



Macintosh Telephony for Small Business

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Introductions

- Michael Bayer
 - President, Computer Telephony Solutions
 - Author, "CTI Solutions and Systems"
 - mbayer@CTExpert.com
 - www.CTExpert.com
 - Company dedicated to Macintosh CTI

Objectives



- Demonstrate a variety of Mac-based Telephony Solutions
- Empower you to:
 - Identify opportunities to use CTI technology
 - Plan and build Mac CTI solutions
 - Make informed CTI product purchases

Agenda



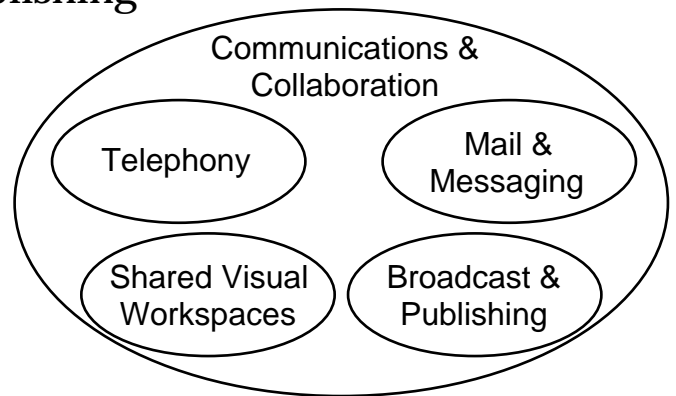
1. Computer Telephony Background
2. Real-world Demonstrations
3. CT Opportunities
4. Buyers Guide to Computer Telephony Products and Services
5. Q&A

Context



- **Communications & Collaboration**

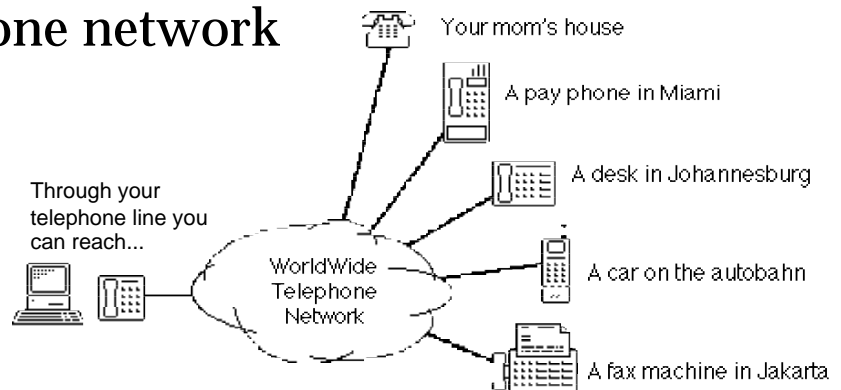
- Telephony
- Shared Visual Workspaces
- Mail & Messaging
- Broadcast & Publishing



Telephony



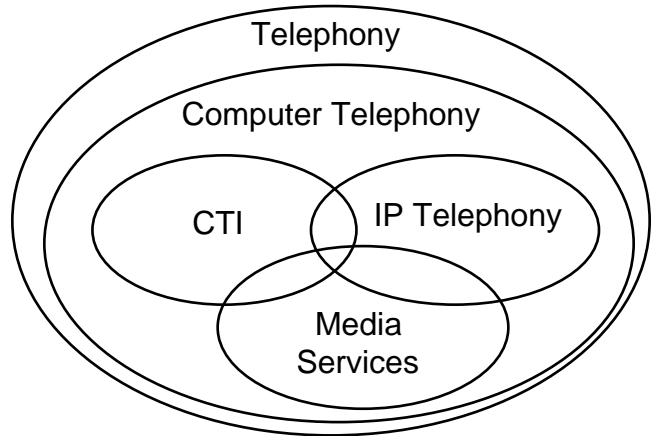
- Associating and allowing communication between two or more endpoints across a telephone network
- Technology that permits use of the telephone network



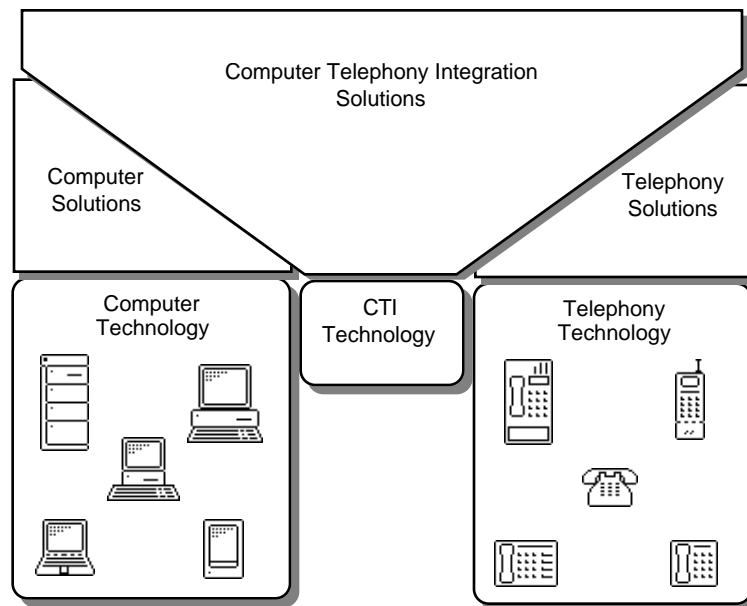
The World of Telephony



- Telephony
- Computer Telephony
- Computer Telephony Integration (CTI)
- Media Services
- IP Telephony



