The In's and Out's of IVR

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Table of Contents

- **1** What is IVR?
- 2 Up in the Clouds
- **3** The Advantages of Hosting
- 4 Five Uses for Outbound IVR
- **5** VoiceXML Hosting Advantages
- 6 / Controlling the IVR Dialog
- 7 IVR: A Good TTS Engine
- 8 The Advantages of Speech Recognition
- 9 Backwards Compatibility
- 10 Being Green: Hosted vs. Onsite
- 12-18 Plum Voice Products

The In's and Out's of IVR





The world of Interactive Voice Response technology is a rapidly changing one, with new voice recognition, speech software, and customer-centric solutions issued onto the market frequently. Of course, the best way to pick through the flotsam and jetsam of the IVR industry, AND to get to the heart of what makes the engine run, is to make oneself familiar with all the available technologies. The more you know, the more of an enlightened decision you will be able to make about which IVR solution will best enhance your organization's customer relationship management strategy.

This eBook from Plum Voice highlights the most important concepts for IVR providers and users. Each chapter explores the advantages of IVR as well as the challenges such solutions face in a market that is evolving itself. With developments in the cloud computing arena as well as compatibility and compliance issues, the IVR space is a necessary one to watch. Here, Plum Voice offers the technical expertise to become a thought leader and to make the best possible investment in IVR solutions.



What is IVR? By Juliana Kenny, TMCnet Managing Editor

An abbreviation for Interactive Voice Response, IVR is any technology that makes interactions between callers and businesses automated using voice prompts, touch-tone telephone keypad entry, or voice recognition features.

IVR solutions have evolved over time ranging from pre-recorded voice prompts to highly advanced voice biometrics. Originally used in telecommunications, IVR allows callers to employ self-service technology so they can handle their own transactions over the phone.

Used for a myriad of functions including bank balances, order statuses, movie show times, flight schedules, or to pay bills, IVR enables businesses to accurately monitor customer transactions. IVR systems are also being incorporated into automobile systems so drivers can communicate without the distraction of a hand-held device.

IVR helps businesses handle high call volumes by automating the process for customer inquiries. Without requiring immediate agent attendance to the customer need, companies save significant costs and time expenditure.

IVR incorporates several pieces of technology, including platforms and applications. The hardware and software that runs the IVR is known as the "platform," whereas the programs that actually direct the voice prompts and other recognition features are called "applications." The IVR platforms serve to host the applications, and both work to gather valuable customer information that helps businesses to learn how to better understand and service their customer bases.

With technology's ever-changing face, IVR systems have been no exception to the alterations in voice software. Traditional IVRs use scripting language whereas more modern IVR systems use varying standards such as VoiceXML. Developments such as voice biometrics have brought the IVR industry to the forefront of technological innovation in the telecommunications arena as the ability of software to recognize and process human interactions continues to save businesses time and money.



Up in the Clouds By Lisa Marquez

A report released yesterday finds that nearly half of all small- and mid-sized businesses (SMBs) use cloud services. Many large corporations had already adopted both private and public cloud services early on, as it was often easier to store large amounts of data in the cloud, as opposed to onsite servers. It was also cost-effective in that many applications available through the cloud offered greater employee accessibility at a lower price point.

It is understandable why large corporations were willing to at least make preliminary moves towards a cloud-based software model early on. They have huge IT budgets that allow for some experimentation, especially if it will lead to lower price points in the future. SMBs typically don't have the budget flexibility to experiment with various IT solutions, so it was when the cloud became more popular, prominent and reliably dependable that the SMBs ultimately made the move en masse.

Now more than half of all SMBs have adopted some type of cloud technology for use in day-to-day business operations, along with a slew of other emerging technologies like the tablet. In addition to that, in spite of the fluctuating and often uncertain economy, technology budgets for SMBs have grown in 2011, which could also further account for widespread cloud adoption.

