



Overcoming the Hurdles of Recording VoIP Interactions

**A Guide to Selecting the Right Solution for Your
Environment**



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Introduction

Across the globe, corporations and organizations are recognizing the reality of VoIP as the next generation of telephony technology. Recent surveys have asserted that organizations of every size and nature are either investigating or implementing Voice Over IP technology. The recording of voice and screen interactions has also become a standard procedure for many organizations. Liability management, quality assurance, regulatory requirements, and security issues are among the many reasons organizations worldwide are opting to record on a full- or part-time basis. Consequently, as more organizations deploy VoIP, the recording of Voice Over IP is also becoming more prevalent. VoIP recording shipments are projected to grow 39 percent from 2003 to 2008, according to research from Tern Systems. Additionally, Forrester Research projects that recording VoIP telephony lines will outpace PBX telephone systems by 2006. This isn't particularly surprising, given the benefits derived from the convergence of voice and data infrastructures:

- Increased operations flexibility – enabling efficient remote access between individual locations of an enterprise or from remote workers (traveling employees, telecommuting, etc.) utilizing the existing WAN (such as T1, etc.) infrastructure.
- Reduced deployment, management and maintenance costs by utilizing a single wiring infrastructure throughout an organization.
- Increased productivity from converged applications.

VoIP telephony is now viable and relatively straightforward to implement, however, recording VoIP interactions is a little more challenging – a “one size fits all” approach simply isn't appropriate for this purpose. There are various ways to record VoIP interactions. The right solution for your specific needs can only be determined by carefully examining the structure of your operational and IT environment, your call volume, the number of channels you have deployed, and of course your reasons for recording. If you're recording for compliance and liability purposes, failure to record could have serious consequences, in which case it's imperative to understand your options and choose wisely.

For years, Voice Print has been trusted by some of the largest organizations in the world to provide full-time digital recording systems – from government organizations to businesses in the financial and commercial sectors. While evaluating the ways in which VoIP was being recorded by other voice recording systems, it soon became clear that these traditional, first generation methods could not possibly meet the needs of the very diverse global business marketplace.

First Generation Methods of VoIP Recording - Understanding the Many Challenges

Since VoIP and contact center technology continues to evolve at a rapid pace, when choosing a VoIP call recording solution, it is extremely important to think about the future. Most implementation issues can be avoided if the VoIP recording infrastructure is integrated into the overall network configuration at the initial design stage. Be sure to ask the following questions:

- Is there a chance that your organization will employ an 802.11 wireless



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**– Tern
Systems**



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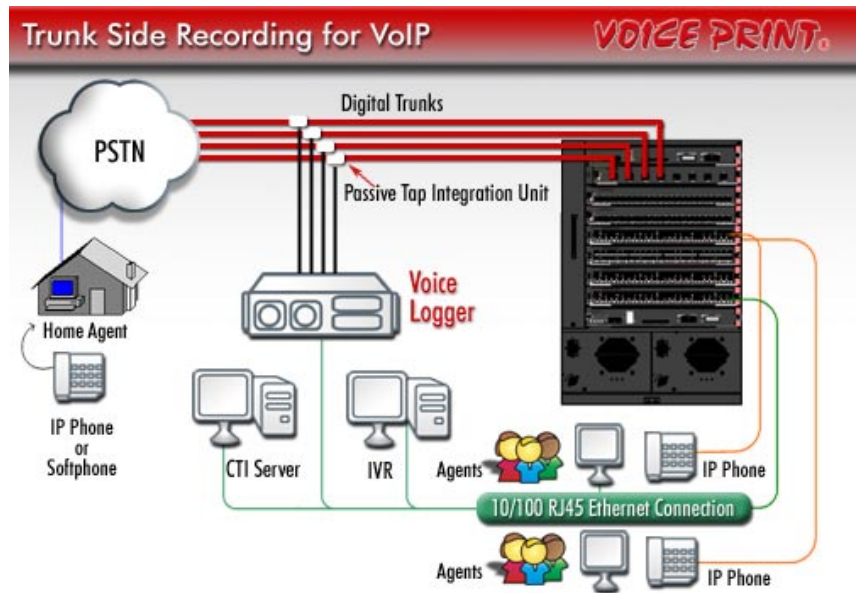
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network?

- Will your organization ever adjust your compression rates as technology evolves?
- Would your organization ever consider employing remote agents in the future?

