



# How This Book Can Help You Achieve Business Goals

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This chapter gives you a view into the services that some organizations and businesses have developed to help them solve three important business goals:

- Increase productivity
- Gain the competitive advantage
- Generate revenue

As you will see in the following sections, phone services can help you accomplish these three goals. Cisco Systems provides the Cisco IP Phone Services Software Developer's Kit (Cisco IP Phone Services SDK) for use in developing phone services. This book complements and expands on the documentation and tools provided with the SDK. On the CD-ROM accompanying this book, you will find additional tools and code not provided on the SDK that can help you write phone services. See the section, "Training and Support for the XML SDK" in Chapter 2, "The Basics," for more information about the SDK and Cisco-provided support for the SDK.

## Increase Productivity

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"If you pick up the phone and have to rest the handset on your shoulder to type something at your computer, then you need an application that interfaces with a phone service."

—Ken Bywaters, Berbee

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Consider that statement . . . instead of working on your computer for the various tasks you may need to perform while speaking with a client, customer, parent, student, partner, or other individual, you can use the phone to accomplish those tasks instead. With Cisco IP Phones, the telephone is not just a phone anymore. By using phone services or interfacing a phone service with an external application, you can use Cisco phones to solve business problems. The problems the phones and services can solve are as widespread as the companies and individuals that put them to use.

Take Berbee, for example. Founded in 1993, Berbee is a small, independent company that helps customers profit from computer networking and the Internet. Berbee was at the forefront of resellers implementing the Cisco AVVID IP Telephony solution and quickly realized the potential that phone services offered. For customers working in professions that bill by the hour or minute, such as lawyers, Berbee developed a service that allows the phone user to select an account code to which the call should be billed. Figure 1-1 shows the main screen for the Berbee Account Code Biller service.

**Figure 1-1** *Billing Options Menu*



By interfacing with a database (via Web input or tab-delimited text file), phone users or the company's accounting department set up the account information in the database. Once added to the database and to the service, the codes for each account are available when the phone user selects the Account Code Biller from the list of services. The Account Code service goes a step further, using the called/caller ID information provided by CallManager to automatically match accounts based on the phone number, saving the phone user a step each time a call is placed or received. The phone user selects the account that matches the called/caller ID number (in Figure 1-1, the first option is to bill to the account recognized by caller ID), enters an account code, or searches for an account.

What about calls for a specific account placed from an unknown number? The service allows the phone user to add the new number to the database with the touch of a soft key, as shown in Figure 1-2.

Now the phone user has billed the call to the proper account and updated the database of contact information for the specified account without ever typing a key on the computer.

**Figure 1-2** *Adding a New Phone Number to the Database Using the Cisco IP Phone*



By teaming a service with an application, you can accomplish a multitude of tasks. Consider the following true story:

Frederick County, occupying the northern-most tip of Virginia, is home to just under 11,000 school-age children. In December 2000, a severe snowstorm brought the public switched telephone network (PSTN) down during the start of the school day. Phone service was out all over the county. Buses were already in route when the storm hit and one bus containing dozens of grade school children was stuck in the snow. Because phone service was down, the bus driver could not call the school district to ask for help and the school district headquarters could not contact the schools to tell them to close for the day. In March 2001, the school district conducted a security audit of their 17 schools. Four of the schools were found to have no means of communication from the school office to the classroom. Frederick County Public Schools had two problems to solve: one, establish communication in four schools that were not wired for intercoms or phones in the classroom; and two, find a backup means of communication when the PSTN fails.

Enter AAC Associates, Inc., a company focused on designing and implementing converged networks. AAC worked with the school district to install a CallManager solution at district headquarters, with each school connected via the metropolitan area network (MAN). Because the classrooms had already been wired for Ethernet when the district outfitted schools with computers, the Cisco phones were a simple addition to classrooms. By deploying Cisco AVVID IP Telephony, the school district accomplished their two primary objectives. But AAC and Frederick County Public Schools were not through brainstorming. Working together, they determined a number of other areas where they could improve on the old way of doing business. AAC built a service that allows the teacher to take attendance on the Cisco phone. By integrating the attendance phone service with a Lotus Notes database, attendance data is automatically saved to the main database. Frederick County Public Schools and AAC are working on taking this a step further by displaying the student attendance data on a Web site that parents can access to determine if their children have skipped one class or all of their classes, real-time or historically.

Because each phone is installed in a classroom, schedules for the classes to be held in that room are programmed for each phone, as shown in Figure 1-3.