CTI bridges Computer and Telephony Technology



CTI Defined



- Call Control
 - Monitoring and directing calls in a telephone system
- Telephone Control
 - Monitoring and controlling features of a telephone set
- Media Binding
 - Relating other communications/telephony functionality to calls in a telephone system

CT Media Access/Services



- Tone Detection and Generation
- Recording and Playback
- Text-to-Speech
- Speech Recognition
- Modulated Data (Modem/Fax)
- Digital Data (Compressed Video, etc.)
- Call Binding

IP Telephony



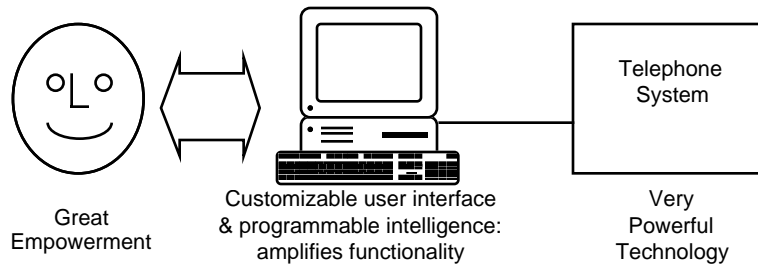
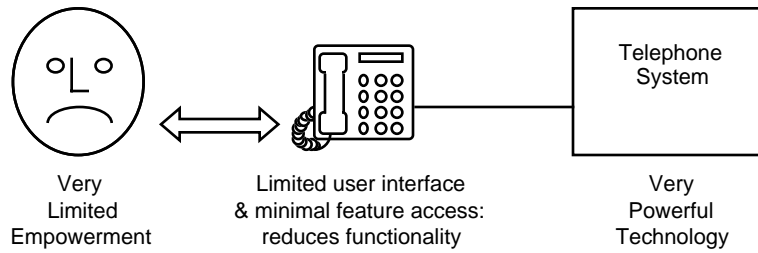
- Switching fabric implemented using packetized voice delivered through conventional IP networking infrastructure
- Standards and specifications for interoperable IP Telephony implementations
- Implementations often based on off-the-shelf computer technology

The Promise of CTI/CT Technology



**Telephone systems
that are
tailored
to the
specific needs and preferences
of users.**

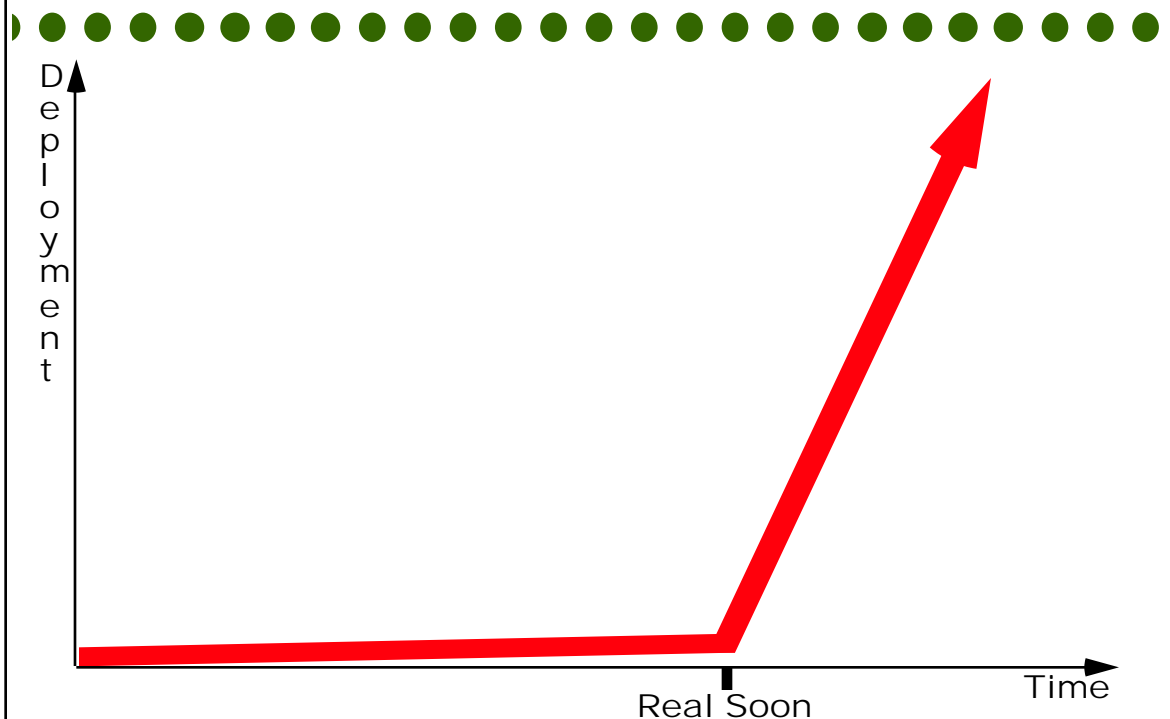
CTI: Before & After



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Any day CTI will take off...



