

Some Application Examples

Automated parcel delivery telephone service: Many post office and courier companies have automated services that you can call in order to check on the delivery of a registered parcel. The best of these use natural speech rather than via phone keypad responses, for example the conversation can be like this:

Service: "Welcome to the post office parcel tracking line. Please tell me your 12 digit tracking ID, it should have 4 letters followed by 8 digits."
Caller: "Um, ok, it's ZAHT23891223".
Service: "Please wait a moment while I look that up....your parcel was delivered in York at 2:50 PM yesterday. Do you need to track another parcel, or to speak to an operator?"
Caller: "No".
Service: "Ok, thank you for calling, goodbye."

Web front-ending: Often companies have information accessible on a web server (internet or intranet), which could also be offered by telephone. There are two components to this solution, the speech interface and the back-end. Here we can provide the back-end with an Envoy application that knows how to make an IP connection to the web server, log-on and retrieve the necessary information, i.e. a "screen-scraping" application. At the same time the Envoy application can take incoming voice calls (via Diva Server) and use speech technology (for example Nuance ASR speech engine) to talk to the customer.

This approach is used a lot in the "prepaid" area, where customers can use the web or a phone number to buy units, time or vouchers for some kind of service. It makes sense for a company to build the back-end charging and activation system only once, then use tools like Envoy to add a variety of different user interfaces to it.

Tele-voting: Many television programmes these days have phone-in competitions or audience participation in the form of SMS messages. The telephone numbers can be premium rate, and charging can be done via SMS, so this is often used to generate revenue, which in turn is used to fund the programme's production costs. Diva Server can handle voice calls and also SMS, so all that is required here is to add the logic for processing the calls using the Envoy engine. A typical application might ask the caller for their name and address details, and then get them to speak their answer or vote, which is interpreted by a speech recogniser, before the result is stored in a database, or perhaps goes into the same back-end that drives the show's website.

Automatic campaign response services: Advertisers on TV need a fast and cost-effective way of dealing with callers responding to advertising campaigns. For example a travel agent or airline might advertise on TV using a freephone number, but they don't want to build a call-centre to handle the calls, since the campaign will only run for a few days or weeks. Here, Envoy can take incoming calls, and use a speech interface to ask the callers which holiday they are interested in, so that brochures can be sent out. The conversation might go like this:

Service: "Welcome to the Holiday in Wales information line. Which brochure are you interested in: Mountain Walking, West Wales Coast, City Breaks or Bed & Breakfast?"
Caller: "I'd like Bed and Breakfast and City Breaks"
Service: "Ok, I understand that you are interested in Bed and Breakfast and also City Breaks, is this correct?"
Caller: "yes, that's right".
Service: "Thank you, we will send those out for you. Please could you tell me your name?"
Caller: "Bill Atherton"
Service: "Thank you, please tell me your postcode"
Caller: "RH4 1QD"
Service: "Is that Reigate Road, Dorking?"
Caller: "correct"
Service: "Ok, what is your street number?"
Caller: "Number 231"
Service: "Ok, we will send the brochures to Bill Atherton, 231 Reigate Road, Dorking, RH4 1QD, is this Ok for you?"
Caller: "yes thanks"
Service: "Thanks for calling, we hope you enjoy your holiday in Wales".

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Application Guide

Using Diva Server / Envoy 6 Combination

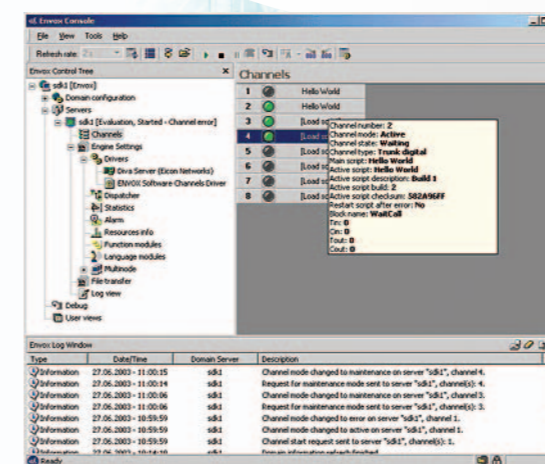
Many companies are now using speech-based applications to replace or supplement existing call centers, and to allow customers to "self-serve" by getting the information they need from automated systems. Advances in computer speech (text-to-speech) and speech recognition (ASR) mean that callers can have a much more rewarding experience than with the first generation interactive voice response (IVR) systems. Thanks to standards like VoiceXML, bringing uniformity to speech application design, there are more people will development skills in voice-user-interfaces (VUI). These factors mean that it is now a realistic possibility to use an IT system to replace a human operator.



