Call Progress Analysis For Contact Centre Solutions

Introduction

Whether you call it a call centre or contact centre, it is not a new concept. Multi-channel contact centres have been around for years, and they have become a vital business tool for many organisations, playing a central part in developing customer relationships and revenues.

While it might be true that the majority of contact centres are involved in handling inbound traffic, there is a significant number using outbound and blended predictive dialler systems. For many corporations incorporating proactive contact and notification strategies in their operations, through companies employing interactive voice messaging (IVM), also referred to as 'outbound IVR', and voice broadcasting, to businesses whose prime purpose is debt collection, outbound technologies are a key component.

Outbound and blended campaigns enable enterprises to proactively reach their customers and prospects. For many, this plays a valuable role in ensuring a superior service outcome for customers and ensures efficient and effective use of agent resources. For companies whose primary business is to fill sales pipelines, streamline collections or aid telemarketing and fundraising efforts, the contact centre is directly associated with revenue generation.

For predictive dialling, IVM and voice broadcasting, contact centres need a number of enabling technologies and media processing capabilities like those available from Aculab. A key element of these is call progress analysis (CPA), which is the subject of this paper.

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Where does call progress analysis fit?

For call centre applications involving predictive (also power, preview, progressive or agent-less) dialling, having access to powerful CPA functionality is a critical enabler. The capability is also used in IVM and voice broadcasting solutions, and is used to great effect in ensuring that each call can be quickly and accurately classified as it is being set up and answered. This categorisation process comprises several stages.

First steps – making the call

The first stage in automated outbound dialling involves proactively contacting customers, account holders and prospects.

An outbound dialler is typically a server that has been preconfigured to make calls automatically, under control of a software application, to a list of customers or prospects, as per campaign scripts. A fully integrated dialler is used to increase productivity by anticipating (or predicting) the number of calls that need to be generated to ensure that a live call can always be connected to an account representative (call centre agent).

When calling consumers at home it is not untypical for only one in five calls to be answered by a live call recipient. Diallers solve this problem using mathematical modelling or virtual simulation to determine the appropriate number of calls to make at any one time to maximise agent productivity. This relieves agents of the dialling function and provides them with a steady flow of live contacts only.

Dialler technology increases an account representative's ability to speak to the right party and increases the chances of getting a payment, promise-to-pay or other appropriate result.

Key stage two – call progress analysis

The next stage is performing CPA, which takes place as the outbound call is being established (pre-connect) and answered (post-connect). The idea is for the connection dialler to guarantee contacts by screening or filtering no-answers, busy signals and disconnects to present only live speakers to agents.

Essentially, CPA employs a number of media processing algorithms – detection functions typically provided by DSP boards or host media processing (HMP) software – which listen on the line and determine what is happening and who or what answers the call. Such software is designed to distinguish between busy signals and other network conditions in addition to answering machines and live speakers.

Some modules will detect the frequency, noise gate and energy of the audio signal and attempt to distinguish whether the call is answered by a human or if a voicemail greeting is being presented on the line. Additional media processing functions are used to detect information from the telephone network – DTMF and call progress tones, such as ringing, busy/ engaged, voicemail, special information tones (SIT or 'triple tones') and fax tones. Other software, associated with the protocol in use, provides complete cause code functionality.

A further condition is apparent with the increase in popularity, in some countries, of colour ring back tones (CRBT). Calling a number whose owner has subscribed to a CRBT service typically results in the caller (or dialler system) hearing a music tone instead of ringing.

The ultimate test is how quickly and accurately this analysis can differentiate between the various tones during call set-up, and a fax, modem, human "Hello" or an answering machine greeting post-connect, before taking the final step.

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Final steps – call management

The final stage involves managing the call, depending on the results of CPA. For example, should CPA determine a network condition based on a triple tone, it will promptly abort the action and immediately attempt another call. If a call is answered by a human, it needs to be transferred to an available agent or, in the case of IVM, connected to some form of automated message playback. These functions are also provided by multi-function DSP boards or HMP software, which can be built into media servers or gateways. Note that strict rules about the nature of any automated message playback are enforced by the appropriate regulatory authorities.