MacWorld NY99 - Macintosh Telephony

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So where are we?



- We haven't reached nirvana yet,
BUT
- Great products are available NOW
- People are doing some AMAZING things

Public Relations Manager



- Single Man Business
- Works from Home Office
- Has a single phone line
- Supports numerous clients
- Work revolves around press contacts

Attorney in General Practice



- All revenue is generated through a fee-for-time basis
- Time and Billing system is mission critical
- A significant portion of time is spent on telephone calls

Photographer



- Call screening
- Follow-me
- Find-me
- Call-back
- Cell-phone support
- Customized outbound messages
- Fax Back

Car Dealership



- Quaterly sales promotions generate many phone calls (despite detailed advertising)
- Call volume takes away from staff time
- Interactive Voice Response (IVR) system eliminates the need to have staff answer repetitive questions

Real Estate Agency



- Telephony-based housing information
- Collection of marketing data to track which ads/signs are working best
- Fax back
- Interested customers can leave voicemail
- Individual agents add, update, and remove listings from any telephone

Mail Order Business

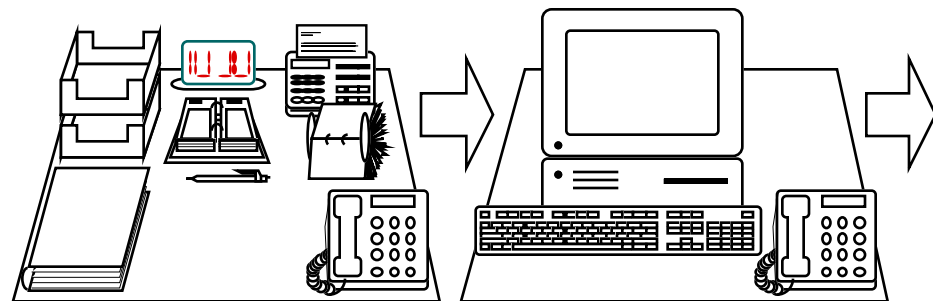


- Combine the features of the earlier demos
- Customers call 1-800 number
- Calls delivered to server and then routed based on callerID
 - Callers routed to agent last talked to if available
 - Priority customers routed to top sales agents
 - After hours, voicemail and IVR is used
- Customer information is presented to agents even before call is answered
 - Screen-pop pulls from customer, sales, and support databases

CTI is Inevitable...



- The Computer
 - the new desktop
- The Telephone
 - the most ubiquitous appliance in the world



CTI is compelling...



- Almost everyone!
- Telephony is the most important communications facility for most people
- Businesses of all sizes rely on the telephone network
- Telephony and telecommunications is one of the world's biggest industries

Business context



- Customer retention and strong vendor/partner relationships now seen as the priority for competitive advantage
 - Focus on "customer relationship" has replaced "customer satisfaction"
- The telephone network (#1) and the Internet (#2) are the interface between companies and their customers
 - Every employee with a telephone is an interface to the organization's customers, partners, and the public at large



Why deploy?

- Improved customer relationships
- Greater morale and productivity
- Increased professionalism
- Coping with downsizing
- Return on IT and Telecom investments
- Reduced operational expenses
- Support telecommuting workforce
- Support mobile workforce



CTI in the office

- Directory dialing
- Logging calls
- Screening of calls
- Support for mobile users

CTI at home



- Separating business and personal calls
- Ensuring privacy of calls
- Integrating consumer appliances
- Taking advantage of alternative networks

CTI in the call center



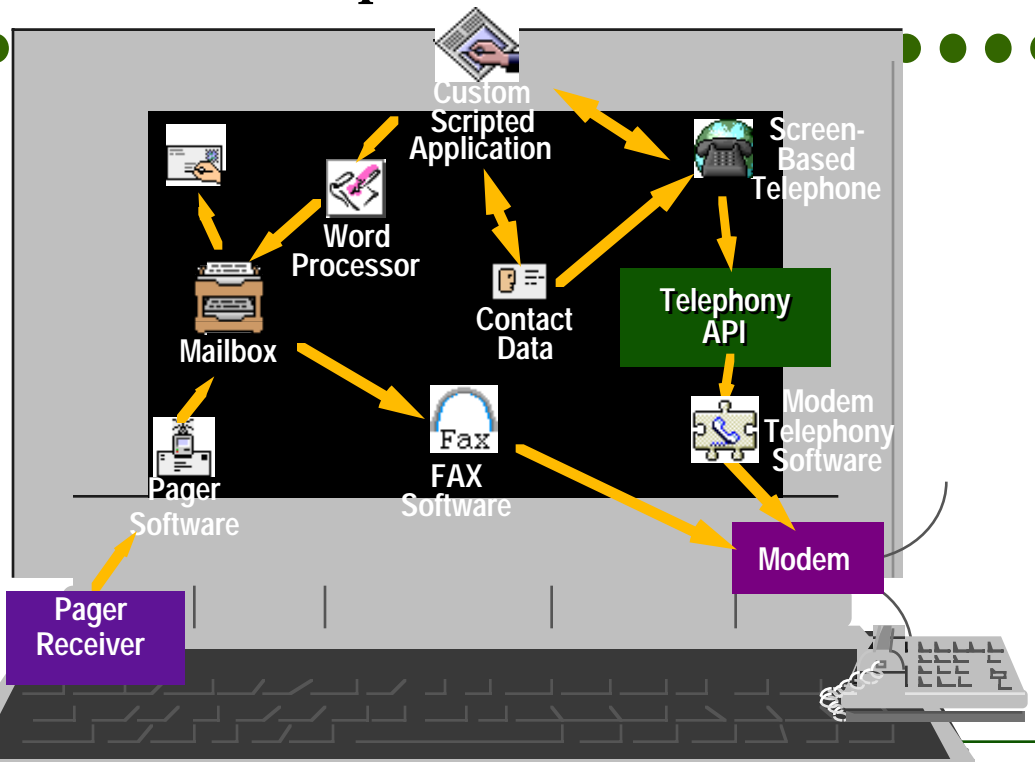
- Routing calls based on caller's number and the number dialed
- Routing calls based on availability of agents, type of caller and history of caller, amount of time spent waiting
- Rerouting of calls with attached information

