IBM

IBM WebSphere Voice Server gives voice to e-business applications

Voice-enable your e-business applications

IBM WebSphere® Voice Server is a software middleware product that provides breakthrough technology for quickly developing and deploying conversational e-business solutions. Voice-enabled applications give your customers, employees and suppliers greater access to information and services. WebSphere Voice Server supports industry standards such as Java and VoiceXML. IBM support for open standards gives you freedom from proprietary technology, enabling you to manage costs and application deployment schedules for your business.

Highlights

- *Can enhance e-business applications with natural voice input and output, allowing access to customers with a telephone or other mobile device*

- *Extends Web information to virtually anyone with a telephone and includes powerful IBM speech recognition and Text-To-Speech (TTS) engines*

- *Uses industry standards so you can easily create new speech-enabled applications or add a voice interface to existing applications*

- *Supports a variety of connection environments*

A leading provider of voice enabling e-business solutions, IBM delivers Web, middleware and telephony solutions that can help businesses quickly deliver information to their customers. As your single point of contact, IBM can help you extend your e-business reach by offering integrated hardware, software and services that support the convergence of voice and data. IBM supports open standards-based VoiceXML technology that is scalable and highly compatible. Bring your business to the next level with IBM — providing a solid foundation on which to build integrated, innovative voice solutions.

Increase the availability of your services

WebSphere Voice Server provides self-service access for your existing customers as well as new ones. It ensures 24x7 support at all times, dramatically extending your business' level of customer service.

Now you can reach a much larger audience — anyone with a telephone. Your customers can access information and conduct transactions, and they don't have to be connected to the Internet to do it. Using a telephone, they can fully interact with your applications and Web site in a much more natural, user-friendly way.

Extend your investments

You have already made significant investments in developing your legacy applications and your e-business framework. By voice-enabling those existing applications, you can extend these same applications and databases to everyone, including customers and employees who may not have had access previously.
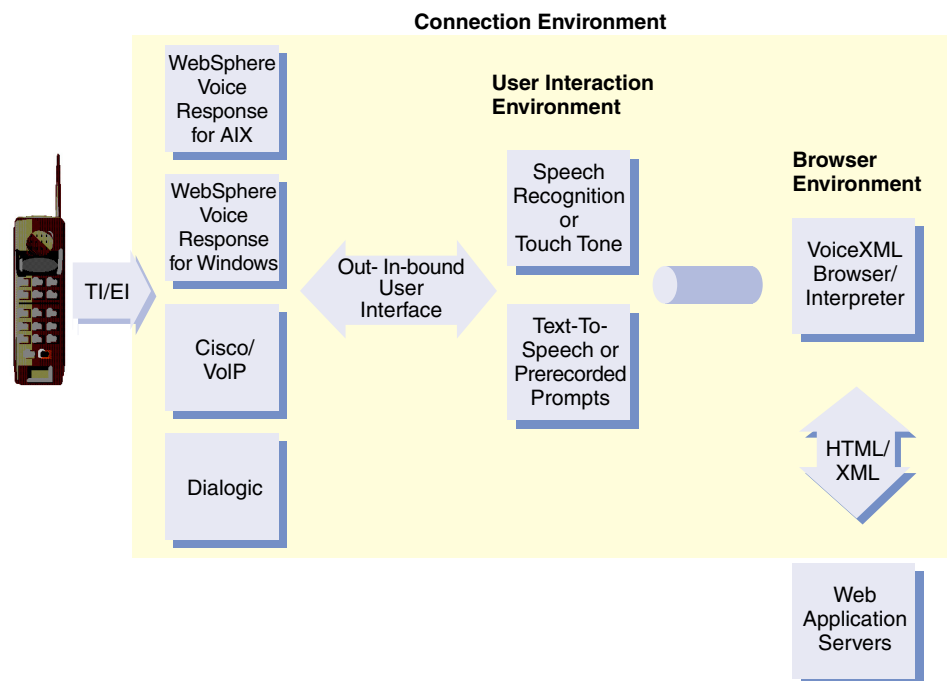
Rapid payback

WebSphere Voice Server uses your existing Web and telephony infrastructure, allowing you to reach new customers and provide additional service to existing customers. Speech recognition and Text-To-Speech (TTS) technology allow you to simplify long menu selections in your existing systems. This means you can reduce the average call duration, cost per call, and decrease call abandonment rates. You can add additional revenue streams by offering new services and use customer service representatives for higher value customer interactions. This allows you to improve customer satisfaction and retention rates. These, and many other factors, can mean a rapid system payback.

Improved usability

Speech recognition makes it easy and natural for your customers to interact with your business. Just as usability is an important factor in traditional applications, it is even more so in mobile applications. Users can access information virtually anywhere, anytime — increasing overall productivity and accelerating communications and responsiveness to customers.