If CPA determines that the call was answered by voicemail, a pre-recorded or text-to-speech (TTS) synthesised message can be played, although this is not required by legislation and, typically, is not done. Such messages can be to inform the customer of the nature of the call or to provide the contact with a number to call, which might be considered good practice. After all, not leaving a voice message when a call is answered by an answering machine can be a cause of anxiety to the called party just as much as a silent call.

On the other hand, if the call is likely to be abandoned – there is no agent available to take a live answered call – a brief information message giving details about the call should be played. Note that such messages and other steps to reduce the impact of abandoned calls in this situation are often a regulatory requirement. Note also, that if there is no agent available, a call is classed as abandoned, even if an information message is played.

Intermediate steps, such as contact verification can also be inserted. This enhances the call centre application by only providing verified, right-party contacts to an account representative. This is achieved by using interactive voice response (IVR) and speech technologies – TTS and automatic speech recognition (ASR). When the system is connected to a live speaker, the IVR uses a combination of pre-recorded messages and TTS to announce the contact's name and ask for the account holder as a means of verification.

Apart from credit/debit card activation, emergency broadcasts, and medical and other appointment reminders, using IVM in this way can also be used to cost-effectively get answers to non-revenue generating questions or to set up payment arrangements with some account holders.

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Gateway options

With many applications, including out-dialling, moving to an all-software, all-IP (SIP-based) platform, it can be that they lose the rich CPA algorithm capabilities they previously used via dedicated DSP-based TDM boards. Note that this needn't be the case as Aculab's HMP provides essentially the same CPA functionality as that of its DSP boards. However, in a pure IP environment, no E1/T1 trunks are provided and so one option is to use some form of generic gateway to allow the SIP application to dial out to the PSTN.

Thankfully, there is a better option than using 'vanilla' gateways for SIP-to-TDM conversion, where effectiveness plummets, because such gateways do not have tightly integrated CPA. In a contact centre employing an IP platform for SIP-based outbound predictive dialling, so much the better if the gateway includes CPA fully integrated with the same vendor's dialler, including sharing a web-based administration interface.

In addition, a gateway needs to be able to handle the intensive load that predictive diallers place upon them. Just such a custom gateway, including powerful and adjustable CPA capability, which can incidentally also be used cost-effectively in SIP-to-SIP environments, is available from Aculab partner Interactive Intelligence.

Another successful approach involving gateways is to front the call centre product with a telephony or media gateway server. Such implementations involve a single server, which combines ACD and PBX capability and supports the necessary wide range of media functions, including CPA, auto attendant, call recording and voicemail. Employing Aculab's Prosody X DSP boards, a telephony server can be readily used in IP, TDM or hybrid environments.

Regulatory comment

In some countries the use of outbound dialling for IVM has recently come under scrutiny of regulatory bodies, where it was considered as possible misuse. In the United Kingdom, at least, Ofcom has concluded that the use of IVM does not intrinsically constitute misuse. Indeed, as used for non-marketing purposes, it has received little adverse customer reaction and can be of widespread public benefit.

That notwithstanding, it is interesting to compare the differing approaches in diverse market regions. In the United States, for example, outbound voice broadcast has been used to good effect in electioneering campaigns associated with party presidential candidature. Whereas, in the United Kingdom, a political party recently fell foul of The Privacy and Electronic Communication Regulations by conducting a similar campaign that was branded a nuisance and led to them being threatened with prosecution.

Important factors

Across all of the identified analysis steps, three very important factors, which involve both pre- and post-connect processing, impact on the effectiveness or success of outbound dialling campaigns:

Accuracy in detecting tones

Before a call is answered, regardless of whether by a human, an answering machine or a voicemail greeting, there are a number of possible scenarios that a dialler has to contend with. Each of these involves signals provided by the telephone network, which are usually intended for a human ear to hear and interpret. As the telephone was originally designed for people, not computers, diallers have the difficult task of differentiating and interpreting these signals. Four common situations involve these signals or network tones:

1. Ring no answer – which fairly obviously means the phone keeps ringing and no one answers. A good call centre solution, with integrated CPA hardware or software building blocks from an enabling technology vendor like Aculab, will provide user configurable options for the management of calls in this situation. Users should be able to specify the length of time the system 'listens' for ringing, before hanging up. Note that in some countries this is subject to regulatory guidelines. In the United Kingdom, for example, Ofcom stipulates that calls which are not answered must ring for a minimum of 15 seconds before being terminated.