CTI on the road



- Taking advantage of pay-phones, hotel room phones
- Integration with personal organizers
- Solution Example

Solution Example

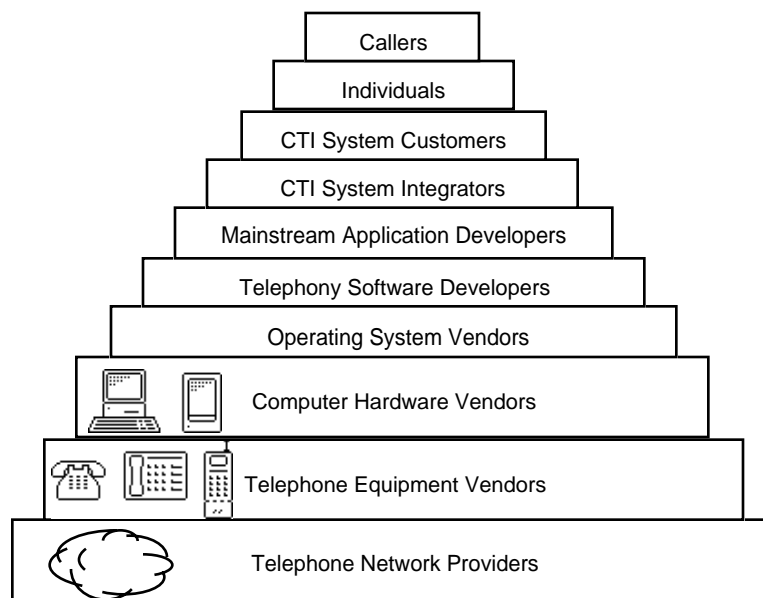


Shopping for Telephony...



- Customer Premise Equipment (CPE)
 - Switches / Communication Servers
 - Telephone sets
 - Peripherals
- Network access
 - Network services
 - Circuit technology

CTI Value Chain

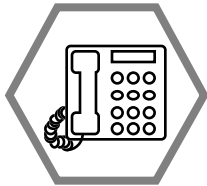


Telephone Systems

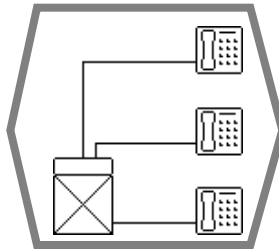


- Component or subset of a telephone network
- Typically the part of a telephone network over which the observer has control