Typical voice-enabled Web application scenarios

Today, many applications are used by customers to access information or conduct transactions. WebSphere Voice Server provides the structure for voice-enabled applications, using dialog management which enables the caller to use a natural interface just by speaking. Voice-enabled applications allow customers to call in for a variety of information and transactions, such as the latest

Connection Environment

WebSphere Voice Response for AIX

WebSphere Voice Response for Windows

Cisco/ VoIP

Dialogic

TI/EI

Out- In-bound User Interface

User Interaction Environment

Speech Recognition or Touch Tone

Text-To-Speech or Prerecorded Prompts

Browser Environment

VoiceXML Browser/ Interpreter

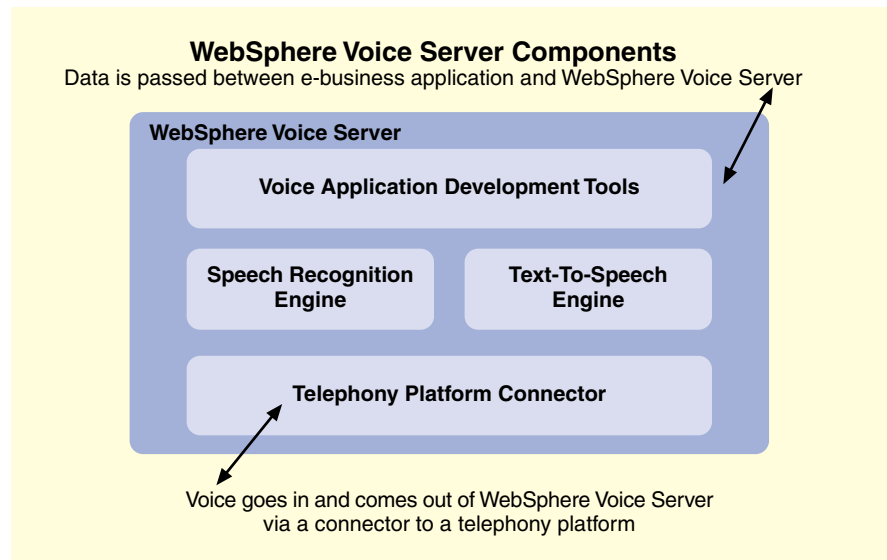HTML/ XML

Web Application Servers

weather report, current movie listings, health care provider enrollment, stock information, travel arrangements, employee timecards, appointments and purchases-in short, the entire range of interactive applications.

These four key elements make up the WebSphere Voice Server product offering:

Speech recognition engine — recognizes caller utterances by means of one or more application-specific grammars and converts spoken audio into text.

Text-To-Speech engine —produces a speech audio stream from text provided by the speech application or stored in databases for playback over a telephone. There are three TTS offerings available with WebSphere Voice Server: formant — the default option, which provides unlimited vocabularies using synthesized voices; concatenative — an optional feature, which provides unlimited vocabularies using human voices; phrase splicing — an IBM services offering, which provides limited vocabularies using pre-recorded human voices.

WebSphere Voice Server Components
Data is passed between e-business application and WebSphere Voice Server

WebSphere Voice Server

Voice Application Development Tools

Speech Recognition Engine

Text-To-Speech Engine

Telephony Platform Connector

Voice goes in and comes out of WebSphere Voice Server via a connector to a telephony platform

Voice application development tools —used to develop and test speech applications using speech recognition and/or TTS. These tools include support for applications written in VoiceXML, JavaBeans or C development environments.

- *WebSphere Voice Toolkit, allows application developers to easily add voice technology to middleware applications and includes a VoiceXML editor, grammar editor and pronunciation builder.*
- *WebSphere Voice Server Software Developers Kit (SDK), provides tools for prototyping VoiceXML applications on a PC without a telephony server.*

Telephony platform connector — the run-time platform for speech applications that connects the voice audio streams from the public telephone network or Voice over Internet Protocol (VoIP) to recognition and TTS engines.

WebSphere Voice Server also includes a complementary copy of the following products:

- *WebSphere Application Server, Advanced Developer Edition V4.0 for internal evaluation, development, demonstration and testing of applications. It provides support for open standards and offers a rich set of application deployment services and transaction management.*
- *WebSphere Studio 4.0 Entry Edition provides additional tools for a comprehensive Web development tool suite for e-business.*

A variety of connection/platform environments

WebSphere Voice Server offers a wide range of connection platforms that can make deployment fast and easy.