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2. Busy signal – this signal indicates that someone is already talking on the phone, or the phone line is occupied (e.g., it is being used by a modem). On detecting this tone, the CPA firmware running on a DSP board, or the equivalent host media processing software, will return an API event to the contact centre application, which will hang up the call.

3. Special information tones (SIT) – also known as 'triple tones', these are heard as a series of multi-frequency tones, usually followed by a recorded message. They can occur for a variety of reasons e.g., the number has been disconnected, denied, or misdialled, or all circuits are busy. There is a unique three-tone sequence for each of the following conditions: no circuit found (NC), operator intercept (IC), vacant circuit or non-registered number (VC), and re-order or system busy (RO). CPA software readily recognises the component tones with their frequency and duration and returns a SIT identifier to the application. As the result will be the call is not connected, the application will promptly hang up and make a fresh call. Some of these tones indicate a number is temporarily unavailable and diallers can use this information to try the number again at a later time.

4. Fax or modem tones (post-connect) – when the phone is answered with a fax CNG/CED or continuous tone, this indicates that a fax machine or a computer modem has answered the call and as soon as the application receives this advice it will hang up and initiate another call attempt.
   If CPA cannot categorise a signal, no API event is likely to occur, therefore, an application would be expected to enact a timeout and rapidly move to another call. In the case of CRBT replacing a ringing tone, an approach is to run post-connect analysis, avoiding the potential for false pre-connect detection of tones within the audio. With ISDN, it should also be possible to use API call events to detect any ringing condition.

Live speaker detection accuracy

Once a call is answered (other than for fax or modem calls), the dialler tries to determine who or what has responded to the call. The two essential scenarios are:

a. Voicemail or answering machine – this is a familiar situation, also known as an auto-voice condition, where an automated voice answers the line with no preceding SIT.

b. Live speaker – the desired outcome, where the called party (a human being) has answered the phone.

CPA is often used to screen out voicemail recordings or answering machines. This can be considered important, as answering machine use is prevalent in many countries, particularly the United States and Canada. Typical campaigns to subscribers can reach an answering machine as much as 80% of the time, especially during normal, Monday to Friday business hours, when most citizens are not at home. So, that suggests, more often than not, less than 20% of outbound call attempts actually reach a live person.

Many vendors will argue that if the CPA software mistakenly determines that a call is answered by a human, when it should have detected a voicemail greeting, the receiving agent will be occupied by the call before becoming available to take another. Even if this timeframe is short, it can accumulate to a significant loss of productivity, especially in contact centres with large call volumes.

Conversely, if CPA mistakenly identifies that a call is being answered by a machine whereas, in reality, it has been answered by a live individual, the call will be terminated and classed as an abandoned call. These cases are also known as 'false positives' and have a twofold affect. For the contact centre, productivity can be impacted even more by the loss of a sales opportunity and failure to connect can impact a collection agency's bottom line. For the individual on the receiving end of an abandoned call, it can be a major cause of annoyance, inconvenience or anxiety, which is why abandoned call rates, as a percentage of live calls, are subject to regulatory limits.

So, the ability to recognise a live speaker and avoid abandoned calls are desirable capabilities.

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Call connection time

The overall time duration between placing the call and connecting to an account representative is a critical metric. The value of post-connect CPA to contact centres and collection agencies is balanced by how long it takes between someone saying "Hello" and a connection being made to an agent. A lengthy delay, with silence on the line, will have a significant impact on whether the person called hangs up the phone or not.

If the call centre software takes too long to connect, there is a high risk of call abandonment. This arises when customers hang up on a silent call, because of the infamous 'dead air' i.e., there isn't an agent on the line. Whether the customer hangs up or the dialler fails to make a timely connection, the call is classed as abandoned. Bear in mind, however, that this condition isn't entirely down to CPA. As diallers are designed to drive calls for maximum agent utilisation, call presentation can sometimes get ahead of agent availability.

