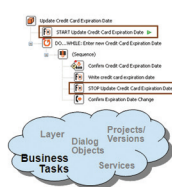
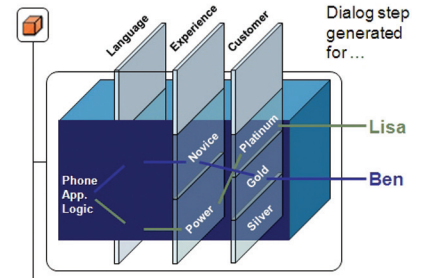
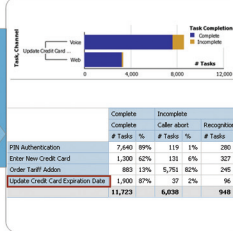


Metadata (Application Definition)



Business Tasks & Caller Behavior



VoiceObjects

Improving Customer Satisfaction with VoiceObjects Unified Self-Service™



## VoiceObjects 9

### Personalized Phone Self-Service Experience

**Open. Flexible. Simple.** This is the promise of VoiceXML. And with the world's leading companies moving to VoiceXML, VoiceObjects is redefining the phone self-service customer experience by providing enterprises and carriers with an open, flexible infrastructure to develop, deploy, manage and analyze self-service phone applications. VoiceObjects 9 makes it easier and significantly less costly for customer-centric organizations to deliver effective, personalized customer service experiences over the phone.

With VoiceObjects 9's personalization engine, group-level and one-to-one personalization with low cost application maintenance and fast updates is a reality. Powered by SOA-based integrations to today's ERP and CRM systems, a self-service phone portal running VoiceObjects can adapt to individual preferences automatically, enabling customers to get answers and perform transactions more quickly while making them feel known and important.

VoiceObjects' Design Once – Deploy Anywhere architecture makes it easy to develop one application and run it on any popular phone channel whether its voice, video, text or mobile Web-based communications.

And with Voxeo's investment in ensuring compatibility, organizations have the flexibility to choose VoiceXML-based IVR vendors, run the same application across multi-vendor VoiceXML IVR infrastructures, and upgrade and or completely change vendors without rewriting a single line of code. Applications are 100% portable and operate seamlessly on leading standards-based IVR platforms such as Aspect, Avaya, Cisco, Genesys, Holly, Interverse, Nortel, Nuance, and Voxeo.

What is happening in the self-service phone portal? What are customers experiencing? VoiceObjects' integrated analytics can provide real-time reporting and analysis on caller behavior, application performance, and transaction success. VoiceObjects eliminates time consuming data extraction, transformation and loading (ETL) processes by automatically collecting data in the VoiceObjects Infostore database. And because Infostore is linked directly with the application development environment, any changes to applications are automatically reflected, reducing the time to manage and update reports.

VoiceObjects 9 represents an exciting advancement in how today's companies can develop, deploy, manage and analyze over-the-phone applications. And consumers benefit from innovative and advanced applications that deliver a faster and more effective phone self-service experience.