There are a few traditional methods employed for recording VoIP – trunk side recording, Follow Me!, and host-based packet and media processing. These methods

Trunk side recording has one major disadvantage – it's incapable of recording internal calls.



are effective to a certain extent, however none of them offer the flexibility necessary for high-volume or full-time recording of VoIP interactions.

Trunk Side Method of Recording VoIP

Trunk side recording of VoIP is achieved via a passive tap on the public telephone line (PRI line or trunks) – recording all telephone traffic before it hits an IP telephone system, accompanied by CTI information (via JTAPI with Cisco systems, via ASAI with Avaya IP systems and similar configurations with Shoreline, NEC, Nortel or Mitel).

Advantages

No Impact on Your Network

This method of recording VoIP is simple, highly reliable, cost-effective and has absolutely zero impact on an organization's network/LAN.

Challenges

Incapable of Recording Internal Calls

Unfortunately, trunk side recording has one major disadvantage – it's incapable of recording internal calls. While this is not an issue for certain recording applications, it could be a major drawback for others.



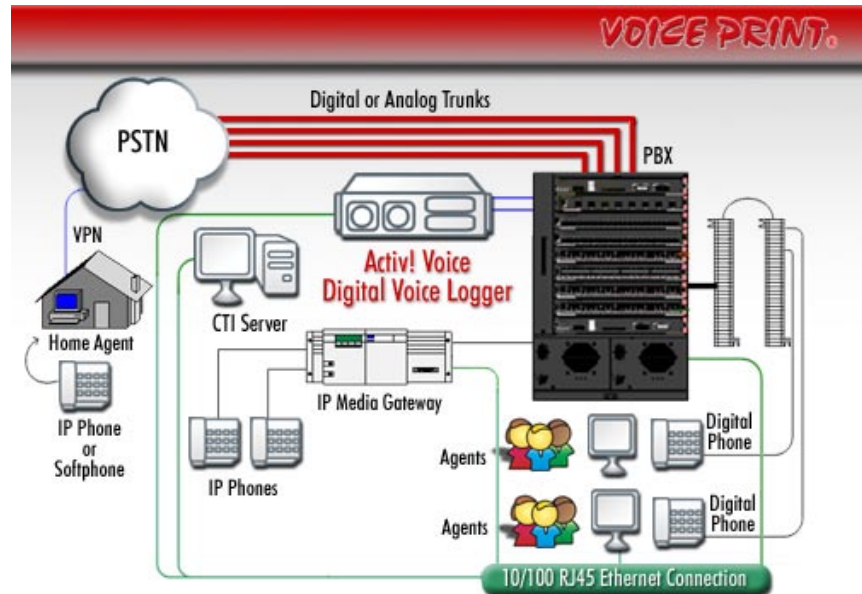
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Follow Me! is an efficient and comprehensive solution for high-volume, full-time VoIP recording.

Difficulty Recording Remote Agents

Trunk side recording also has failing points when an IP SoftPhone is utilized by an off-site user. It has a point of failure relevant to the standard modes of IP Softphone use, and even when both methods are used concurrently, the failure points are not compensatory.

Voice Print's "Follow Me!" Method of Recording VoIP



Follow Me! is an efficient and comprehensive solution for high-volume, full-time VoIP

Advantages

Captures All Internal and External Calls

Follow Me! allows for the recording of telephone communications of an agent who is either physically residing on a telephone network within the organization (internal telephone events) or connecting remotely via VoIP network from outside (external telephone events). In addition to all internal connections, no matter which external connection mode the agent chooses to use with his IP SoftPhone, the Follow Me! solution will record each and every communication – 100% of the time. In summary, regardless of an agent's location (when connecting to their extension to perform a telephone session), the recording channel assigned to this particular agent will follow him – logging and recording all telephone conversations both to and from the agent in a unified manner.