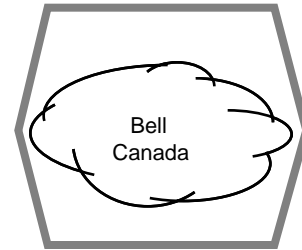
Telephone Set



PBX with Sets



Public Carrier Network



Telephony Resources



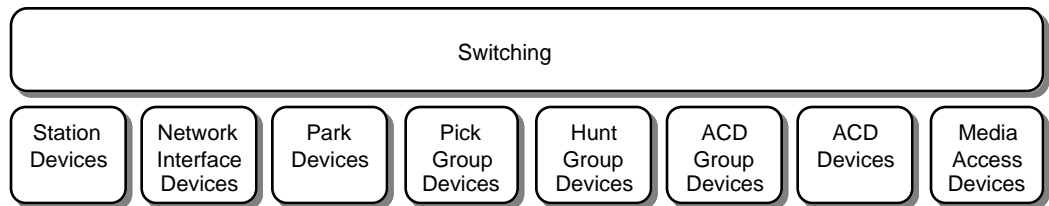
- Switching

Switching

Telephony Resources



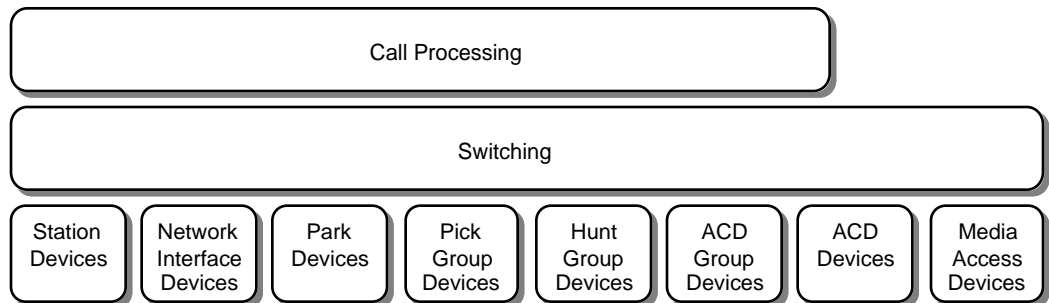
- Devices



Telephony Resources



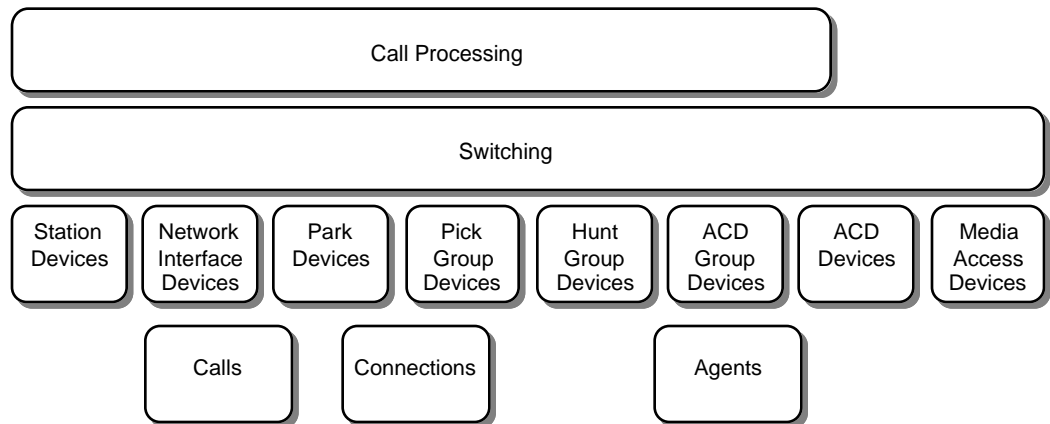
- Call Processing





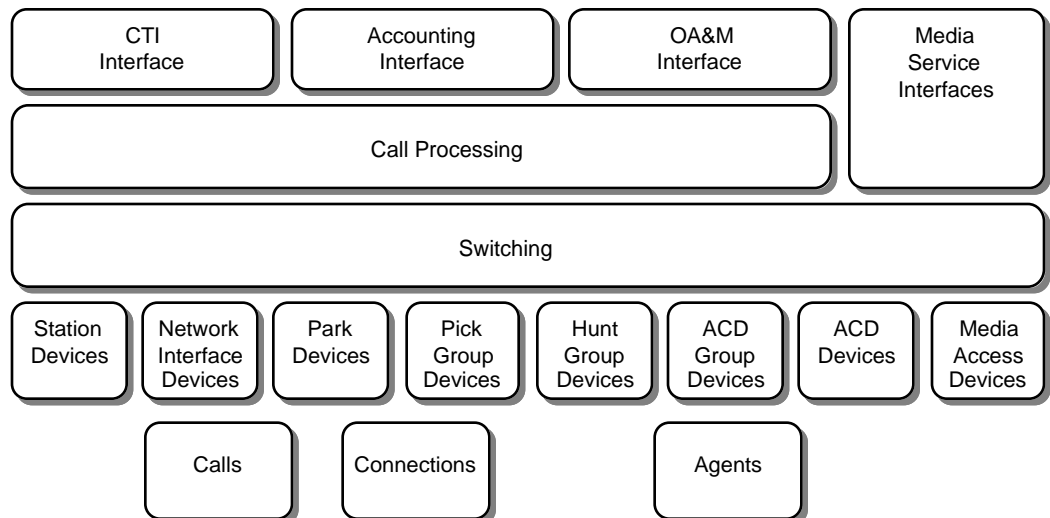
Telephony Resources

- Dynamic (intangible) resources



Telephony Resources

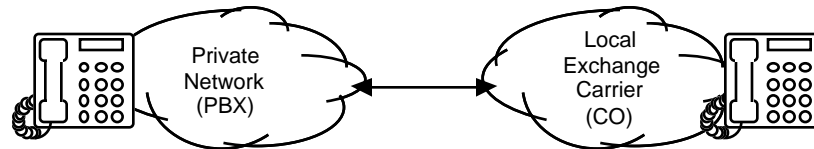
- Interfaces



Public and private networks



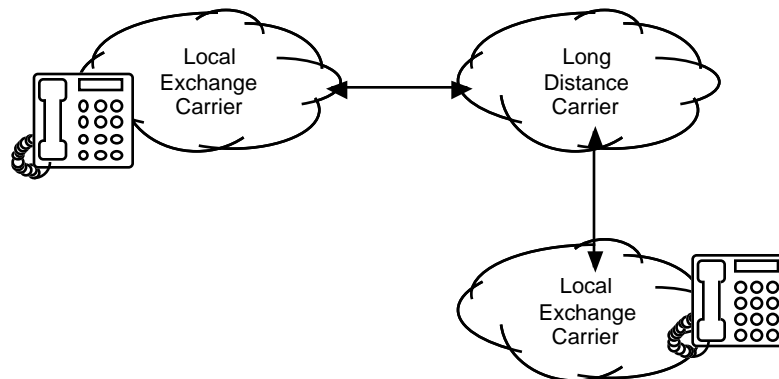
- Public Switched Telephone Network (PSTN) consists of public carrier gear
 - Central Office switches (COs)
 - Toll switches
- Private Networks consist of privately owned or leased equipment
 - Private Branch Exchanges (PBXs)
 - Key System Units (KSUs)