Here at Plum Voice we operate both hosted and onsite interactive voice response (IVR) systems. There are advantages to employing each type of system. Onsite systems are built primarily for those who prefer to manage their own equipment. Plum IVR systems are built in-house by Plum's team of engineers and equipped with features like carrier-grade servers and limitless scalability so that customers receive the best systems on the market with the option to upgrade their port capacity infinitely.

Our hosted solutions are built on the Plum VoiceXML platform and managed by Plum's experienced team of engineers. Systems are hosted in world-class data centers in the U.S. and Europe with features like fault tolerance, disaster recovery, unlimited port capacity and 24X7 operations.

Here at Plum, we have also noticed a significant customer migration to hosted IVR applications. Hosted applications are our version of the cloud, because they are built and managed remotely. Customers as of late are seeing the benefits of having a system that is managed off-site by industry professionals. Hosted systems do not take up space onsite or require that anyone have the specific expertise to manage them.

They include all the features of onsite systems and come complete with 99.999% uptime guarantees and the assistance of Plum's support team 24X7. The trend of SMBs (and large corporations) transferring their technology over to cloud software and systems is also a trend we are noticing here at Plum too, with many new customers signing up for hosted systems and others trading their onsite systems for hosted applications.



The Advantages of Hosting

By Lisa Marquez, Marketing Representative

This has once again been a banner year for the cloud. Seven out of ten companies are using cloud services as of the end of 2011. By 2013 it is estimated that the cloud computing market will be generating a \$150-billion-dollar profit per year. Cloud computing, and especially mobile cloud computing, has experienced rapid growth in 2011, and its prospects look equally bright in 2012.

As I have mentioned in an earlier post, all types of companies have "cloud capabilities." Any application that is accessed remotely through the Internet (as opposed to onsite) shares many of the same benefits as cloud computing. Hosted IVR is Plum's service equivalent of cloud computing, and while the popularity of hosted IVR has increased ten-fold, Plum contends with many of the same issues that all companies offering cloud services do.

The three main issues often cited by businesses large and small when contemplating a move to the cloud are security, cost and access to the latest, most cutting edge technology. The rapid growth of the cloud sector has been overwhelmingly popular with those companies that are early-adopters, but there has been hesitation for those that are less tech savvy. These are the three most oft mentioned concerns of those undertaking a large-scale data migration to the cloud.

Plum's customers need not worry. The three primary concerns of customers considering a hosted solution are actually not concerns at all. In fact, there are pronounced benefits that come along with all three aspects of cloud hosting, which will be explored as follows:

Five Uses for Outbound IVR

By Charlie Smith, Technical Writer

Outbound interactive voice response (IVR) has started to come into its own in the last few years in the United States. Much of that has to do with telemarketing law changes and new freedom for companies to contact their current customers.

In 2003, the Federal Trade Commission revised laws regarding outbound calls by companies to customers. The revisions limited cold calling but freed up calls to current customers, ushering in the era of high-touch customer service via outbound IVR.

High-touch transforms what used to be dinner-interrupting annoyances into thoughtful welcomes, notifications and reminders.

Here are five ways to use outbound IVR for high-touch service...

Welcome Calls—Any time a new customer comes on board, a company can provide a welcome call not only as a polite gesture but as an informative communication. The call can include any information a new customer might need or find useful.

Order Confirmation—Confirmation that an order is processing lets customers know their payment has gone through and the cogs of the wheel are turning. Order confirmations via phone or text are convenient for customers who don't have regular Internet access in particular.

Shipment Confirmation—Most customers want to know when something they've ordered is on its way. A shipment notification can let them know their package is en route and when they can expect it to arrive.

Installation Scheduling—One of the most important things when working with cable companies or construction contractors or any company that installs anything is scheduling the installation. Companies can use outbound IVR to schedule appointments and provide reminders.

Service Notification—Notifying or reminding customers of unexpected or scheduled service helps them keep track of things they didn't know were coming or might otherwise have forgotten.



By Charlie Smith, Senior Technical Writer, Plum Voice

Cloud computing has advanced many technologies, not the least of which is interactive voice response (IVR).

With hosting, companies can access IVR systems without housing and maintaining the systems themselves. The hosting services include telecommunications and all telecommunications management. Companies only pay for the minutes they use without investing in equipment.