Challenges

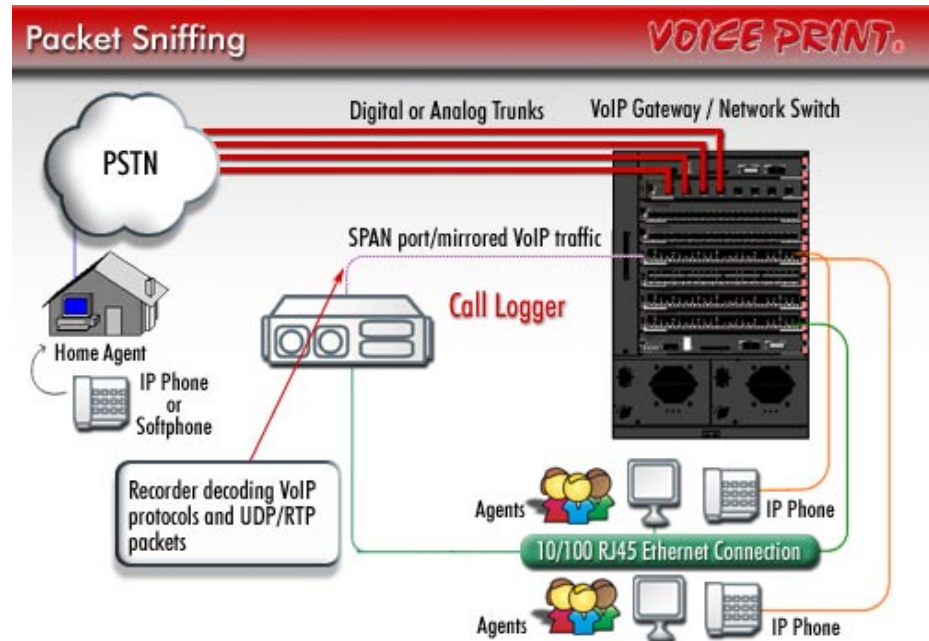
Hardware Intensive

Follow Me! may require the implementation of extensive hardware resources in order to manage high-volume call recording.



Host-Based Packet and Media Processing

Host-based Media and Packet Processing is also a very common method of recording VoIP. The VoIP packets that comprise a conversation between two network points are available to the workstations or IP phones at those endpoints, on the physical cabling to the nearest Ethernet switch and in the switching infrastructure. A recorder that connects to the same network infrastructure analyzes each and every IP packet on the network and copies all relevant audio packets into its database of audio recordings, along with appropriate call detail information.



Perhaps the most noteworthy issue with packet sniffing is the fact that it is severely limited in its ability to record external calls.

Challenges

Tremendous Burden on Network Resources

Host-based Media Packet Processing can impose a significant burden on network traffic. This melody of recording VoIP often does not have the ability to separate upstream and downstream IP packets can use up to four times more network resources than more advanced, second generation VoIP recording methods - which we will discuss shortly.

Requires Extensive Server Processing Resources

Host-based Packet and Media Processing requires tremendous server processing resources (CPU) and can impose a significant burden on network traffic. Most host-based offerings suffer from performance problems related to running the application and network interface functions all on the same regular media processing server.

Encrypting Calls Prevents Recording

One of the most noteworthy issues with Host-based Packet and Media Processing is the fact that it is severely limited in its ability to record encrypted calls. Beyond the internal telephone network (as soon as an IP audio signal leaves an organization's location) the IP signal must be encrypted for security purposes (a standard practice today) and this means that the packets can no longer be sniffed - unless the security of these



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interactions is unimportant to the organization, which is highly unlikely. This particular recording drawback may defeat the initial purpose of VoIP deployment – to enable (and record) efficient telephone connections between multiple offices of an enterprise or remote employees (traveling employees, telecommuting, etc.).

Difficulty Recording Remote Agents

Host-based Media Packet Processing has failing points once an IP SoftPhone is utilized by an off-site user (IP SoftPhones are software-based telephone applications for your PC – an IP SoftPhone can run on your laptop and will enable you to take your extension with you and receive calls wherever you're connected to the corporate network). Host-based Media Packet Processing has a point of failure relevant to the standard modes of IP Softphone use, and even when both methods are used concurrently, the failure points are not compensatory.

Extensive Hardware Resources Often Required for Implementation

Host-based Packet and Media Processing can require extensive resources for implementation. A dedicated recorder is necessary for every subnet on a network – and networks can often times have literally thousands of subnets.

“Tech support staff in technology firms, many of whom are teleworkers, increasingly use IP-based soft clients to forward calls by name, location or job function to their colleagues worldwide. IP-based call-routing techniques help these users speedily resolve complex tech support issues and handle customer-initiated query escalations.”

– Forrester Research



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“By 2008, wholesale VoIP traffic in Europe, the Middle East, and Asia (EMEA) could reach 57 billion minutes. About 1,771 billion minutes of retail voice traffic originating in EMEA will have a VoIP component in some portion of the route.”