Telephone networks



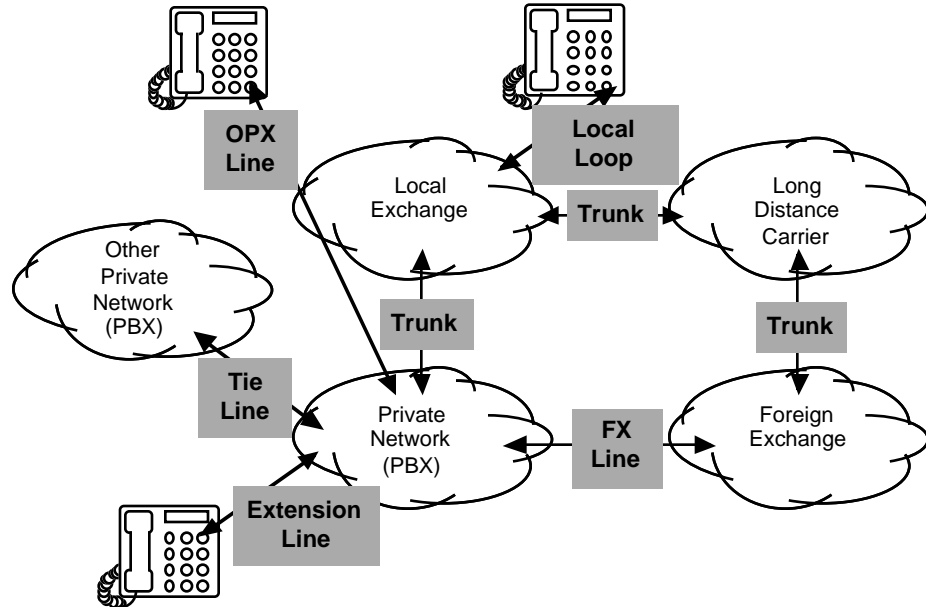
- ...are made up of smaller telephone networks



Connecting telephone equipment



- Circuits have various names:



Circuits



- Analog
- T-1
- ISDN
- DSL
- CableTV
- Wireless
- IP over Intranets and the Internet

The CTI Interface



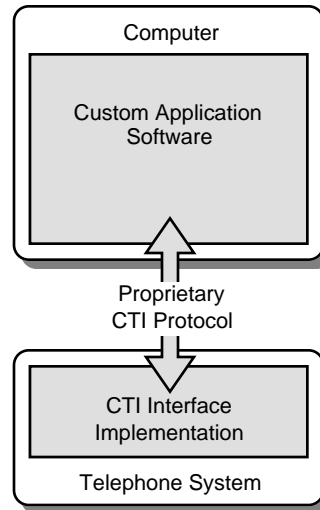
- Allows:
 - Call Control
 - Telephone Control
 - Media Binding
- The protocol for controlling calls
 - orthogonal to media stream standards
 - support for existing CTI servers and applications
- Call control information drives applications

Call Control Information

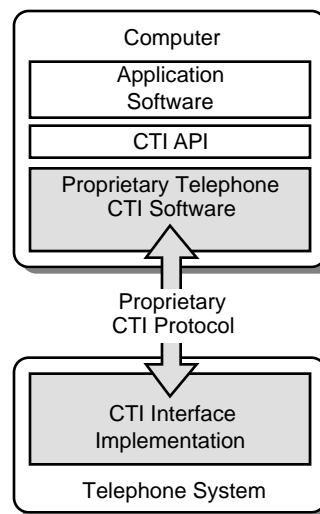


- CallerID
- CalledParty
- Billing Information
- Redirection Information
- Correlator Data
 - Database or web page reference
- User-to-User Data
 - Other personal information