VoiceXML is the open-standard markup language for IVR software developers. Any programmer can learn it, and any company can use it to develop an IVR application. Because of this, companies can create IVR apps on their own.

In fact, companies can leverage their programmer resources like they do for web development. Their web developers can control voice applications so the company doesn't have to pay a firm to develop their IVR call flows.

As an open-standard programming language that evolves based on the contributions of the industry's leading companies, businesses that invest in a VoiceXML hosting service are benefiting from collective R&D efforts of an entire industry.

With decades of industry experience and billions in R&D behind it, VoiceXML is the most advanced IVR coding language available. It enables more advanced features and voice applications while also supporting speech recognition and text-to-speech.

As the language evolves to add more features, so too do VoiceXML hosting services. This ensures companies always have access to the latest speech and voice technology.

Also, VoiceXML is vendor-neutral, so companies aren't locked into using a proprietary programming language to build their voice applications. The code is portable to any platform that supports VoiceXML.



Controlling the IVR Dialog

By Lisa Marquez, Marketing Representative, Plum Voice

Companies in different industries use IVR to make their businesses more efficient and to improve customer service by enabling callers to access information over the phone 24 hours a day.

While use cases and functional requirements for IVR vary from industry to industry, the one requirement that all businesses have is the need to control the call flow or dialog.

The call flow is the caller-user interface that presents menu options and commands to the caller. It delivers information, collects information from the caller and processes requests by accessing the company's database.

As business needs change, companies have to update IVR call flows to accommodate new menu options, branding requirements and the ability to access new or different data to provide accurate and up-to-date information to callers.

The easiest way to change an IVR call flow, without recourse to an IT department or development resource, is to use a platform based on a graphical user interface (GUI). GUI tools enable business users to change IVR applications without having to write code. Users need only arrange and connect visual elements on a page to create or change call flows.

GUI tools, such as Plum's QuickFuse platform, intuitively help users design IVR call flows by visually mapping all the menu options and commands a caller can access while navigating through an IVR application.

In addition to visual call-flow mapping, QuickFuse offers an audio file management tool that stores all recorded prompts. Using the audio management tool, users can easily make changes to the wording of prompts without affecting the structure of the call flow or the application's functionality.

The QuickFuse platform is also entirely web-based, so users can access its interface from any computer via a standard web browser to make changes to an IVR application or create a new call flow in minutes.



IVR: A Good TTS Engine By Charlie Smith, Senior Technical Writer, Plum Voice

Interactive voice response (IVR) systems rely heavily on text to speech (TTS) engines to convert text characters into audible human speech (or at least human-like speech).

TTS engines translate the text in call flows into the messages transmitted to callers in IVR systems. Many IVR system designers use messages pre-recorded by humans (usually hired voice professionals).

However, the process usually takes a certain amount of time and relies on the voice professional's availability. For more flexibility, IVR designers can use TTS engines to quickly create call flows with any text they need.

TTS technology uses voice recordings as well but in a very different way than pre-recorded messages. TTS messages are sample-based, where a professional voice expert records a number of samples. That's the beginning.

To create TTS, designers have to create a large sound library from the samples recorded by the voice professional. They need to manually take apart all the syllables and sounds to make a library from which to rebuild concatenated speech—words put together in strings from the sampled bits of speech.

Because all TTS engines work this way—using concatenated speech—differences in quality come down to just a few key elements.

The higher quality the voice samples are, the better the end result will be. This means clear, precise diction and an accent appropriate to the customer base. The more samples recorded by the voice professional for the base of the syllable and sound library, the better the end result will be.

And the higher quality the TTS engine, the better the end result will be as well. A TTS engine that can make the most of the syllable and sound library will stitch together better speech.

Advantages of Speech Recognition

By Scott Wilson, Plum Voice

Speech Recognition is used in many voice applications to collect information from callers that would otherwise be impossible to gather over the phone. However, many companies use speech recognition in their IVR applications for the wrong reasons.