## Introduction

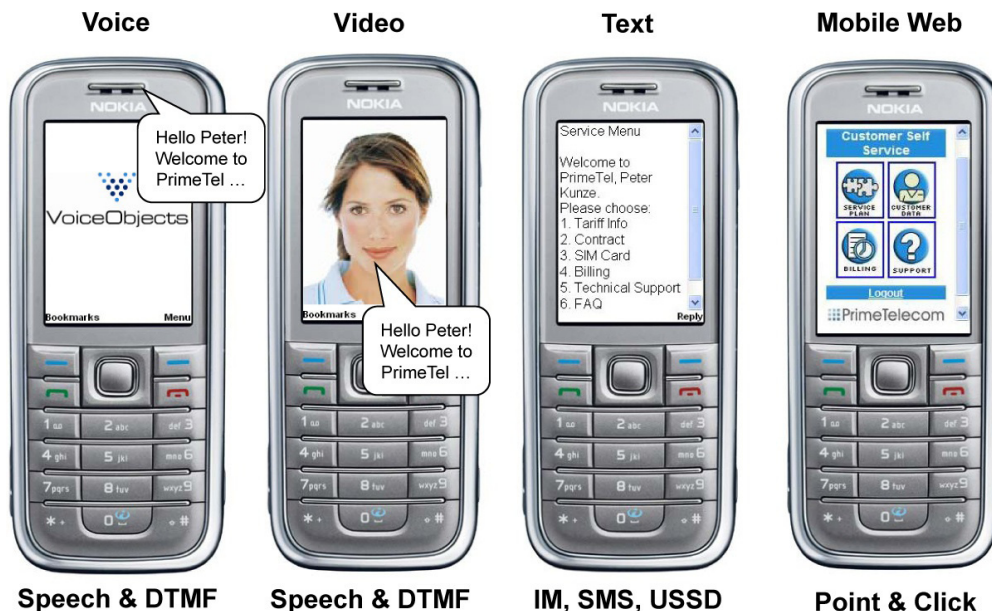
Studies show customers accept self-service phone portals that are easy to navigate, save time, provide the information they need, and use interaction history to provide a sense that the system knows who they are. However, these types of systems are too infrequently deployed as cost savings and dealing with day-to-day operations headaches has taken precedence over providing good customer experiences.

Enterprises and carriers face the challenge of how to strike a balance between providing good phone self-service while minimizing service creation, delivery, deployment and management costs.

The VoiceObjects software suite – the world’s leading self-service application development, management, and analytics solution – is designed to meet these challenges head on. VoiceObjects technology helps customers build and maintain applications that can be rapidly changed or tuned based on evolving business requirements or projects. Read on to find out more about VoiceObjects Server, VoiceObjects Analyzer, and VoiceObjects Desktop.

## VoiceObjects 9

Key Features	Benefits
Design Once – Deploy Anywhere architecture	VoiceObjects’ Design Once – Deploy Anywhere architecture lets you build one application that customers can use across multiple phone channels like voice, video, text, and mobile Web. Moreover, VoiceObjects supports VoiceXML platforms from various vendors so that you can change VoiceXML platform versions or vendors at any time without rewriting a single line of code.
Personalization Engine	Powered by built-in integration to popular ERP and CRM systems, VoiceObjects applications can automatically adapt to individual preferences resulting in effective customer experiences and higher self-service adoption.
SOA-based Integration	The VoiceObjects Web services interface and connector framework provides easy integration with any back-end system or legacy application for existing and future investment protection.
Integrated Analytics	VoiceObjects’ integrated analytics provides real-time analysis and reporting of caller behavior, application performance, and transaction success to help improve ROI and eliminate caller frustrations.



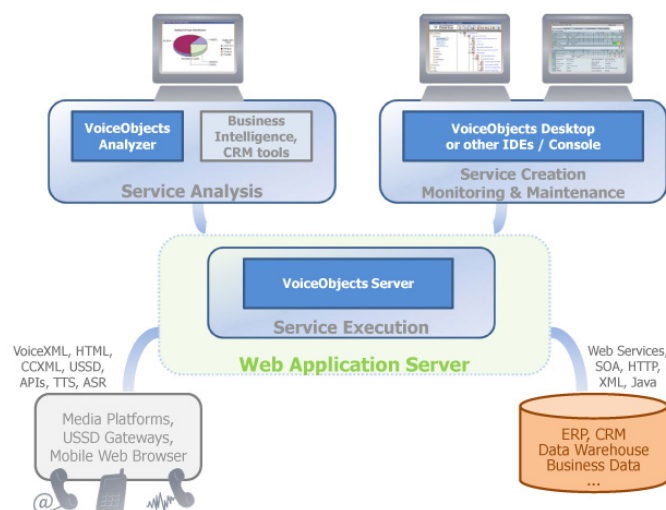


## VoiceObjects Server - A Phone Application Server

*VoiceObjects Server*, VoiceObjects' flagship product, is designed to reduce the complexity of deploying and managing adaptive self-service phone portals. VoiceObjects Server enables highly scalable, carrier-grade deployment of personalized over-the-phone self-service applications and is designed with efficient application execution and management in mind.