Connection environments supported are:

- *WebSphere Voice Response for AIX®*
- *WebSphere Voice Response for Windows® 2000*
- *Cisco telephony platform (supports Voice over IP networks)*
- *Intel® Dialogic Voice Portal Reference System*

Global access

WebSphere Voice Server is available in multiple languages, enabling easy communication around the globe in users' native languages. Languages include US English, UK English, French, German, Italian, Spanish, Japanese, Simplified Chinese and Traditional Chinese. For additional information about language and platform support, go to **ibm.com**/software/speech/enterprise.

Features

WebSphere Voice Server is used to enable callers to access e-business applications using their voice or the buttons on their telephone. There are a number of features that can enhance your users' experience:

- *A speech-recognition engine, which matches spoken words to a list of possible words in a grammar*
- *TTS engine, which produces synthesized speech data from text provided by the application or stored in databases is shipped with the system (formant is the default — concatenative and phrase splicing TTS are also available)*

- *Support for a variety of telephony-platforms for in-bound and out-bound voice calls*
- *One or more VoiceXML browsers*
- *A System Management component, which handles the starting and stopping of browsers*
- *Support for Automatic Number Identification, Dialed Number Identification Service and Call Transfers to ACD or specific agents*
- *Barge-in detection*
- *Support to enable the WebSphere Voice Server to reside behind a firewall*
- *Support for secure sockets layer*

Advanced technology converts Text-To-Speech (TTS)

TTS synthesis provides the ability for machines to convert dynamic text into audible speech. IBM provides concatenative speech synthesis as an optional feature so customers can upgrade the sound quality of the dynamic data played back to a caller on their system. Concatenative TTS uses small pieces of recorded speech to create speech output. This technology sounds more natural because it is comprised from pre-recorded information from both a male and female voice.

Operating System	Telephony platforms	Languages
AIX Windows 2000	WebSphere Voice Response Intel Dialogic Cisco	US English UK English French German Italian Spanish Japanese Simplified Chinese Traditional Chinese

The IBM Concatenative TTS Run Time Kit provides the speech synthesis, engine and other components necessary for applications to produce speech output from any data source. This kit can be used by solution developers who want to embed the Concatenative TTS into their own speech-enabled solution. Included are the tools, libraries, recordings and application interfaces needed to support concatenative synthesized speech.

Natural Language Understanding (NLU)

Natural Language Understanding is the ability of a computer to understand and intelligently react or respond to a query or command from a human in standard language, as opposed to a specially formatted sentence or menu command. People interact with their applications by typing, clicking, speaking or writing; and NLU technology spans all of these input modalities. NLU solutions offer significant benefits to both the enterprise and the end-user by allowing users to do things for themselves (self-service means decreased cost of business) in a manner that's comfortable and pleasant.

NLU combines breakthrough research and development in the fields of voice recognition, linguistics, statistics, human factors and artificial intelligence. There are several types of NLU, including grammar-based and statistical NLU. Grammar-based NLU requires an exact utterance that has a specific match in the system, whereas statistical NLU employs abstract models based on actual conversation, which means a perfect match is not required. Statistical NLU can provide a solid foundation to accommodate increased scalability and application complexity, which can help facilitate future maintenance, expansion and deployments.

IBM NLU systems use statistically-based models which provide more flexibility and robustness than traditional grammar based methods. IBM NLU eliminates the limitations of speech recognition grammars that are typically used in speech applications today. IBM can provide services to help you realize the benefits of this state-of-the-art technology.

Custom services

IBM and certified IBM Business Partners offer a complete set of fee-based integration services that can help businesses develop and deploy their voice-enabled applications. There is a fixed-price, Fast-Start program available to help you get up and going quickly.

Customer services include:

- *Requirements workshops*
- *Solution design*
- *Solution implementation*
- *Project planning*
- *Human factors*
- *Prototypes*
- *Proof of concept*
- *Integrated voice solutions*
- *Migration between platforms*

WebSphere software platform: building on a firm foundation

WebSphere Voice Server is part of the IBM WebSphere software platform — a comprehensive set of integrated, award-winning e-business solutions. No matter where you are in the e-business cycle, the WebSphere software platform delivers the flexibility you need to grow — at the speed the market demands. Building on this robust platform, you can connect diverse Information Technology (IT) environments to maximize your current investments and leverage existing skills. Deliver your core business applications to the Web using industry standards like Java technology and XML and create next-generation applications that differentiate you from the competition. Advance to a powerful platform for integrated e-business — the WebSphere software platform.

To learn more

For more information about how IBM can help your business take advantage of conversational e-business, call your local IBM Sales Representative, contact an IBM Business Partner specializing in voice at **ibm.com**/software/voice/partners/list or visit **ibm.com**/software/voice, call us in North America at 1 800 Talk-2Me or outside North America, e-mail Talk2Me@us.ibm.com.

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