Customers don't often tolerate this nuisance and the contact centre operator may face stiff penalties for non-compliance to strict regulations. Rules, such as the Telemarketing Sales Rule (TSR), the Fair Debt Collection Practices Act (FDCPA), and the United Kingdom's Persistent Misuse Statement are enforced by the Federal Trade Commission (FTC) and Ofcom.

In most countries, a connection typically needs to be made in less than two seconds from the time there is a live answer. The United States Federal Trade Commission TSR states that an outbound telephone call is abandoned if a person answers it and the telemarketer does not connect the call to a sales representative within two seconds of the person's completed greeting.

In the United Kingdom, the rule is tighter. Ofcom's policy on misuse demands that, in the event of an abandoned or silent call, a very brief recorded information message, containing at least stipulated information, is played no later than two seconds after the telephone has been picked up. This applies to any call answered before an agent is available, so the connection timer starts as soon as the phone goes off-hook.

The best defence against regulatory violations and fines is an effective compliance plan. Most good dialler systems include tools that help the contact centre maintain campaign compliance.

Call progress summary

Using Aculab's CPA capabilities, which are readily available with DSP boards or HMP software to developers of call centre solutions, an example of the three stages in sequence might be as follows:

Stage 1 – Vendor's predictive dialler algorithm initiates outbound calls on a trunk on the basis that an agent will be available to take the call if connected.

Stage 2 – Aculab's pre-connect call progress algorithm detects ring tone and following an off-hook condition, its detection algorithm detects a live speaker.

Stage 3 – Vendor's higher level call centre software application connects the call to an agent.

For call centre software vendors, the important aspects to look for when selecting media processing resources to perform pre- and post-connect CPA are: excellent 'out of the box' accuracy; and the ability to configure or fine tune various parameters associated with tone frequencies, noise levels and time periods. Additionally, with call connection time and abandoned calls being key measures, it is important that a fast and accurate result can be presented to the call centre application.

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Dialler strategies

A worldwide patent search will today find over 50 patents devoted to pacing algorithms for predictive diallers. The technique used in most cases will vary from old-fashioned agent-based pacing to some kind of mathematical model. The success of these methods will vary considerably, however, it is generally accepted that mathematical models don't cope with the wide variety of real world outbound campaigns.

Neural networks are a later development that seeks to add an adaptive learning ability. This approach has also been applied to CPA; specifically, answering machine detection (AMD). Unfortunately, in practice the degree of training required to cope with the dynamics of all possible circumstances is huge. Faced with a situation that it has not encountered before, this approach is often found wanting.

The state of the art lies in highly-tuned, large scale, virtual engines that are capable of simulating extremely high call volumes and individually profiling each call. Diallers dynamically adjust dialling rates – the number of additional trunks dialled as an agent becomes free – taking into account all agent and telephony events, such as call outcomes and talk/wrap characteristics, which are continually simulated during real-time operation.

It is not so much a question of how many calls do I have to make to get a live connect as it is one of when to dial in order to be able to present a new connect to an agent as soon as they are free.

No customer relationship strategy or collections agency would be effective without the ability to proactively contact customers and prospects or debtors. For outbound applications, speed and accuracy in detecting network tones and identifying a live speaker are important, both for sound, competitive business reasons and in order to comply with strict regulations. Increasing the amount of time agents can spend talking to live contacts (reducing wait time) and meeting the target for abandoned calls set by the user are the common goals.

The importance of CPA

The benefits of CPA in conjunction with an intelligent customer interaction solution are often judged by looking at comparisons involving lost agent time and connection accuracy. These comparisons invariably focus on post-connect analysis, however, it should never be overlooked that pre-connect signalling detection is equally, if not more, invaluable for a dialler system. Good pre-connect call progress detection is a vital component in any dialler's armoury in order to be able to quickly and accurately determine if a call attempt is worth continuing.

Lost agent time

A hypothetical contact centre, for instance, might place 30,000 calls per day (as illustrated in Table 1, where the figures are based on the idea that it is not untypical for only one in five calls to be answered by a live call recipient).