Phone application servers have four major characteristics:

- The ability to dynamically generate VoiceXML to create personalized dialogs with each caller at calltime, using information in an organization's CRM or other databases. In customer service applications, the resulting caller-specific conversations provide opportunities to up-sell and cross-sell and facilitate higher rates of customer satisfaction and service adoption.
- An application execution environment that supports remote management and monitoring of multimodal applications, online application maintenance for instant changes or rollbacks, and guaranteed high availability.
- Web services support for easy integration between an organization's phone-based self-service assets and its CRM, ERP, and other IT assets in service-oriented architecture (SOA) environments, drastically reducing development time and cost.
- Support for multimodal phone applications that may include voice, video, text and mobile Web interfaces, allowing user-friendly interactive applications that are unmatched in the phone self-service industry.



*VoiceObjects 9 enables the development, deployment, management and analysis of self-service phone portals.*

## New Features

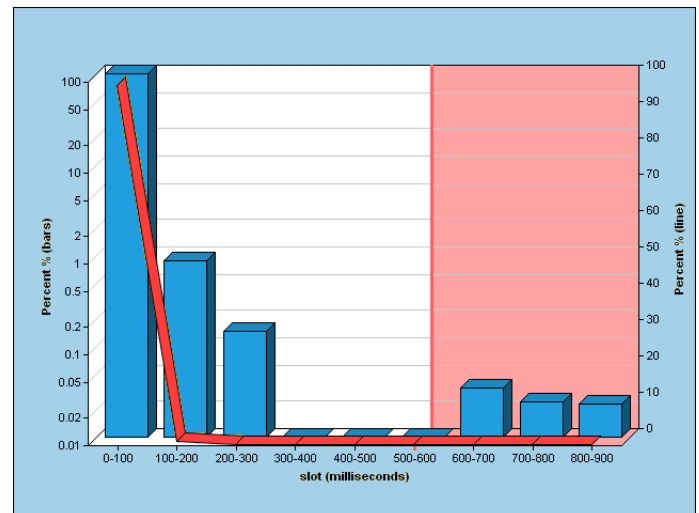
### 2-way interactive text applications via SMS and USSD

The current version of VoiceObjects supports 2-way interactive text applications via USSD and SMS. The VoiceObjects text application architecture follows a flexible, extensible adapter approach that enables support for a wide variety of SMS and USSD gateways.

Organizations can use this functionality to extend their automated self-service offerings, providing mobile phone users with a powerful and efficient text-based self-service interface that is not only highly appealing to a growing number of customers, but also extremely cost effective.

### Load and performance testing

VoiceObjects includes a LoadTester tool to verify scalability, performance, and resilience of your application server and back-end systems. The LoadTester is primarily used for load and performance testing, simulating a large number of virtual callers, but can also be used for automated functional regression testing. In a production environment the LoadTester can be used for continuous active end-to-end monitoring and alarming. The LoadTester is bundled with additional scripts for analyzing the test results.



With the SlotStat chart it is very easy to identify in which time range most peaks occur.

### Integrated Grammar IDE

Nu Echo's NuGram IDE is an Eclipse plug-in that offers a complete environment for authoring, testing, and debugging speech or DTMF recognition grammars. The NuGram IDE seamlessly integrates with the VoiceObjects platform so that grammars created with VoiceObjects are ready to be opened with the NuGram IDE for inspection, modification, and testing. The NuGram IDE Basic Edition is integrated in the latest version of the VoiceObjects platform.