Using speech recognition to collect information that could just have easily been entered by a user via a touchtone keypad can lead to bad IVR design and caller frustration.

Examples of overusing speech recognition include asking callers to enter numeric information via speech instead having callers input data through their telephone's keypad. Entering numeric information through the phone's keypad assures a higher degree of accuracy, as the performance of speech recognition engines is highly dependent on the caller's environment, noise levels in that environment, and their pronunciation of words.

In addition, the average call length of a typical self service IVR call flow can increase exponentially if speech recognition does not understand a caller's utterance. If the speech engine does not recognize the input of a caller the IVR application must re-prompt the caller to enter their information again which can also lead to frustration.

So when does it make sense to use speech recognition in an IVR application? The most particle applications for speech are to collect information that simple cannot be enter on a keypad like a caller's first and last name, city and state, product names, or a specific location.

Using speech in the proper place in a call flow will help companies that implement IVR gather useful information, increase automation rates and lower customer service costs.



Backwards Compatibility By Scott Wilson, Vice President of Marketing and Sales

We receive a number of calls every week from companies that need to replace end-of-life IVR hardware and want a modern next-generation IVR system that supports open standards like VoiceXML, SSML, MRCP, and ABNF+XML. Plum is the perfect fit for any company looking to upgrade their IVR system to support web-based technology.

To avoid the capital expense of replacing an IVR system, many companies opt for a hosted IVR solution. Hosted IVR services should always have the most up-to-date software and hardware. That's one of the biggest benefits of SaaS and cloud-based systems. However, over the past several months we've received a number of requests to replace IVR applications that are running on other vendor's hosted platforms. Companies are looking to Plum to redevelop and redeploy their existing hosted IVR apps on the Plum platform. It seems that as some vendors are replacing their infrastructure to update systems with the latest technology, the platform upgrades they're putting in place are not backwards compatible. We've heard from several companies that to continue their service with their current vendor they have to rewrite the entire application or pay their vendor to recreate existing programs to accommodate the upgrades. To Plum, this is an unnecessary and costly duplication of effort. No company should have to redevelop an application due to a platform upgrade. That's why our hosted network and IVR platform is 100% backwards compatible.

Any time we make a software upgrade we make sure that all applications running on the Plum platform will work error-free. We have several clients that still operate voice application built using VoiceXML 1.0 on our VoiceXML 2.1 platform.



A couple of weeks ago I did a piece exploring Plum's hosted interactive voice response (IVR) solutions, which are hosted in the cloud. The Cloud is generally thought to be the greenest way companies can both store data and utilize programs. Cloud computing reduces energy use and carbon emissions.

Hosted IVR systems share these similarities with other cloud programs and are increasingly becoming the green option for customers utilizing IVR systems. When customers choose to utilize a hosted solution, they are integrating with applications built on a VoiceXML platform and hosting their data in physical data centers around both the U.S. and Europe.

So how exactly is this a greener option than an onsite system? Building and executing an IVR application requires setting up infrastructure that requires physical resources and energy to power. When customers choose to go with a hosted solution, they effectively reduce or eliminate the problem of the over-allocation of infrastructure by having all of their infrastructure and capacity located in one place. This minimizes the risk of over-allocation by allowing their solution to utilize only the resources that are required for actual usage, thus eliminating an over-production and unnecessary usage of energy-consuming resources.

Companies that utilize onsite systems often require multiple system configurations in multiple locations to ensure redundancy. These configurations require hardware and energy to power, and when there are multiple systems in multiple locations, it only serves to exacerbate energy output and demands much additional infrastructure to be used.

The resources required to power onsite systems are much greater than those used in IVR hosting. Utilizing a hosted solution means that customers are employing resources that are already in place, with no need to purchase or build more. Hosting centers are equipped with all of the software, infrastructure and port capacity that a client would need. Furthermore, it is hosted at one site, with redundancy ensured in part because of the technological capacity of the center itself. Hosted clients need not worry about scattered equipment and technology. Customers using onsite instead of hosted systems are basically just duplicating what already exists, which is environmentally and fiscally inefficient.