Quite apart from the practical issues around exactly how many agents are logged-in and available at any given moment, it is not possible to predict on an individual per call basis if it is going to be answered and, if so, by man or machine. Therefore, unless calls are accurately screened to only connect live speakers, all calls have to be connected and agents have the task of determining who or what is on the line, which takes up their time and, according to widely promulgated theory, impacts productivity.

Exploring the theory

The theory is based on the idea that the handling time for an agent to wrap up a falsely connected call is 30 seconds. If this were true, the 18,000 events shown in table 1 represent 150 hours of lost agent time per day. Over 261 calling days, that amounts to 39,150 hours of lost agent time per year. At $10 per agent hour, the notional cost of handling unproductive calls is almost $400,000 per year. By screening all calls, according to perceived wisdom, the lost time cost can be cut.

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Table 1: calls per day by outcome – hypothetical scenario

Calls placed per day	100%	30,000
Live voice connect	20%	6,000
Answering machines	60%	18,000
Busy, no answer, SIT	20%	6,000

Essentially, this theory is flawed. An established call centre will employ 'n' agents and its method of operation will be to engage those agents in productive calls for as much as possible of the available time per agent per shift. The number of calls made is related to the number of agents available. As an agent becomes free, the dialling rate goes up. Consequently, the number of calls is never constant. It is a basic principle of diallers to adjust the dialling rate (ideally, to be able to connect a call to an agent immediately that agent is available) and reduce wait times. As the percentage of live calls will vary considerably over the course of a shift, from as much as 80% to as low as 20%, basing an argument on 80% of all calls not being a live connect is misleading. On average, the live call rate will be around 40%.

In addition, the theory is primarily undermined, chiefly because of the assumption that it takes an agent 30 seconds to wrap up a non-live call. This is truly a myth, as in the real world, an agent will take no longer than a few seconds to wrap up a call that is connected to an answering machine. Accordingly, as suggested from the revised figures in table 2, the lost time cost of a realistic 12,000 events, even with a three seconds wrap up time, is exactly one hour, which is really negligible.

Table 2: calls per day by outcome – realistic scenario

Calls placed per day	100%	30,000
Live voice connect	40%	12,000
Answering machines	40%	12,000
Busy, no answer, SIT	20%	6,000

Notwithstanding the above, I'm sure it can be argued that, regardless of the number of agents, they are paid in any case and so the true cost is the same, whether in fact they take any calls at all! Naturally, if there are to be any productivity gains, rather than the costs being dramatically reduced, what that is more likely to mean is that the collections or revenue per agent figure would be dramatically increased.

Wait time

The real culprit in terms of lost agent time is certainly wait time. That isn't waiting time for post-connect detection of an answering machine, which must be less than two seconds to comply with regulations and is insignificant in terms of a time cost, it's waiting time between wrap-up and the next live connect. This is the concern of a dialler system, rather than an aspect of CPA.

Benefits of greater accuracy

Another theoretical contact centre, engaged in a collections campaign, has 50 agents making outbound calls. According to normative calculations, if averaging 2 minute calls, they could complete 4800 daily connects (as per table 3).

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Table 3: converted calls per day – theoretical example

Calls presented	Detection accuracy	Live connects	Successful conversions	Daily collections
4800	85%	4080	408	$40,800
4800	86%	4128	413	$41,300
4800	90%	4320	432	$43,200

Let us assume there is a 10% conversion success per true connect and an average collection of $100. With AMD accuracy of 85% that produces a collections total of $40,800 on a good day. At that rate, every 1% increase in accuracy could result in an additional $130,500 annually. And a 5% increase in voice detection accuracy, to a reasonable 90%, would result in over $600,000 in additional contact centre collections revenue per year!

Examples such as this are often presented to suggest that being able to accurately detect a live speaker is important for productivity, revenue generation and collections. However, it seems apparent to me that a call centre would collect exactly the same revenue if all answered calls were connected.

Voice connect accuracy

With the accuracy of detecting human speech versus answering machines varying widely, call centre software developers need to be careful about their selection of CPA technology. There is a view that 80-85% represents the industry average for accurate detection of voicemail/answering machines. Some vendors would have you believe that at the higher level, a 15% inaccuracy rate, the number of falsely detected voice connects would cost, using figures from table 1, more than $58,000 in lost agent time per year.