## Key Benefits of VoiceObjects Server

### Component-based architecture

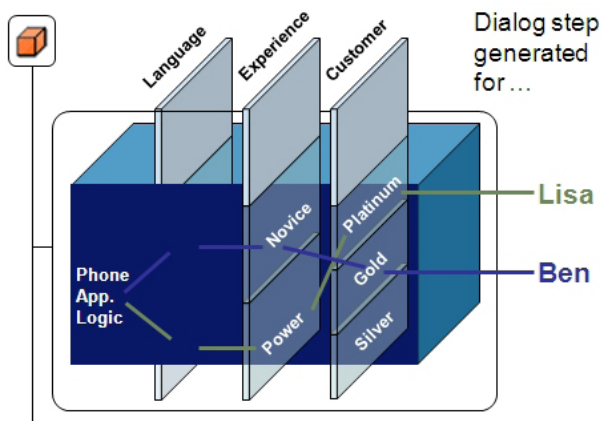
*VoiceObjects Server* uses core objects as the building and configuring blocks for developing services. This object-oriented approach uncouples the underlying technology from the application and allows designers to build user-friendly applications without Java or VoiceXML coding. Modularity lends itself to advantages such as inheritance and easy reusability of components.

### Design Once – Deploy Anywhere

The same applications developed for one phone channel can run on any other phone channel of choice, whether its voice, video, text or mobile Web-based communications. Organizations also have the flexibility to choose among the VoiceXML-based IVR vendors, run the same applications on multiple VoiceXML IVRs, do version upgrades or completely change vendors without rewriting a single line of code.

### Dynamic personalization

VoiceObjects' personalization engine does away with the typical one-size-fits-all phone self-service approach. The personalization engine uses layers to present dynamically generated information, prompting each caller based on their input and/or customer preferences and interaction history stored in a CRM database. By using layers, designers can easily separate the core application logic from the way the application is presented to the caller. For example, a welcome prompt is created once within the dialog flow, but consists of various presentations for different languages, personas, or customer groups.



Layers manage the complexity of designing dynamic, personalized dialogs. Callers hear different dialogs, depending on their profiles and input.

### Hot redeployments and rollbacks

With one-click hot redeploy, applications updates can be deployed across an entire server farm with no service downtime or manual distribution of files. Hot restore reverts an application back to a safe state, eliminating the deployment of broken or incomplete applications.

*VoiceObjects Server* provides SNMP traps and e-mail notifications to rapidly alert operations personnel to unexpected occurrences in an installation.

### Carrier-grade cluster management

Based on a distributed, redundant cluster architecture, *VoiceObjects Server* delivers seamless scalability and graceful handling of peak loads, easily scaling from five ports for a small business to tens of thousands of ports for a managed services platform or operator.

### Multi-tenancy

With *VoiceObjects Server*, you can deploy multiple tenants and multiple users simultaneously on a single infrastructure, ensuring efficient sharing of resources. Securely separate project, object and user management among tenants and leverage collaborative development among corporate teams. User management and user roles can support the different functions within projects and provide appropriate access rights to efficiently manage large corporate and managed service environments.

### Platform independence

Customers running *VoiceObjects Server* protect existing and future infrastructure investment and gain IT flexibility with comprehensive support for all leading operating systems, databases and Web application servers. *VoiceObjects Server* has media platform drivers for the latest versions of all major voice and text browsers — VoiceXML-based IVR systems for voice and Unstructured Supplementary Services Data (USSD)-based browsers for text-based applications. Back-end integration Organizations can easily integrate with any CRM, ERP or IT back-end systems, enterprise data or legacy applications with VoiceObjects' Web services, Java or HTTP connectors.

### Tool independence

Developers have service creation choice with rich- or thin-client editions of *VoiceObjects Desktop* in *Desktop for Eclipse* and *Desktop for Web* or any third-party IDE using *VoiceObjects XDK*.

### Natural dialog management

VoiceObjects capabilities combined with natural language understanding creates a more human, natural, personalized interaction with callers such as mixed initiative dialogs and adapt-to-speaker features which allow the caller to steer the interaction and to speak in their preferred speaking style.