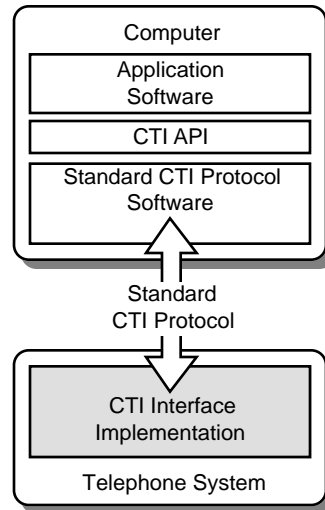
First Phase of CTI: Custom Systems



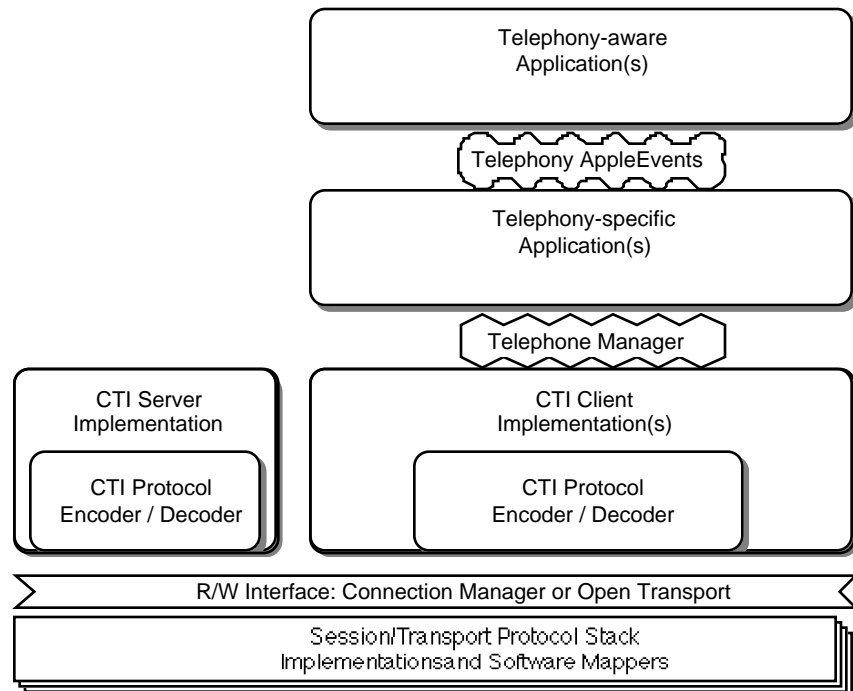
Second Phase of CTI: APIs



Third Phase of CTI: CTI Protocols



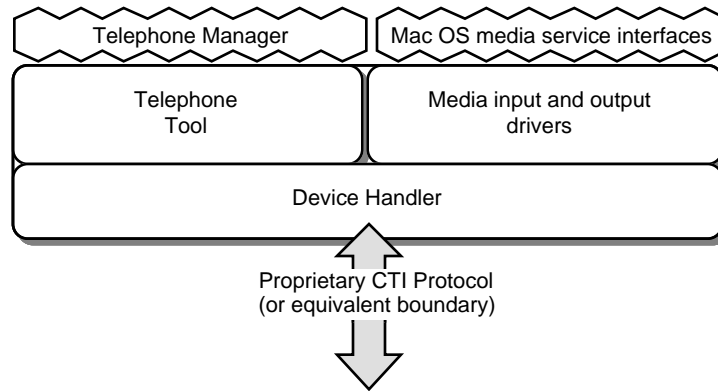
Macintosh Telephony Architecture



Telephone Manager



- One layer of Macintosh Telephony Architecture (MTA)



Telephony Apple Events



- High-Level Interface for CTI
- Typically used to initiate dialing
- Also used for monitoring telephone activity

CTI Applications



- Screen-based Telephones (SBTs)
- Programmed Telephony
- Telephony-Aware applications

SBT Designs

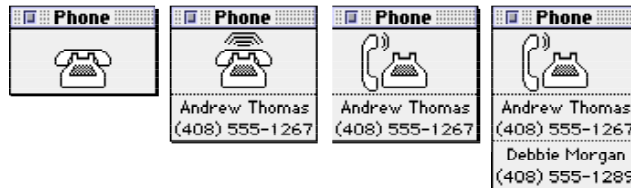


- Phone-under-glass design approach
- Button panel design approach
- Minimalist design approach
- Direct manipulation / visualization

SBT Examples



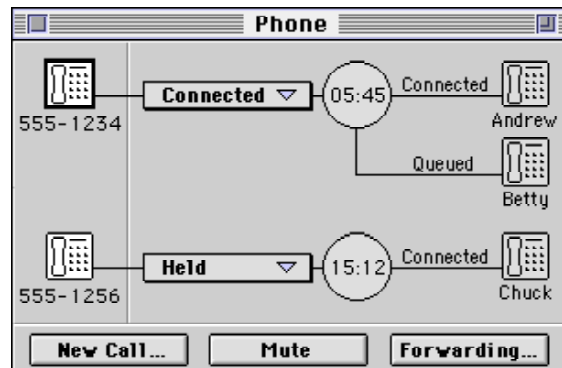
- Minimalist design approach



SBT Examples



- Direct manipulation / visualization design approach



Programmed Telephony Applications



- Delegate phone interaction to your Mac
- Play messages
- Make decisions based on callerID, digits entered, etc.
- Record messages
- Transfer calls
- Make calls

