems hamper H.323's widespread use.

Inbound calls: An incoming call that terminating CT equipment answers. For example, if you call a company's voicemail system, your call is inbound to that system.

Interactive voice response (IVR): A system that lets you request information, usually stored in databases, by pressing keys on a touch-tone phone. Automated bank-by-phone services and automated flight information are two examples of IVR.

IP telephony: A generic term for moving voice and fax over TCP/IP networks.

Java Telephony API (JTAPI): A robust, vendor-independent method of communicating between computers and switches, especially in Web browser-based telephony applications. You can layer JTAPI on TAPI or use JTAPI natively with switches supporting it. JTAPI is Sun Microsystems' extension to telephony control.

Messaging API (MAPI): The Microsoft standard for communicating messages (especially email) between applications, either intramachine or on a LAN. People often consider MAPI as a prototype COM API.

Multi-Vendor Integration Protocol (MVIP): A time-division bus and signaling standard for connecting call-processing boards within one chassis or box. In other words, MVIP provides a way for multiple boards to communicate and to pass and signal calls. MVIP has multiple standards of differing densities and usage. MVIP also refers to the GO-MVIP standards body.

Open Database Connectivity (ODBC): The link between a CT application and a database back end. Many vendors write CT applications in Visual Basic (VB). When you use VB, SQL front ends are expensive and difficult to develop. Therefore, vendors use ODBC, which is standard with VB, to link to SQL.

Outbound calls: A call that CT equipment places. For example, if a company's voicemail system sends a message to your pager, the system places an outbound call.

Plain old telephone service (POTS) lines: Analog, twisted-pair phone lines that connect analog telephones and telecommunications devices. Each POTS line uses two active wires. You need to use a modem to send digital data, faxes, and so forth on analog lines.

Public Switched Telephone Network (PSTN): A network that lets you make and receive telephone calls (i.e., not Internet calls).

ReSerVation Protocol (RSVP): An evolving standard to make routers prioritize time-urgent communications. Windows NT 5.0 will have built-in RSVP.

S.100: A standard that defines a set of OS-independent APIs for developing CT applications in an open environment. Applications are portable between S.100-compliant platforms because S.100's client/server model abstracts implementation details of CT hardware and switch fabrics. S.100 is not object oriented (OO). A future S.x00 standard will be OO.

Signal Computing System Architecture (SCSA): An architectural standard for CT hardware and software components. SCSA defines physical interconnecting switching fabric for CT peripherals and more. Many vendors of CT hardware and applications support SCSA. Dialogic launched SCSA in 1993.

Signaling System 7 (SS7): An out-of-band signaling scheme. With SS7, terminating CT equipment makes faster call connections, provides information on who's calling (like ANI does), and provides enhanced call features (such as call forwarding)—all without a PBX. The entire phone network becomes a huge computer-controlled switch with SS7.

SQL (Structured Query Language): The standard for organization-level database queries. Notable Windows NT SQL database providers include Oracle, Sybase, and Microsoft.

Switch: Slang for PBX or phone system. The switch is the box that all phones within an organization connect to.

T-1: A unit of digital bandwidth totaling 1.544Mbps, or 24 simultaneous full-voice channels. T-1, which the US uses for most of its communications, is often cut into fractional units. In Europe, E-1 (2.048Mbps) fills the same role as T-1, but supports 30 channels. On robbed-bit implementations, both E-1 and T-1 take bits from the overall bandwidth for timing and signaling, slightly lowering the available bandwidth of each channel.

Telephone user interface (TUI): An interface that lets you use a touch-tone phone to control a CT application. You simply listen to recorded prompts and respond using the phone's buttons.

Telephony API (TAPI): The standard that Windows 95 and Windows NT use to communicate with phone systems. TAPI 1.0 appeared with Win95 and NT 3.51; TAPI 2.0 came with NT 4.0. TAPI 2.1 is in public beta and adds client/server functions, which are necessary for organizationwide solutions. TAPI 3.0 will be out with NT 5.0.

Telephony Services API (TSAPI): The standard that Novell NetWare systems use to communicate with phone systems.

Text-to-speech (TTS) conversion: A technology that lets CT systems verbally relay text information without previously recording it. TTS works very effectively with IVR systems. For example, with TTS, an IVR system can retrieve an address from a large database of addresses and verbally tell the caller that address. This technology is preferable to recording each address as a separate speech prompt when the number of prompts is very large. With TTS, you can use a phone to retrieve email messages from a unified messaging system. This technology is especially useful for applications in which rapidly changing database information needs to be spoken.

Third-party call control: The ability to control a phone call that is not directly connected to your computer. Third-party call control usually requires TAPI 2.0 or later and a direct connection from the

Unified messaging: A simple concept that can save you time and effort. In a unified messaging system, all your messages—voice, email, fax, and data (such as documents)—go into a unified inbox. Everything in the inbox is accessible from a desktop PC, phone, or laptop computer.

UnPBX: A CT server that uses call-processing boards to provide all functions of a PBX, voicemail, auto attendant, and ACD system. UnPBX systems can use traditional and PC-based phones.

Voice over IP (VoIP): An emerging method for sending voice over the Internet, an intranet, or an extranet. Although VoIP suffers from such problems as dropped packets, variable delivery times, unpredictable bandwidth, and variable speech quality, many long-distance callers use VoIP because it saves them money.

Voice Profile for Internet Mail (VPIM): An umbrella standard for attaching voice (and related material) to email messages, especially over the Internet. VPIM supports many intersystem voice and fax messaging functions, including nondelivery notification, message privacy, and priority mail. De facto limits on email attachment size hamper this standard's use as a universal inbox and follow-me service for all email, voicemail, and faxes.

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