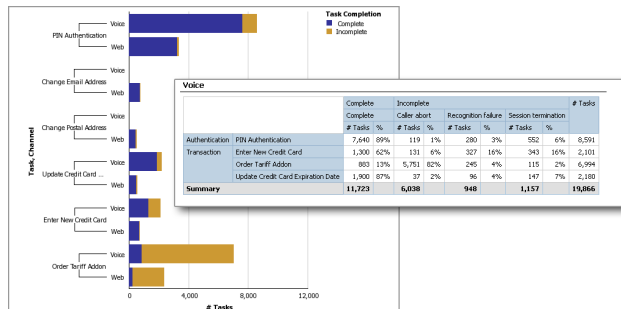
## VoiceObjects Analyzer – Real-time Analysis and Reporting

Key to delivering effective phone self-service is the ability to understand what customers are doing within self service applications — and most importantly, what they are experiencing — for a more proactive approach to application management. *VoiceObjects Analyzer* is a service analysis environment that enables instant analysis of key business, operational, and application design questions.

Infostore is the logging component of *VoiceObjects Server* and stores information on the behavior of services and of the callers using them such as system usage, system and application performance, caller behavior, and recognition success.

The *Infostore Repository* is based on a standard data warehouse schema and can be used directly by market-leading business intelligence tools such as SAP Business Objects, MicroStrategy or IBM Cognos for formatting, drilling down, slicing and dicing, and filtering data. Session data from Infostore is also seamlessly integrated with CRM data and applications for custom reports. No additional consolidation or transformation is needed as data structures are kept consistent across the infrastructure and processes.

*VoiceObjects Analyzer* delivers out-of-the-box reports that offer valuable insight into the usage and acceptance of services and integrates the data into common business intelligence frameworks in real time, providing up-to-the-minute graphical views of the status of the system. Over fifty predefined reports allow instant analysis of the more prevalent questions for business analysts and marketing specialists, dialog designers and developers, and administrators and system operators.



Tracking voice and mobile Web self-service business task completion rates with VoiceObjects Analyzer.

### Key Benefits of VoiceObjects Analyzer

#### Real-time application feedback

When designers make an update to an application in the service creation environment, changes are automatically reflected in Infostore and in the reports for instant analysis.

#### Real-time analysis

Analysts can review reports immediately without requiring additional load or transformation steps into a separate datamart or database.

#### Extensible data model

Infostore is extensible and can connect to different data sets with custom data from CRM, CTI, IVR, ASR or legacy systems combined with session statistics for enriched analysis and call center optimization.

#### Pre-defined and custom reports

Specific user groups can create custom reports to suit their business, application development and tuning, or operational needs or use one of over fifty pre-built reports.

VoiceObjects Analyzer offers over fifty pre-built reports for business analysts, developers and administration roles

#### Business Analysts and Marketing Specialists

- How many unique callers do you have?
- How often do they call?
- How much time do callers spend in your application? What are the callers' major navigation patterns?
- Are the callers able to complete business tasks?
- Is personalization helping customers use the application?

#### And extension with CRM data provides answers to these questions...

- Are there regions with sub-average recognition performance?
- Do transaction completion rates depend on age or customer status?
- Do different customer groups use the application differently?

#### Administrators and System Operators

- What is the workload of your servers?
- Is the current number of ports sufficient? Are the servers properly sized?
- Is the load on your cluster evenly balanced?
- Percentage of aborted and rejected sessions?

#### Dialog Designers and Developers

- Are there daily/monthly trends in the use of your application?
- What are your most actively used services?
- Which prompts lead to an unusually high rate of No Input / No Match events?
- What are callers saying? Utterances by input states?
- How are they exiting the application?