– Frost and Sullivan

recording. It requires dedicated T1 or E1 lines, and leverages the ability of an Avaya, Nortel or Siemens PBX to perform a “static” observe session on a given extension or set of extensions.

Advantages of Second Generation VoIP Recording Solutions

The awkward, first generation methods for recording VoIP are now being replaced by elegant, software-based second generation solutions. These advanced solutions are based upon unique, patent-pending next generation network interface (NIC) board technology designed specifically for voice recording. Leveraging partnerships with

several major VoIP telephony developers, extensive research and development, and an open architecture philosophy, Voice Print’s Activ! IP – the most advanced VoIP recording solution available today – is platform independent, integrating seamlessly into your existing and evolving infrastructure.

Easily Migrate from Traditional to VoIP Telephony Recording

With Activ! IP’s extreme flexibility, you can count on seamless integration and simple migration to emerging VoIP technologies. Grow and adapt on your own terms by easily and reliably recording audio from most traditional circuit-switched and new VoIP PBXs/ACDs in the same system – preserving your investment. Unlike other offerings that require a complete system change-out to migrate from recording in a traditional telephony environment to recording in a VoIP environment (i.e. different software,

different hardware etc.), with Activ! IP, simply change the voice interface boards in the server. Activ! Voice IP leverages open architecture and is platform independent to integrate seamlessly into your existing and evolving infrastructure. It can sit securely behind your firewall and work in harmony with your network operations.

Minimize Impact on Precious Network Resources

Activ! IP can record all VoIP traffic, including SPAN and RSPAN, with very little impact on your network resources. Activ! IP has the flexibility to separate upstream and

downstream packets and the ability to span only outbound RTP audio packets when desired – utilizing 50% less network SPAN traffic than what is required by many other VoIP call recording offerings! With Activ! IP, you don’t have to forklift your network control data or upgrade your network to reliably record VoIP interactions.

Capture All Audio in Standard GSM File Format

Activ! IP’s unique interface has the ability to perform transcoding on the fly, normalizing

and compressing all audio (over 20 CODECS supported including G.711, G.723.1, G.729A, etc.) into industry standard, non-proprietary GSM file format regardless of disparate audio sources. This allows for simple, centralized storage and playback using any standard media player (does not require CODECS to be installed on the PC prior to playback).

Self Maintaining - No Servers Required for Host Processing

Based on state-of-the-art Digital Signal Processor (DSP) technology, Activ! IP is self-maintaining and provides for all network interface, packet filtering, media processing and recording functions – it does not require you to constantly adjust network



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**True video
screen recording
in a VoIP
environment is
now a reality
with Voice Print's
Activ! IP.**

compression rates, rely on customer-provided routers and additional hardware, or increase the capacity of your current PBX to reliably capture calls. Activ! IP ensures true real-time response and quality of service on every channel recorded by greatly reducing the server processing resources (CPU) required by most host-based offerings that often suffer from performance problems related to running the application and network interface functions all on same regular media processing server. Not only does Activ! IP's next generation network interface board off-load host processing, it also has the ability to identify and register endpoint with the station manager to enable you to capture "rolling" IP addresses in real-time as they change – even if your CTI server fails.

Combining Proven, Award Winning Software with Advanced VoIP Recording

Unlike some other vendors that recently created from scratch very basic interfaces for their new VoIP call recording offerings, with Voice Print's Activ! IP you will experience the many robust features and benefits of Voice Print's time-tested, award-winning call recording software. For example, you will be able to retrieve and playback your recorded interactions from anywhere in the world and from your existing applications! You can access your call recordings and associated data from Voice Print's local client, Web browser-based client, or directly from your existing applications through outward integrations, courtesy of Voice Print's APIs and XML tools. Voice Print provides advanced

data management driven by your business rules – the powerful SQL database enables centralized management of millions of records, providing instant access to recorded interactions. With Activ! IP, you determine how, where, and when to record, store, retrieve, and dispose of your call records based on the events that occur before, upon, or during a call interaction. Activ! IP is scalable to tens of thousands of channels and can be configured for centralized or distributed storage.

True Video Screen Recording Now a Reality in a VoIP Environment

Voice Print's Activ! IP is the first solution to make true video quality screen recording in a VoIP environment a reality without compromising the quality of video recording or impacting network performance. Unlike other technologies that constantly stream data over the network, file transfer of screen recordings originally captured at local PC workstations can be either continuous upon conclusion of every recording session or done via scheduled bursts after hours, when the network is less busy, to control network traffic.