Envoy 6 and Diva Server together provides a powerful development and hosting tool to automate systems, and dramatically reduce the cost of providing 24-7 access to information.

Some of the features that make Envoy and Diva Server a winning combination include:

- Seamless integration of VoIP and traditional telephony in one system
- Powerful development tools to get your application going faster
- Easy-to-manage Windows GUI tools
- Speech, fax, SMS, email, web can all be integrated into one application
- Application portability, so that your application is not locked to one PBX or network



What is Envoy?



Envoy Communications Server is both a speech application server, and a development system. Envoy Studio is a GUI development system that allows you to build applications graphically, so that you can see the flow of the application on screen. When you have finished developing an application with Envoy Studio, you can compile it, and it becomes an application that you can run on Envoy Communications Server. For companies committed to the open VoiceXML standard, Envoy also provide a graphical tool for building native VoiceXML applications. These applications also run on the Envoy Server.

Envox is licensed by the number of channels that are in use concurrently, so for example you could run a server with 20 VoIP sessions and 30 conventional telephony lines, using Diva Server SoftIP and a Diva Server PRI CTI. Having built your application, you can then load it on one or more of these channels, to serve multiple concurrent telephone calls. You can load multiple different applications on different channels, or load the same application for all.

Envox applications can perform a whole range of different functionality (obviously provided that the underlying telephony adapter provides the features) including:

- IVR (playing prompts and audio streams; getting user input via DTMF tones)
- Speech enhanced IVR, using Text-to-speech (TTS) automatic speech recognition (ASR) engines from a number of key companies like Nuance, Scansoft, Microsoft
- Audio streaming from MP3 to a caller
- Send and receive Fax
- Call conferencing
- Call transfer, switch-based and trombone
- Supplementary services like UUI (user to user information) and MWI (message waiting indicator).

Unlike some telephony application servers, Envov does not just stop at the telephony features, but also has a large library of functions to access common data sources, and also using legacy protocols to allow integration of crucial legacy back-end systems. So some of the features supported are:

- HTTP (for directly interacting with web sites)
- SQL to access standard databases
- Access to common email protocols like POP3 and SMTP
- Raw TCP/IP, to access arbitrary data systems
- X.25 access, for example for connecting to point-of-sale and credit card authorisation systems

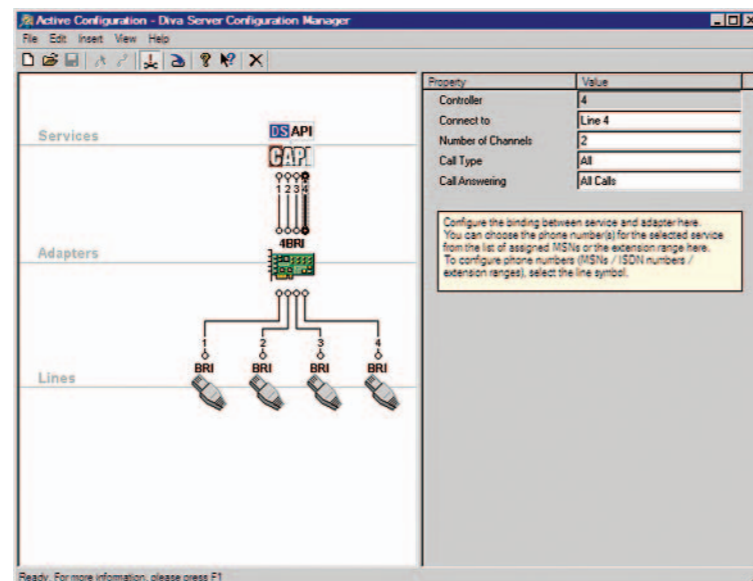
This is only a sample of what is possible in Envov applications. Using Envov it is possible to build very powerful systems that can extract data from many different sources, and present that data over a speech interface to callers. However, because of its powerful telephony features it is also possible to imagine a wide range of different applications it could be applied to, including:

- Front-ending legacy PBXes, adding features like voicemail, SMS messaging integration and integration of VoIP and non-VoIP systems.
- Alarm systems, coordinating remote alarms from different types of remote equipment
- Adding a speech (ASR/TTS) interface onto practically any legacy application

The Diva Server Connection

Diva Server is a complete range of telephony solutions, that covers all your telephony needs. The product range includes:

- Diva Server Analog, with 4 or 8 standard telephone ports per board (4 or 8 calls)
- Diva Server PRI, which offers E1, T1 and ISDN PRI for 24 or 30 concurrent calls per board
- Diva Server BRI and 4BRI, which offer 1 or 4 ISDN Basic Rate connections for 2 or 8 concurrent calls per board.
- Diva Server SoftIP, a software adapter that allows multiple VoIP calls to connect in to the server (up to 240 concurrent, depending on CPU capability).