## VoiceObjects Desktop – Application Development and Monitoring

*VoiceObjects Desktop*, the graphical development environment within the VoiceObjects framework, is available in two editions: *Desktop for Eclipse* and *Desktop for Web*. Both *Eclipse* and *Web* interface options of *VoiceObjects Desktop* provide the same core functionality to create and manage phone applications based on the leading phone application server *VoiceObjects Server*.

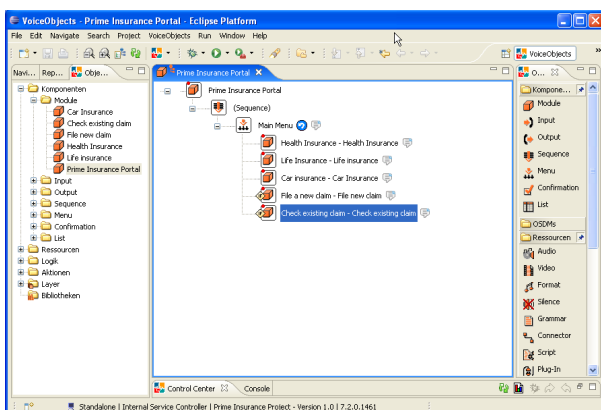
*Desktop for Eclipse* is based on the open source framework Eclipse and provides two working modes. The network mode allows for team collaboration with all users working in one central repository, and the standalone mode enables offline development and testing using an embedded database.

*Desktop for Web*, the Web-based interface of *VoiceObjects Desktop*, provides a lightweight option for phone application development. Because it can be simply accessed by a Web browser *Desktop for Web* perfectly supports collaboration of distributed teams and developers with limited infrastructure requirements.

Also available is a special packaging of *Desktop for Eclipse* – the *VoiceObjects Developer Edition*, a free version that is accessible from the VoiceObjects Developer Portal at [www.voiceobjects.com/free](http://www.voiceobjects.com/free). Developers may also download a free version of Voxeo's Prophecy VoiceXML platform at the same location.

In addition to *VoiceObjects Desktop* and in support of VoiceObjects' open tools strategy, developers can use the IDE of their choice through *VoiceObjects XDK*, the XML-based development interface to *VoiceObjects Server*.

Key components of *VoiceObjects Desktop* include the *Control Center*, the *Dialog Designer* and the *Storyboard Manager*. The *Control Center* is a graphical, integrated management console enabling the deployment, management, and monitoring of servers and services. The *Dialog Designer* is the main work area for designing and developing applications. Dialog flows of objects are displayed in a tree structure and can be modified as needed within this graphical environment.



Dialog Designer in VoiceObjects Desktop for Eclipse

The *Storyboard Manager* is a VUI designer tool for managing application prompts. It has two subcomponents for maintenance, migration and design-from-scratch prompt management. The *Storyboard Manager for Maintenance* allows you to view and print prompt lists of different detail levels and modify the wording and filter settings of existing prompts. It also supports a re-import of any changes made to prompts into an existing application. The *Storyboard Manager for Design and Migration* enables faster, less tedious prompt design for new voice projects and speeds up the migration of legacy IVR applications, cutting both prompt migration and new development time in half.

### Key Benefits of Voice Objects Desktop

#### *Service creation for business analysts*

Both technical and non technical users can leverage *VoiceObjects Desktop* for creating and maintaining business critical communication services.

#### *Integrated management console for real-time monitoring*

The *Control Center* delivers centralized live monitoring and management of services and servers.

#### *Testing and de-bugging tools*

An integrated Phone Simulator makes it easy to test, debug and demonstrate text and mobile Web applications. Functional testing is supported by the Debug Viewer (phone-less testing) and by call tracing (both integrated into *VoiceObjects Desktop*). An integrated Load Tester tool performs load tests on the functional behavior of applications and measures the performance and scalability of *VoiceObjects Server*.

#### *Automatic documentation creation*

Automatic documentation generation (graphical call flow and object parameterization) is provided; no manual maintenance of documentation is required. The *Storyboard Manager* automatically documents prompts (Audio, Video, TTS).