Advanced Security

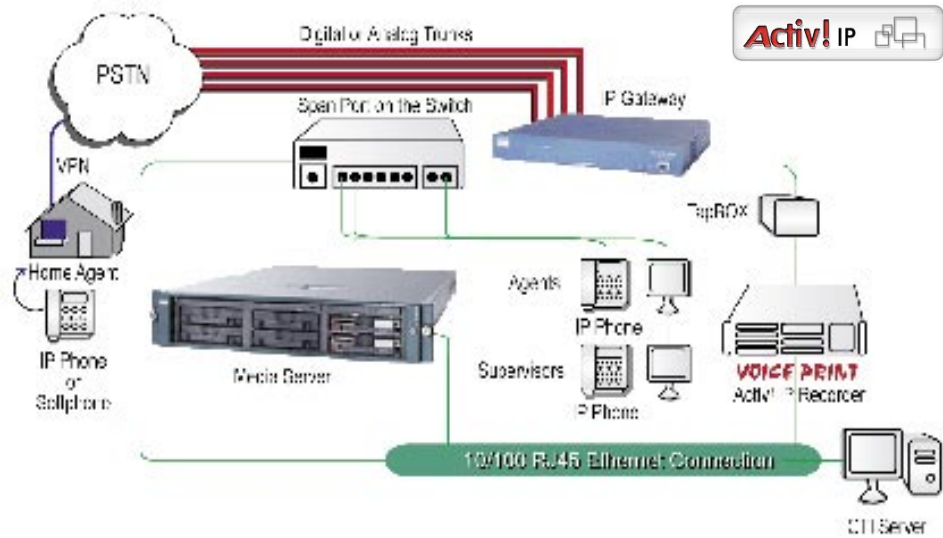
Since Activ! IP has the ability to process only your organizations voice packets up front, you do not have to worry about any confidential IP data packets being transferred to the call recording application.

No Desktop Deployment Required for IP Voice Recording

Voice Print's Activ! IP does not require desktop deployment for IP voice recording. As is the case with many other offerings, with Activ! IP, each agent does not need to login to a separate VoIP call recording application to initiate recording.



In addition to being compatible with most IP PBX systems, Voice Print's Media Tap VoIP call recording solution is ideal for high-volume recording environments.



Voice Print's Activ! IP Media Tap Solution

VoIP Call Recording via Advanced Media Gateway Tap

Voice Print's Activ! IP Media Tap utilizes advanced passive splitting or regeneration technology to transmit in-line traffic voice packets. Span port (or port mirroring) technology is not necessary to record all external calls. Since Activ! IP does not require you to create a "virtual extension" of the telephone switch to mirror each port, it does not rely on customer provided hardware and network infrastructure to recognize and route the audio files. Activ! IP Media TAP can acquire all control information and upstream RTP audio packets without using any span port resources!

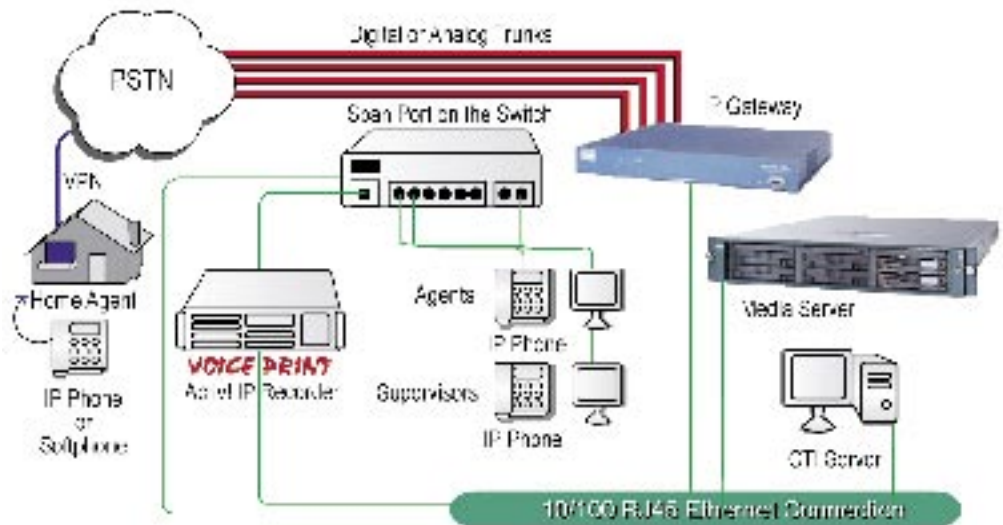
Activ! IP is connected to a TapBOX – an external passive IP Link tapping device that duplicates all external incoming and outgoing (upstream) IP packets and associated data and routes them back to Activ! IP, which automatically filters out and discards all non-voice packets so that only the voice packets are recorded. The TapBOX amplifies the voice signal as well. This solution does not, however, capture any internal agent-to-agent calls.