What they are trying to say is that, 85% of the time, AMD software can be hoodwinked into determining that a call is answered by a human, when in fact it was answered by a machine i.e., the machine's rendition of speech is so 'human like' it's going to fool the detector. Higher accuracy would mean the contact centre is going to be more productive and cost-effective.

In truth, that is a facetious argument. The state of the art in AMD essentially means that if a call is truly answered by a machine with a typical greeting along the lines of "Hello, this is Mr. Smith. I am sorry I am unable to take your call right now, etc." the detection rate will be at or near 100%.

Reality bites

In reality, the important error rate in AMD technology typically comes from falsely detecting an answering machine or voicemail greeting on calls that are really answered by a human. This is exactly the reverse of the commonly promulgated belief and is why 'false positives' are an important metric. Nevertheless, the effect on productivity and cost-effectiveness may well be similar as these measures can be impacted even more by the loss of a sales opportunity and failure to connect to a real person can impact a collection agency's bottom line.

Connection speed

Another diversionary argument that is often presented is speed of connection i.e., the faster an agent is connected to each live contact, the more productive and compliant the outbound campaign will be. The key theme is the suggestion that connection in one second or less is the secret formula for maximising campaign results. Sadly, the hard facts are that accurate post-connect detection in less than one second is not possible with present day technology – no matter what analysis method (heuristics, statistics or neural networks) is used on the data.

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The essential timing parameter is the two second rule, which is applied for good customer care reasons and not purely for efficiency. And, in any case, a fraction of a second in transferring to an agent is not going to detract from productivity over the course of a day, no matter how many calls are connected.

IP-based call centres

Aculab's CPA is available with Prosody S HMP at version 3.0, enabling CPA to be employed in all-IP as well as in TDM networks. Apart from any limitations of the call (or session) control protocol in use, the technology works equally well, regardless of the environment. Importantly, Aculab's CPA software is switch agnostic, allowing platform developers maximum flexibility, and enabling their customers to leverage existing investments and resources.

Furthermore, using Aculab's SIP stack, with its third party call control capability, with either Prosody X or Prosody S, users benefit from the most economical use of media processing resources. This also means scalability is not an issue. SIP signalling is used to control the call (session) and media resources are only involved when needed i.e., during detections. In this way, media channels are quickly free to be used on another call/detection, whilst Aculab's SIP stack continues to control the call in place between the customer and the agent.

Supplementary tones

Some carriers and service providers have taken to inserting a tone ahead of transferring an inbound call to a network-based voicemail or answering service. This additional tone is a welcome development as it means that a non-live speaker can be detected with fundamental accuracy, because of the confirmatory nature of the tone. Usefully, for developers looking to deal with this scenario, the ability to simultaneously detect tones and execute LSD on the same channel is inherent in Aculab's CPA capability.

Benefits of a consistent API

Predictive dialling systems use CPA involving both pre-connect signalling detection and post-connect voice detection. They do so in addition to being able to make calls, deliver prompts through recorded or TTS-based messages, and record call data. Consequently, the integration of media processing resources and call control protocols through a single, consistent application programming interface (API) is important.

Through its Prosody X boards and Prosody S HMP software, Aculab offers alternatives that share some essential qualities. These include APIs, media processing features, a distributed architecture and call control functionality. So, for inbound/outbound contact centre developers, choosing Aculab's enabling technology gives the benefit of being able to specify a single platform that has all the media processing resources needed. Whether it is features such as auto-attendant, voicemail, IVM or inbound/outbound IVR, pre- and post-connect CPA, two-party conferencing (for agent/supervisor collaboration) or extensive IP and TDM call/session control protocol support that are needed, Aculab has the capability.

And, moreover, developers do not need to learn a daunting mix of disparate APIs for the various functions, or cope with a mix of different vendor's APIs when multiple boards are needed for a solution. Aculab's API set, although constantly evolving to offer new functionality, remains consistent in its approach and ensures ease of use resulting in faster time to market.