Fault tolerance, 24/7 uptime, redundancy and port capacity are characteristics that are intimately important to those utilizing an enterprise-level IVR set up. Hosted IVR applications offer all of these features and improve data-center efficiency because they are overhead functions performed and executed for every application. Because these functions are performed for a large number of applications, they are optimized for efficiency and reduce power and energy required.

Additionally, large hosted server deployments mean that infrastructure is serving multiple tenants and can efficiently balance storage loads efficiently at the physical server location. This means that the systems can be operated at higher utilization rates, meaning that the system is functioning more productively and efficiently, wasting less energy and serving more clients.

Essentially, hosted IVR applications are greener because they allow many companies to power hundreds (or even thousands) of IVR applications utilizing the resources of one hosting environment. Plum's hosting and data centers are equipped with the capability to power thousands of enterprise-level applications in one place, promoting efficiency and preserving the environment!

we're plum voice we do telephony interactive voice response | phone surveys | professional services

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IVR Hosting, Systems and Solutions



IVR Solutions for Business

With Plum Voice IVR, telephones turn into:

24x7 customer service assistants

Conductors of telephone surveys

Account administrators

Tour guides

Call center navigators

Employee benefits processors

Help desk assistants

Automated tellers

Timecard punch managers

Notification and alert systems

Work schedulers and task managers

Plum Voice is a single-source provider of carrier-class IVR (Interactive Voice Response) solutions. We offer:

- 1. Hosted IVR services
- 2. Turnkey IVR systems
- 3. Professional services to design and build custom IVR applications

Plum is exceptional among IVR providers because we own the core intellectual property and offer a full range of deployment options. We are not just IVR resellers. Whether you buy a Plum server or use Plum GlobalVoice hosting, at the core is the state-of-the-art VoiceXML compliant Plum Voice IVR platform, which Plum's engineers built from the ground up and support at every point.

We can help you:

- · enhance customer service
- · implement surveys
- reduce call center costs
 - generate automatic messages
- manage timecards
- and more...
- · create on-demand audio tours

For businesses of all sizes that demand high-performance, versatile, and scalable IVR systems, Plum Voice offers a rare combination of proprietary technology and complete professional services. We deliver IVR solutions that enable companies to exceed their business goals and streamline their business processes, whatever they may be.

With Plum IVR technology, the possibilities are endless. We will work with you to define your needs. Then we'll meet them – helping you connect your customers to the information they need with a simple phone call, improving customer satisfaction and reducing costs.

The business case for IVR is clear: research confirms that IVR technology generates significant return on investment. Take the case of a live agent vs. call automation. The cost of employing live agents to answer routine requests can average over \$5 per call. However, the incremental cost of handling calls with a VoiceXML IVR gateway is measured in mere pennies.*
* In-Stat/MDR Research Study 2003

Superior Call Quality

Crystal-clear voice connectivity is assured: Plum uses top quality voice circuits from leading global telecommunications providers.

Feature-Rich, Easy-to-Use

Management Tools With GlobalVoice, administration of IVR applications – whether international or domestic – can be performed from a single, intuitive webbased interface to enable full call-control capabilities anytime and anywhere.

Guaranteed Reliability

Housed within world-class data centers in the US and internationally, the GlobalVoice hosting infrastructure offers an industry leading service-level agreement designed to meet the highest standards. For critical applications, GlobalVoice offers 24/7/365 monitoring, quick incident response, maintenance upgrade support, and robust failure systems to guarantee 99.999% uptime.

Rock-Solid Security

The Plum GlobalVoice system infrastructure is secured behind Cisco firewall technology, on hardened Linux servers, in restricted-access data enters. Financial, medical, and private data will always be safe: our engineering department has decades of experience building dependable encrypted applications that protect your data from hackers. With just a phone call, Plum GlobalVoice helps you connect your customers, wherever they may be, to your business data. Telco provisioning, 24x7 operations, port capacity, fault tolerance, disaster recovery: leave these details to us, while you focus on your customers and your business.