Voice Print's Activ! IP Enterprise VoIP Call Recording Solution

Record All Internal, Incoming and Outgoing Calls

Voice Print's Activ! IP Enterprise solution succeeds in recording all internal and external calls and associated telephony data – not just VoIP interactions.



Voice Print's Activ! IP utilizes advanced passive splitting or regeneration technology to transmit in-line traffic voice packets. Span port (or port mirroring) technology is not necessary to record all external calls. Since Activ! IP does not require you to create a "virtual extension" of the telephone switch to mirror each port, it does not rely on customer provided hardware and network infrastructure to recognize and route the audio files. Activ! IP is connected to the SPAN Port or RSPAN Port. Internal IP packets can be passively tapped from the LAN and routed directly to Activ! Voice IP, which features a LAN interface.

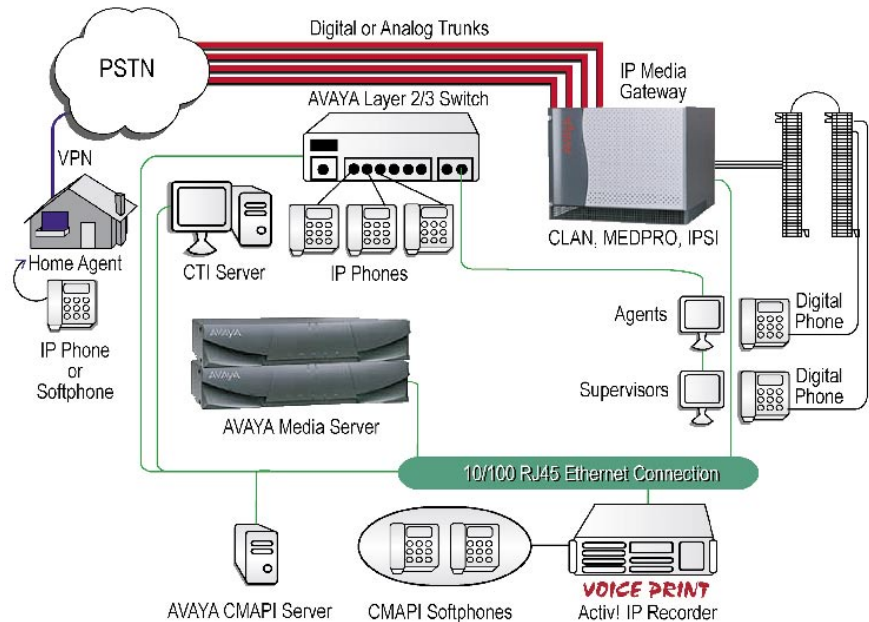
To capture internal traffic, Voice Print's Activ! IP utilizes the span port (or mirroring port), offering a solution that does not require customer-provided hardware (i.e. router resources) to perform span port mirroring. The span port recognizes and copies specific VoIP packets, which are then routed directly to Activ! IP. Depending upon the type of router employed, it may be possible to integrate two span ports into your network – one for troubleshooting and one to mirror your VoIP packets.



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“A migration to IP telephony is occurring, and we project that by 2008, the number of IP port shipments will exceed PSTN port shipments in the call center recording area.”