Response codes

In order to ensure diallers can take appropriate call management action on a per call basis, an application needs to make full use of the appropriate API functions. If post-connect analysis doesn't produce a timely detection result (fax, modem, live speaker or answering machine), the application has no option other than transferring the call to an agent within the two-second limit.

To implement this behaviour, an application will use information about the call state, which is gets from the call control API,

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along with any protocol specific cause codes, together with events returned from the detection API module. As the LSD firmware will have no knowledge of when connections are made or when indeed the signal is on/off-hook, the application is rightly in control of events and timers and can make the transfer. This tight integration of call control and media processing detection events is made faster and easier if using a single, coherent API.

This is undoubtedly the best approach in order to minimise abandoned calls and meet regulatory targets. Better to involve an agent for a brief period of time, to deal with what might prove to be an answering machine call instead of a live speaker, than to suffer from the imposition of a fine for breaching rules on abandoned calls.

Testing claims

Aculab does not make any extravagant claims regarding its CPA and the accuracy of its LSD, nor the corresponding ability to accurately detect answering machines. Nevertheless, as indicated above, for answering machines responding with a typical recorded greeting, the detection rate should be close to 100%.

Aculab welcomes the opportunity to benchmark the performance of its CPA against any other product, believing that it is 'as good as it gets'. In addition, Aculab's LSD will stand comparison using any benchmark data derived from live recorded calls.

IQ Services, an Aculab partner and leading provider of end-to-end, customer experience testing services for complex unified communications and contact centre solutions, offer an 'Outbound/Predictive Dialer System StressTest'. Developers of contact centre platforms often look to such companies to test performance of their integrated call centre solution. Assessment is done at system level so that the dialler algorithms as well as CPA (both live speaker and tone detection) are tested in a reliable way. Full testing exercises a variety of conditions such as call attempts, wait times (to connection or announcement) and nuisance rates, and provides ultimate confidence that outbound systems are working correctly and comply with FTC rules.

It is often said that the best advertisement is referral. Some of the most well known and internationally active call centre platform vendors use Aculab's enabling technology for CPA and other essential media processing functions. These customers have won industry awards and plaudits from their call centre customers for the excellence of their solutions powered by Aculab's enabling technology.

Summary

For call centre applications, having access to powerful CPA functionality is a critical enabler. The capability is also used in IVM and voice broadcasting solutions, and is used to great effect in ensuring that each call can be quickly and accurately analysed as it is being set up (pre-connect) and answered (post-connect).

When selecting a CPA product, make sure you determine what is being measured where claims of accuracy are made. Regardless of any suppliers' claims, it should be acknowledged that the technology is not capable of accurately detecting a live speaker 100% of the time within two seconds of either the phone going off-hook or the end of a speaker's completed greeting.

Inarguably, call centre software vendors need to integrate multiple technologies, including their predictive algorithms and media processing resources with CPA. Amongst the important aspects to look for when selecting technology to perform CPA are: excellent 'out of the box' accuracy; and the ability to perform multiple, simultaneous detections. Also important is the availability of a single, consistent API for all the media processing resources and other functionalities, such as voicemail, IVR, conferencing, MRCP, PSTN and IP protocol support etc., that are needed.

In a contact centre employing an IP platform for SIP-based outbound predictive dialling, gateways that include fully integrated CPA functionality are a good option. In addition, if CPA can be employed with equal results using HMP in all-IP, SIP-based call centre compared with using DSP boards in a TDM network, solution developers and, importantly, their customers, are going to benefit in many ways.

Finally, testing is an important consideration, and developers are encouraged to arrange proofing to provide their customers with the confidence that their outbound systems are working effectively and comply with FTC rules.

About Aculab

Aculab provides deployment proven telephony products to the global communications market

Whether you need telephony resources on a board, on a host server processor or from a cloud-based platform, Aculab ensures that you have the choice. We are an innovative, market leading company that places product quality and support right at the top of our agenda. With over 35 years of experience in helping to drive our customers' success, our technology is used to deliver multimodal voice, data and fax solutions for use within IP, PSTN and mobile networks – with performance levels that are second to none.

For more information

To learn more about Aculab Cloud and Aculab's extensive telephony solutions visit:

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