

Advanced FreePBX

This is a three day course intended to give extensive exposure to FreePBX administration and key internals. It is taught around a series of labs that build upon each other and create a very interactive environment amongst the class participants to maximize the learning experience. The class is taught using the latest FreePBX Distro but is valid for any FreePBX installation including AsteriskNOWTM, trixbox, Elastix, PBX-in-a-Flash, or your own. The major focuses of the course are described next.

Advanced FreePBX Administration

At the center of all activities is a focus on gaining a strong understanding of FreePBX administration with lots of opportunities to glimpse deeper into key FreePBX internals or its interactions with Asterisk and the underlying Linux system.

From the get go you will configure a FreePBX system with a couple phones connected and trunk to our internal class "PSTN" switch which creates a true phone system environment across the class. Where networking permits this will connect you into the real PSTN as well thus connecting your cell phones, office and the outside world!

With phone and trunking connectivity established we spend a fair amount of time going over inbound and outbound call flow and many of the important areas and modules typically used in creating a well designed and thought out system. This spans the range from IVRs, Queues and Ring Groups to Outbound Routing and Trunks and gaining a better understanding of the Routing patterns, trunk rules and outbound Caller ID handling which are often areas of confusion for many FreePBX administrators.

We will stress the importance of the E911 handling within FreePBX as part of the routing section and how to assure proper configuration for E911 "ANI" identification within your setup. This is supplemented with some basic lecture on the overall E911 system and many of the important areas and decisions that you should be considering and designing into your system as well as where to go to try and get answers to local E911 requirements.

Students are next paired up to interconnect their PBX systems providing more opportunities to further explore the trunking and routing capabilities of FreePBX. This gives an understanding on how to better integrate multiple systems into branch office type scenarios and is used as a tool to introduce a deeper understandings of underlying Asterisk configurations that FreePBX sets up. This pairing up of PBXs creates the richer environment used next when exploring the more advanced features and capabilities from Extension features such as Follow-Me and VmX Locator to deeper Queue capabilities, auto-answer and paging abilities and more.

Backup, restore and high availability are essential to the integrity of your PBX system. You will finish off the lab work going over the built in and rich capabilities of the FreePBX backup system, which will also allow you to "take your lab work home with you" if you choose. You will then have the opportunity to learn first hand how to configure the backup system with your partner's PBX and learn how to take advantage of the warm standby abilities that allow you to very rapidly restore service to a failed system.



There is a high ratio of lab work to lecture as we strive to create a learning environment through interaction with your systems while including the necessary lecture environment to facilitate the learning experience. We also provide many optional lab exercises to accommodate the different learning pace and experience level of attendees.

Phones, BLFs, XML and Asterisk Internals and Troubleshooting

Designing a good phone system that provides a rich environment for the end users means obtaining a solid understanding of tightly integrating the phones into your PBX planning. We usually work with Aastra and softphones in our class lab environment. You will see how phone XML scripts and BLF integration can provide for a very rich and positive end user experience starting from end user self configuration to the access of advanced features and integrating BLF capabilities between the phones and FreePBX.

Really understanding this BLF "state" capabilities of the phones requires a level of Asterisk internals and associated CLI commands and FreePBX module pages that can provide significant feedback and troubleshooting assistance. Throughout the class we will refer back to these diagnostic screens and CLI commands. You will use them during lab exercises as you slowly build up your phone system throughout the class to learn how to enrich the phone environment that you are setting up.

These exercises lead to some review of Asterisk dialplan basics in order to obtain some level of understanding when reviewing dialplan, CLI and Asterisk log traces which are often extremely useful troubleshooting tools when dealing with both simple and more complex PBX capabilities. We refer back to these throughout the class and many of the labs are designed to provide opportunities to use these tools in order to verify proper operations or troubleshoot your work while working on completing the various assignments.

Linux Administration for PBXs

Through hands on lab work, you will gain familiarity with basic Linux level interaction with your PBX. Although there is much available in the GUI, we will direct you to where similar and much more information can and often should be used when digging into deeper issues with FreePBX and Asterisk.

You will configure SSH access to your PBX from the get go and as you work through the different exercises, you will interact with and learn useful commands from yum and rpm installation, navigating through and interacting with the file system, editing files and more. For some this may be "old hat" but for many, this may be your first foray beyond the GUI and we will walk you through the essentials. You will leave the class much more comfortable with these important skills.

As part of this, there will be much interaction inside of the Asterisk CLI and sometimes its log file system as the lab exercises either direct you to do various steps or necessary troubleshooting leads you to solve problems with the use of these tools.

TDM Hardware and IP Phones

Choosing the right hardware is one of the most critical decisions you can make when deploying a PBX. We will share our experiences on what TDM hardware to choose and what options you should be obtaining for these systems. This includes making the right decisions up front to avoid the painful experience of echo problems and troubleshooting that are often a result of poor decisions made up front.



Through the contrast of the rich capabilities of your hardphone experience compared to the softphone during the class, you will gain an appreciation for the importance of proper phone selection. We will touch on other popular phones supported and often deployed in FreePBX environments and go over the various considerations for these different choices.

Troubleshooting and Telco Issues

Advanced troubleshooting skills will make the difference of you having a satisfied customer or an unhappy customer, and this has far reaching consequences. No matter how you slice it, telephony deployments are always full of issues, from circuit cutover issues, to networking issues, to training issues. Your ability to troubleshoot effectively will enable you to make deployments as smooth as possible, as well as keeping existing customers satisfied when problems occur.

Troubleshooting tools, including Asterisk log files, CLI output, debugging and call tracing are used throughout the labs and much discussion and reference back to these tools is included in the material to help familiarize you with what is available when interacting with Asterisk and FreePBX.

Marketing and Selling Asterisk PBX Solutions

The marketplace for selling and marketing PBXs has changed surprisingly little since the vast move to IP telephony. In fact, as you sell PBXs you will rarely be competing with each other. Instead, you will be competing with the goliath big name incumbents and be selling an IP-PBX solution in a legacy world. Your ability to differentiate yourself and sell a solution that is on par with the big name vendors will be key to your success.

We will present your competition, who they are, what their capabilities are, their strengths, weaknesses, and how to sell against them. You are not selling consulting. You are selling an enterprise product and you need to understand the mechanics of the vendors that comprise your competition.

We will then get into proven strategies for selling Asterisk-based PBXs, including demonstration kits, what to talk about in your sales pitch (and what NOT to talk about), demonstrating credibility,, feature selling, and the overall sales cycle and what to expect.

We will finish off by discussing strategies around deployment planning and all the considerations to assure an end solution that not only goes as smoothly as possible when cutting over, but meets and exceeds the expectations of your end customer once installed.