**Walt Tetschner
– Tern Systems**



Voice Print's Activ! IP AES Solution VoIP Call Recording via AVAYA AES

Developed to suit all your recording needs, including high volume recording, Activ! IP has been certified in AVAYA Labs to reliably record interactions at 10,000 BHCC (Busy Hour Call Completions). Activ! IP utilizes AVAYA AES (formerly CMAPI) and Media Control Services softphones (or virtual stations) to record VoIP interactions. AVAYA AES is a software-only connector installed on a customer-provided AVAYA server running Linux. AES provides connectivity between and communicates with the Activ! IP recording solution and the Communication Manager. The Communication Manager resides on an AVAYA Media Server, which includes AVAYA S8700/8710, AVAYA S8500, AVAYA HP380, AVAYA S8300, AVAYA Definity® Server CSI, and Definity® Server SI in an MCC/SCC Cabinet.

Utilizing an advanced, standards-based XML programming interface with this connector server, Activ! IP takes advantage of the rich feature set of AVAYA Communication Manager software. Activ! IP also leverages the power of a CTI server to receive additional telephony data such as ACD information, DNIS, ANI, etc. The Activ! IP server creates an AES virtual station per each recorded telephone user. The recorded telephone instrument can be either a digital telephone, analog telephone and/or IP hard or softphone using road warrior or telecommuter modes. The Voice Print Activ! IP server monitors AES events on the telephone or extension to begin and end recordings. It records the audio from the desired extensions by using either a single step conference or service observe. Activ! IP captures the audio in RTP (Real-Time Transport Protocol) packets from the virtual softphone and then compresses it into an industry-standard GSM compressed WAV file format. In this manner, all incoming and outgoing calls and associated telephony data are captured and recorded.

Activ! IP records off-site IP softphone calls made via the Road Warrior mode on the trunk-side, in conjunction with a CTI interface to ensure that only the Road Warrior interactions are recorded. This relatively simple measure enables you to avoid the unnecessary implementation of extensive recording resources for all other trunk-side traffic, which is already being captured by Activ! IP.

Conclusion

In order to function within the global economy, organizations around the world are incrementally reengineering their entire voice infrastructures to adopt VoIP. As you move through the normal cycle of replacing your PBX system, you will probably view VoIP as a logical choice for achieving increased productivity from converged messaging. VoIP can also play a significant role in the reduction of your deployment and management costs due to the utilization of a single wiring infrastructure.

Voice Print's Activ! IP Enerprise, Media Tap, AE Sevices, and Follow Me! solutions provide the greatest flexibility for saving, locating, playing, managing, archiving, securing, and discarding records. Unlike the other awkward, ineffective recording methods that require expensive implementation, costly upgrades, and unreasonable compromises, these solutions have been designed to meet each and every one of your VoIP recording needs, both now and for years to come.

As you are well aware, communications technology is crucial for maintaining and improving the quality of your customer relationship management. Your ability to meaningfully utilize and leverage this constantly evolving technology correlates directly to your ability to compete and win in the marketplace. Voice Print's solutions are designed to grow with your organization's evolving needs - your initial investment is protected because your recording solution will never become obsolete. By leveraging Voice Print's open architecture designs, you can very easily upgrade any component of the Voice Print infrastructure – without a complete replacement or drastic overhaul. This is not the case for some of the unfortunate individuals struggling with our competitors' systems, which are often based on closed architectures, proprietary hardware, and require the continuous investment of outrageous maintenance dollars.

No matter which Voice Print solution you choose to implement to record your VoIP interactions, your system will continue to evolve in a way that makes the most of every dollar you invest. Since we don't manufacture proprietary boxes and don't have to deal with constant hardware redesigns to keep up with the latest trends, we focus on the development of world-class systems functionality through software modules that you can adopt incrementally at your own pace. When we introduce new features, they seamlessly integrate into your core application. The concept of retiring your infrastructure ends with Voice Print.

While Voice Print's technology focuses on the future, our business practices are "old fashioned". We tell the truth, we listen, we're accountable, and we provide the best value possible in order to build a long-term business relationship with you. Contact us today to learn how we can add significant value to your business.



**Voice Print's
VoIP recording
solutions focus
on the latest
innovations
to ensure that
your every
recording
need can be
successfully
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About Voice Print International, Inc.

Voice Print International is a leading provider and innovator of interactions recording, quality management and workforce performance optimization solutions for contact centers, financial traders, government, and public safety organizations worldwide. Voice Print's flexible, software-based technology enables organizations to reliably capture, evaluate and analyze interactions in order to cultivate customer satisfaction, leading to substantial improvement of business performance. Voice Print systems are designed for reliability and adaptability, building on open standards technology and Commercially-Off-The-Shelf hardware for simple maintenance, integrations and expandability.



**Contact Voice Print today
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