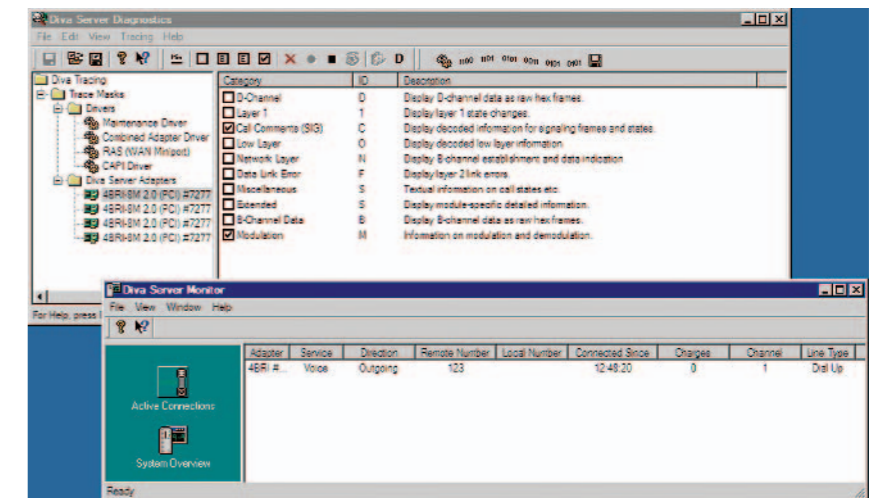


The Diva Server range all support a standard driver interface, which means that Envov can see a pool of channels, which might consist of a mixture of analog, ISDN, E1 and VoIP ports, all connecting in the same server, to the same Envov applications. Functionality supported includes:

- Voice, fax, conferencing and data
- Call answering or initiation
- Call progress analysis
- Call transfer (tromboned or switch-based)
- Basic IVR and speech enhanced IVR (with echo cancellation, ECR, and barge-in)
- Conferencing with automatic gain control (AGC) and ECR
- Prompt playing: TTS, file or stream-based audio
- Send and receive a fax, or multiple faxes
- Call recording
- Supplementary services: CLI; MWI; UUI; CD etc.
- QSig interoperability with external PBXes
- Wide range of worldwide telephony protocols

The Diva Server is simple to install and configure, and complies with all modern plug and play standards. We use modern, low power, designs that can be fitted to server machines with the latest PCI or PCI-X standard slots. It has unparalleled tools for monitoring and management, using easy-to-use GUI-based tools.

Diva Server integrates with Envov Server using the Envov telephony interface. A small piece of code from Eicon integrates the two things together, allowing Envov to access all of the features provided by the Diva Server range.



Highlights of the Diva Server/Envov Combination

All of the Diva Server adapters can co-exist in the same machine, so VoIP can run alongside traditional telephony in a single server. This can be used as a transition tool, while you switch over from E1 to VoIP, but it can also be used in an integration scenario: for example you might have a legacy PBX that needs to be integrated into a VoIP framework. Up to 6 Diva Server adapters can be installed in each PC server.

All Diva Server adapters have the same API, and so the same appearance to Envov. This means that you can write the Envov application once, and then use the same application to serve callers via analog phone, VoIP, E1 or ISDN.

Solutions built with Envov and Diva Server are easy to maintain and manage. Diva Server conforms to all the hardware and Windows Plug and Play standards, and both Diva Server and Envov use the Windows GUI management tools that are familiar to IT personnel the world over.

Our standard API means that Envov can execute a switch-based call transfer without understanding the details of how this is done, all the protocol-specific details are dealt with by the Eicon software. The consequence of this is that an Envov application written to work with one PBX will continue to work even after the PBX has been replaced by VoIP. The PBX might use QSig to perform a call transfer, and VoIP might use H.450, but both systems look exactly the same from the application developers view.

Diva Server SoftIP provides a powerful tool for reducing the development time of telephony applications. Using SoftIP it is possible to write and test a telephony application on a laptop computer, even out the office, or on a train. Using one of many low-cost soft-phone applications, you can directly call into the application and test it, without the need to fit or configure any telephony hardware. Once the application is finished, it will then work just the same on the whole Diva Server range, VoIP or standard telephony.