



## CITY OF PFORZHEIM



CASE STUDY

ASTERISK IP-PBX

### OVERVIEW

Nestled in the southwest corner of Germany at the gate to the Black Forest is the City of Pforzheim. A region known for its highlands, scenery and woods, Black Forest Cake and traditional cuckoo-clocks, Pforzheim now lays stake to another claim: contributor of German language prompts to the Asterisk open source IP-based telephony system.

Motivated by the movement to Voice-Over-Internet-Protocol (VoIP), the City of Pforzheim's Director of Internet Technology, Andreas Hurst, wanted to implement a rich functionality based VoIP telephone server to support the people in the municipality's network. Choosing Digium's Asterisk, the City of Pforzheim is reaping the benefits of a hybrid TDM and packet voice PBX solution complete in open source software.

"The motivation to use Asterisk is that we can very easily take advantage of VoIP technology," said Hurst. "We started with a simple installation on Red Hat Linux to Session Initiation Protocol (SIP) phones. When we saw how stable and how much functionality the Asterisk solution provided us, we wanted to implement it across our organization."

### Open Source PBX Solution Enables German Municipality to Take Advantage of VoIP Technology

### CHALLENGE

Supporting nearly 120,000 citizens, the City of Pforzheim employs approximately 2000 individuals spread among 100 offices throughout the city. With a networking infrastructure of copper cables and fiber channels across the area, getting high-speed connections is quite easy – and the motivation to take advantage of new VoIP technologies.

"We wanted to exploit our existing infrastructure and be able to provide VoIP services as inexpensively as possible," said Hurst. "One thing we find really great is that Asterisk offers a hybrid solution. It is TDM and packet based so we are able to easily integrate our existing Alcatel 4400 PBX with the new VoIP technology."

"Asterisk has the features one would expect of a large PBX system – it communicates seamlessly between VoIP and the public telephony network using any of the most popular codecs and protocols and is the most leading open source project in the telecommunications server area."

## SOLUTION

Working with BeroNet, a qualified Asterisk reseller, the City of Pforzheim installed Digium's Asterisk open source server in the summer of 2004. Digium is the original creator and primary developer of Asterisk, the industry's first open source PBX and Asterisk Business Edition, the professional-grade version of Asterisk. Used in combination with Digium's PCI telephony interface cards, Asterisk offers a strategic, highly cost-effective approach to voice and data transport over IP, TDM, switched and Ethernet architectures. Connected to the City of Pforzheim's solution are 60 Cisco and Thompson SpeedTouch SIP phones, and 1,700 ISDN PBX users are connected with Digium's Wildcard TE410P and TE110P telephony interface devices. Following their initial implementation, the City of Pforzheim has taken advantage of many Asterisk functions such as Interactive Voice Response (IVR) menus, Automatic Call Distributor (ACD) support for the city's central help desk and a telephone book for their Cisco SIP phones.

"Asterisk offers a very modular architecture and is extremely robust, reliable and stable," said Hurst. "We have critical applications that are housed here and support various services around the city municipality. It is very important that the VoIP system and the communications system is really stable."

## RESULTS

Since installing their Asterisk solution, Hurst notes that they now have greater functionality available than what they had previously with their traditional telephony system. "The beauty of Asterisk is its ability to be expanded using its application program interface (API)," he added. "It is dynamic, modular, and the Asterisk Gateway Interface (AGI) scripting allows us to easily integrate our applications."

The city of Pforzheim has written several applications since their initial deployment including an Asterisk-based phone book for their Cisco 7960/7940 SIP phones, a simple Web-based Graphical User Interface (GUI) for Asterisk ACD/IVR management, Asterisk CRM/Help Desk integration, and German voice prompts, which are now under general public license and available to the Open Source community.

"We are really happy that Asterisk is available as an open source system so we can participate in the development," said Hurst. "We created and contributed the German voice prompts and now all Asterisk installations in Germany use them. In the Asterisk community, our city has been made famous for its contribution."

The positive open source community engagement was what initially attracted the City of Pforzheim to an Asterisk implementation, as well as its continued development driven by contributed development, in-house development as well as in response to supporting third parties. Moving forward, the City of Pforzheim is planning additional VoIP projects and will soon create an Asterisk-based gateway between their Alcatel 4400 PBX system (supporting 2,800 phones) and VoIP carriers. Other plans include development of an Asterisk-based gateway between their Alcatel PBX and Global System for Mobile Communications (GSM) networks as well as migration of their PBX to Asterisk VoIP Cluster.

"Making the biggest difference for our organization is the possibility to integrate collaboration services and business applications with voice," concludes Hurst. "That is the greatest difference between the new VoIP Asterisk solution and other traditional systems. With Asterisk, we have more functionality available than we had with the traditional telephony system. We have had great project success and have confidence Asterisk will provide us with all the features we need to support our business."

*Digium's vision is a world based upon open communications.*

*Our mission is to transform the way businesses acquire and operate their communications systems through the application of open source software.*



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