#### *Easy and flexible tuning*

Tuning is supported by call tracing and logging/reporting, delivering an application-centric view of recognition results; support for utterance recordings is provided.

#### *Eclipse-based edition*

Developers have access to a fully-featured, Eclipse-based IDE in support of the leading Java development environment for more efficient, user-friendly application development.



## Third-Party Systems Supported

**VoiceObjects transparently supports the leading technologies including all major operating systems, databases and Web application servers as well as top browsers and media platforms.**

**VoiceObjects currently supports the following technologies in support of phone channels such as voice, video, text and mobile Web:**

### Operating Systems

IBM AIX 5.1 or higher  
Linux Kernel 2.4x / 2.6x  
Debian GNU/Linux  
Fedora Linux  
Novell SUSE Linux  
Red Hat Linux  
Microsoft Windows 2000 Service Pack 4 or higher  
Microsoft Windows Server™ 2003  
Microsoft Windows XP  
Microsoft Windows Vista  
Sun Solaris 8 or higher

### JAVA Development Kits

IBM JDK Version 1.5  
(supported with VoiceObjects 9 only for Linux and AIX)  
Sun Microsystems JDK Version 1.5

### Web Application Server

Apache Tomcat Version 6.0.x  
BEA WebLogic Server 9.2/10 or higher  
IBM WebSphere Application Server 5.1/6.0 or higher  
IBM WebSphere Application Server Community Edition 1.0 or higher  
JBoss Application Server 4.x  
Jetty Version 5.1.x/6.1.x or higher  
Microsoft Internet Information Services Version 5.0/6.0  
(Requires the installation of ServletExec 5.0 as an in-process servlet/JSP engine.)  
Oracle Application Server 10g or higher  
SAP NetWeaver Web Application Server 6.40 or higher

### Media Platforms

Alcatel-Lucent 8855 Voice and Browser 3.1/4.2  
Alcatel-Lucent 8855 Voice and Multimedia Browser 4.3

Apple iPhone Web XHTML 1.0  
Aspect Customer Self Service 7.2  
atip aVP 5.6-5.8  
Avaya Interactive Response 1.2-2.0/3.0  
Avaya Voice Portal 3.0-5.0  
Cellcium Cellcube 3.6  
Cisco IOS VoiceXML 2.0/ 2.1  
Cisco Unified Customer Voice Portal (CVP) 3.0-7.0  
Converse Media Server 3.0.3/3.1  
CreaLog CreaVoice VoiceXML Gateway  
Edify Voice Interaction Platform (EVIP) 9.0-10.0  
Envox 7.0/7.1  
Genesys Voice Portal 6.5-8.1  
Genesys Voice Web Application Platform (VWAP) 6.5.2/3  
Holly Voice Gateway 4.0  
Holly Voice Platform 4.1-5.0  
HP OpenCall Media Platform 2.4-3.1  
HP OpenCall Media Platform Video 1.0  
HP OpenCall speechWeb 2.3  
I6NET VXIasterisk 2.0  
I6NET VXIasterisk 1.5 (Video)  
IBM WebSphere Voice Server 2.0/5.1  
IBM WebSphere Voice Response 3.1/4.2  
IBM WebSphere Voice Application Access 4.2  
Intervoice Omnia Media Gateway (OMG) 2.02  
Intervoice MTC VXML Browser 2.2-3.0.1  
IP Unity Media Server 2.7  
Loquendo VoxNauta 6.0/7.0  
Materna AnnyWay SS7 Data Gateway 2.0.1  
Microsoft Office Communications Server 2007  
Microsoft Speech Server 2007  
NMS Vision VoiceXML Server 2.1  
Nortel Hosted IVR  
Nortel Interactive Communications Platform (ICP) 1.0  
Nortel Media Processing Server (MPS) 2.1/3.0  
Nortel Media Processing Server (MPS) 500  
Nortel Media Processing Server (MPS) 1000  
Nortel VoiceXML 2.0/2.1  
Nuance Cafe 2.9  
Nuance Voice Platform 2.0-3.1  
Nuance Voice Web Server 2.0  
OptimSys OptimTalk VoiceXML Platform  
Plum Voice Hosting  
Prosodie Voice Portal  
Rich Web Client XHTML 1.0  
SandCherry Voice Portal 3.2/3.3