Plum GlobalVoice IVR Hosting

Plum IVR Hosting Serves SMBs and Large Enterprises

GlobalVoice is our hosted and managed service for applications built on the award-winning Plum VoiceXML platform. GlobalVoice offers businesses of all sizes the most cost-effective and reliable way to deploy IVR solutions both locally and internationally. We provide a versatile hosting infrastructure that scales seamlessly to grow with your business needs.

GlobalVoice Revolutionizes International IVR Deployments

GlobalVoice guarantees rapid deployment of telephony applications in 16 countries throughout Asia, Europe, and North America. Unlike alternative IVR configurations that attempt to backhaul calls to a central location or require disparate platforms, applications, and vendors, GlobalVoice delivers a "one-stop shop" deployment, streamlining international IVR launches and ensuring exceptional call quality and connectivity.



With just a phone call, Plum GlobalVoice helps you connect your customers, wherever they may be, to your business data.

Telco provisioning, 24x7 operations, port capacity, fault tolerance, disaster recovery: leave these details to us, while you focus on your customers and your business.

Plum Voice Turnkey IVR Servers

Carrier-Grade Reliability

Configured for maximum uptime with fault-tolerant system components.

User-Friendly Management Tools

Easy-to-use, browserbased interface simplifies administration tasks.

Limitless Scalability

Systems can be scaled to any size: from four ports to thousands.

Exceptional Versatility

A variety of configurations and options are available to meet your business needs. For those who prefer to manage their own equipment, Plum also sells its platform as an integrated hardware and software package. Reliable, scalable, and pre-configured to meet custom specifications, Plum's on-site turnkey systems include all necessary software and hardware to enable the swift deployment of IVR applications.

State-of-the-Art VoiceXML Platform Software

Plum's on-site systems are built on our own VoiceXML 2.1 compliant platform, delivered with your choice of speech synthesis and speech recognition options – ensuring outstanding automated telephony solutions for your business. Unlike IVR resellers, we built and own our core platform, so we know it from top to bottom.

Nonstop IVR Hardware

All Plum on-site systems are built on carrier-grade servers, optionally configured with spare drives, spare fans, and spare power supplies. And because we use Intel Dialogic boards, we can reliably interconnect with carrier or private branch exchange (PBX) switches anywhere in the world using a wide range of telephony interfaces and protocols.

Easy-to-Use Administration Tools

Plum's management tools help you to maintain your IVR system with an intuitive, browser-based interface. This user-friendly interface simplifies platform configuration tasks, report generation, and application development.

"We were very impressed by Plum's service and performance."

~Pfizer

"Plum has been great – we've had no problems using the system we purchased. Technical service and support have been excellent."

~ADP

"Fantastic team! Service was A+ from start to finish."

~University of Idaho

"The Plum platform has proved itself very reliable and scalable for our business. New iterations of the product continue to impress us."

~Teletimecard

"Choosing the Plum VoiceXML platform was a winning decision for us."

~Xionetic Technologies

"Our experience with Plum engineers has been excellent. We would strongly recommend the Plum solutions to other enterprises."

> ~Payment Service Network

Plum Voice Professional Services

End-to-End Solution Development and Consulting

As a leading provider of custom IVR solutions and services, Plum designs, builds, deploys, and manages IVR systems and applications for businesses of all sizes and industries, all over the world. We accomplish this through ourcombination of VoiceXML development expertise, versatile deployment options, flexible telecom and data integration, and responsive customer support.

Our projects range from the straightforward (retrieving the account balance on a gift card) to the specialized (encouraging smokers who are attempting to quit through daily phone calls). We work with companies from healthcare providers (tracking cancer patient symptoms) to museums (enriching the artwork-viewing experience with custom audio content).



Plum's first step is to work with you to design and document your IVR application requirements. After building your application, our engineers will conduct rigorous testing before production deployment in our hosted environment or on a Plum turnkey on-site server. Once your application is launched, we promise to stand behind our work, providing excellent technical support. Plum has a lengthy track record of proven customer satisfaction unsurpassed in the industry.



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