Telephone-Aware Applications

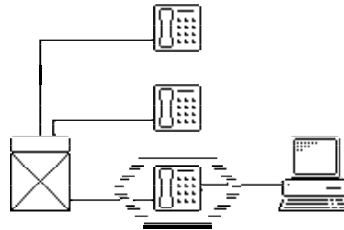


- Out-of-the-box
- AppleScript Attachability
- FaceSpan

Direct-Connect Configurations



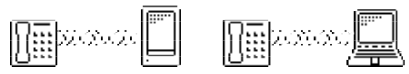
- First Party



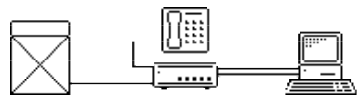
Serial cable/bus configurations



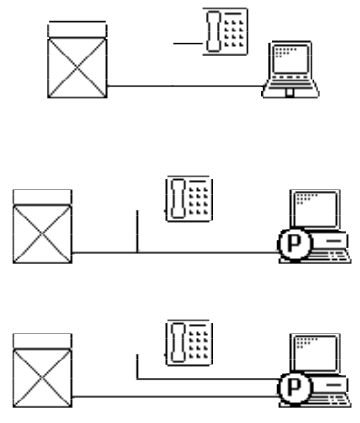
Smart-phone infrared configuration



Serial telephone station peripheral



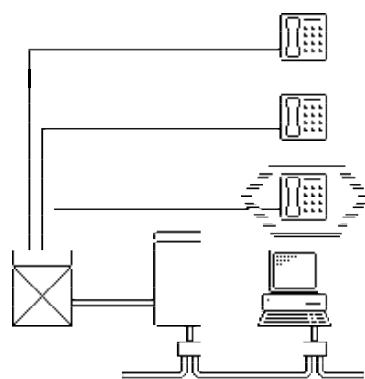
Add-in boards



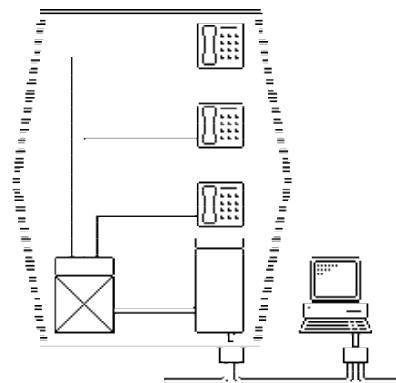
Client-Server Configurations



- Third party

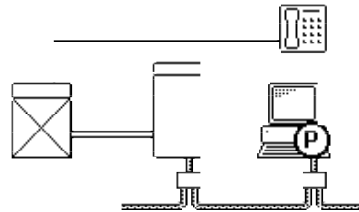


Individual station devices

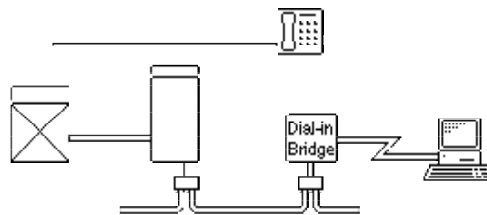


All telephony resources

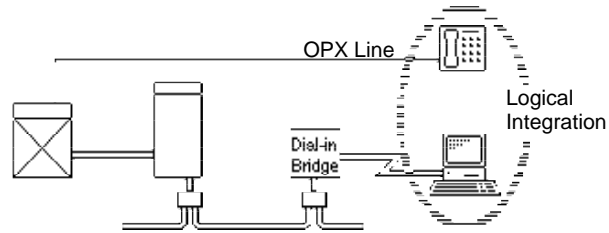
Server-client driver



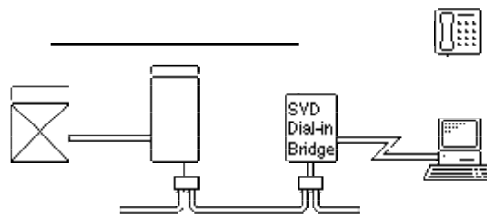
LAN remote access



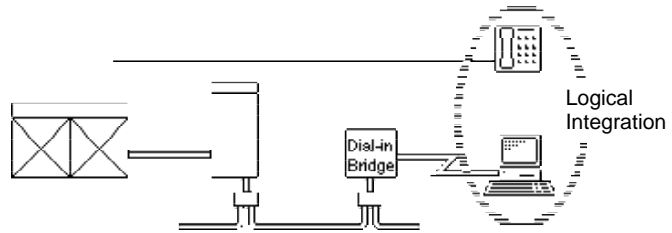
LAN remote access with OPX



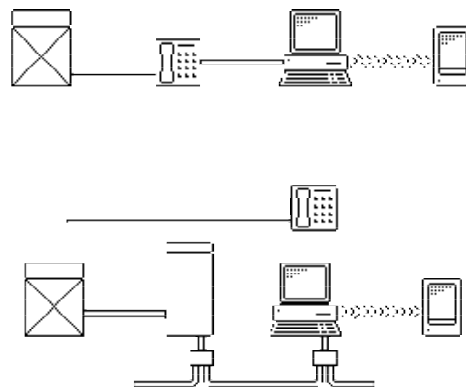
LAN remote access with SVD



CO-Server remote access



Client-client configurations



Screen Based Telephones



- PhoneWatcher - MarkSpace
- USWest Dialer (YoYo) - USWest
- MegaPhone - Bing Software
- RingManager - STF / Smith Micro
- LeoVoice - Hermstedt (Europe)

Programmed Telephony



- Bonzer - Bing Software
- Ring Manager - STF / Smith Micro
- CommuniGate - Stalker
- PhonePro - Bing Software

Direct-Connect Hardware



- Analog
 - Desktop Dialer - Sophisticated Circuits
 - USWest Dialer - USWest
 - GeoPort Telecom Adapter - Apple
 - "Voice Modems" - various
- ISDN
 - Planet Board - SAT/Sagem
 - Planet GeoPort - SAT/Sagem
 - BitSurfer - Motorola
 - LeoVoice - Hermstedt (Europe)

Client Server



- via YoYo for Networks (in Beta - Big Island)
 - Novell Telephony Services (Netware)
 - Lucent CenterVu Server (NT)



Watch this space

- more USB products
- More MTA-compliant products
- More SOHO systems
- "Personal PBX"
- Mac Telephony Products Page
 - www.CTExpert.com/mac



Mac Telephony Myths

- ~~• 1. CTI isn't applicable to average Mac users~~
- ~~• 2. Mac is a 2nd class citizen when it comes to CTI~~
- ~~• 3. CTI products aren't available for the Mac~~



Q&A