Sicap USSD Menu Browser 3.2-4.2  
Tecnomen Telco Server 2.1  
Telenet MultiVoice  
Tellme Studio  
Unisys Open Services Platform (OSP) 4.8  
Verascape Vera Serv 2.2  
Verizon Business Hosted IVR  
Visibridge VoiceXML Gateway  
Vocalocity OpenVXI 3.0  
Vocalocity Voice Browser 2.2  
VoiceGenie 7.0-7.2  
VoiceGenie VoiceXML Gateway 5.9-6.3  
VoiceGenie NeXusPoint 6.4  
Voxeo Prophecy Hosting  
Voxeo Prophecy Voice Platform 7.0/9.0  
Voxeo IMified Hosting  
Voxpilot voxbuilder  
Voxpilot Open Media Platform 2.1-3.2  
West OSB 3.0  
WindMobile UXML-HTTP Interface Handler Module 1.0

### 3rd-Party Product Integration

Nuance OpenSpeech DialogModules 2.0.2

### Relational Database Systems

Apache Derby Version 10 or higher  
IBM DB2 UDB 8.2 or higher  
IBM DB2 Express-C  
SAP MaxDB™ 7.5/7.6 or higher  
Microsoft SQL Server 2000 SP 3a or higher  
Microsoft SQL Server 2005 and 2008 or higher  
Microsoft SQL Server 2005 and 2008 Express Edition or higher  
Oracle Database 9i/10g or higher  
Oracle Database 10g Express Edition or higher  
PostgreSQL 8.1-8.4

### Eclipse Platform

Eclipse 3.2.0-3.4

### Web Browsers

Microsoft Internet Explorer 5.5-7 or higher

### Business Intelligence Software

Business Objects XI R2 SP3  
MicroStrategy 8.0.2  
Cognos 8.2

If you do not have a VoiceXML-based IVR Platform for testing and deploying your voice applications, you can download a free Voxeo Prophecy IVR platform or sign up for our free Voxeo Hosted Evolution Developer Portal. For details please visit [www.voxeo.com/free](http://www.voxeo.com/free).

### About Voxeo

Voxeo unlocks communications. We loathe the locks that make voice, SMS, instant messaging, Twitter, web chat, and mobile web unified communication and self-service applications difficult to create, manage, analyze, optimize and afford. Every day we work to unlock the neglected value of these communications solutions with open standards, disruptive innovation and a passion for problem solving – fueled by a company-wide obsession with customer success. We do so for more than 100,000 developers, 45,000 companies, and half of the Fortune 100 from our headquarters in Orlando, Beijing, Cologne, and London. Visit us or join our conversations on the web at [www.voxeo.com](http://www.voxeo.com), [blogs.voxeo.com](http://blogs.voxeo.com), or [twitter.com/voxeo](http://twitter.com/voxeo).

Voxeo's VoiceObjects products are the world's leading self-service application development and analytics solution. These solutions enable enterprises and mobile carriers to reduce the complexity and costs of deploying sophisticated phone applications while increasing customer experience. VoiceObjects' design once-deploy anywhere architecture makes it easy to design one application and deploy it on every available phone channel, such as voice, video, text (IM, SMS, USSD) and mobile Web. For more information, please visit [www.voiceobjects.com](http://www.voiceobjects.com).

All Voxeo products and services are available for free development and trial use at [www.voxeo.com/free](http://www.voxeo.com/free) or [www.voiceobjects.com/free](http://www.voiceobjects.com/free).

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