**Figure 1-3** *Class Schedule for Classroom*



Teachers retrieve the attendance list for their class shown in Figure 1-4. The system alerts teachers to pre-approved absences by a (\*) flag and upcoming birthday students by a (-) flag. Teachers—particularly substitutes and hall monitors—also benefit from the ability to call up a student profile (no pun intended) on any Cisco phone and view their photograph.

**Figure 1-4** *Student Attendance List on the Phone*

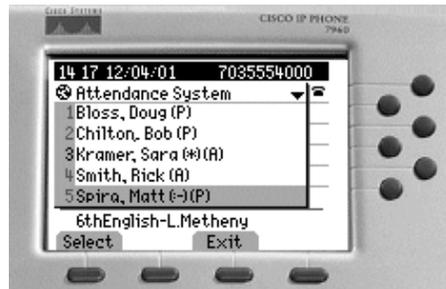
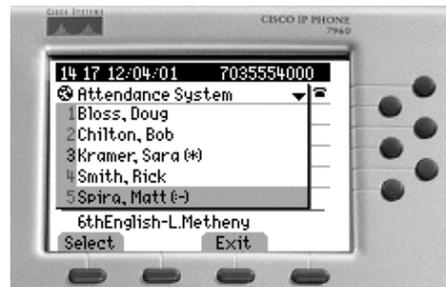


Figure 1-5 shows the ability to view the student's photograph and press a soft key to mark the student present or absent.

Having brought attendance-taking into the 21<sup>st</sup> century, AAC next attacked the antiquated method of permitting students access to and from the principal's office, nurse's station, or bathroom. For decades, students have traversed school hallways during class time with small slips of colored paper bearing their name, the time, destination, and the approving teacher's name as their only right of passage. With hall monitors placed strategically throughout school, imagine the fear that courses through a young student's body if some terrible tragedy should befall that slip of paper while in the bathroom. Imagine, too, the spirited freedom that results from an illegal journey through those quiet halls carrying a forged hall pass. School children no longer have to carry those slips of paper; they can use electronic hall passes that hall monitors access using Cisco IP Phones installed in the school hallways. The hall pass service also provides greater security because a teacher can verify the identity of the student by viewing the student's picture.

**Figure 1-5** *Viewing Photograph while Taking Attendance*

The hall pass services works like this: when a student must leave during class time, whether to the bathroom or principal's office, the teacher simply calls up the student's name on the phone as shown in Figure 1-6. (The attendance and hall pass applications are password protected.)

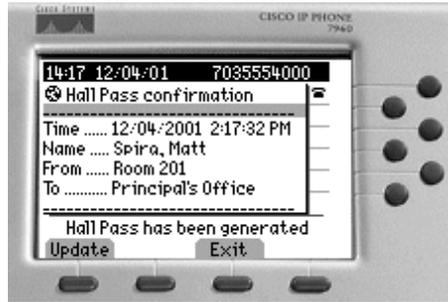
**Figure 1-6** *Identifying Who Needs a Hall Pass*

Next, the teacher identifies the destination for the hall pass (Figure 1-7).

**Figure 1-7** *Identifying the Destination for a Hall Pass*

The hall pass is then generated by the system (Figure 1-8) and the data recorded to a database accessible from any phone in the network.

**Figure 1-8** *Issued Hall Pass*

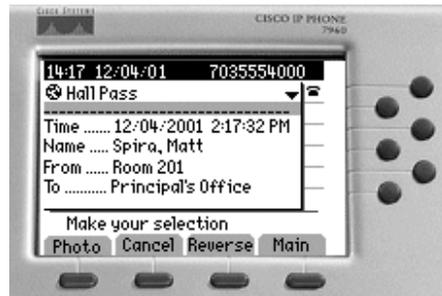


When the student is stopped in the hallway by a hall monitor, the monitor can retrieve the student's hall pass by searching for the student's name or the destination (Figure 1-9). This function allows school administrators and security personnel to see how many hall passes are active at a given time, or how many students are visiting the library at a given time, and so on.

**Figure 1-9** *Search for Current Hall Passes*



Figure 1-10 shows the hall pass that the system displays on the phone when retrieved by the student's last name.

**Figure 1-10** *Hall Pass Verification*

The monitor can use the soft keys on the phone to view the student's photo as shown in Figure 1-11, cancel the hall pass (normally done once the student returns from his or her trip), or reverse the hall pass. For example, the principal can reverse the pass to allow the student passage back to the original classroom once the student has reached the principal's office.

**Figure 1-11** *Identity Verification*

The next step is to merge the school's visitor passes with the hall pass application, coupled with photos of visitors taken at the reception desk. This provides hall monitors with the ability to verify the identity of school visitors for even greater security purposes.

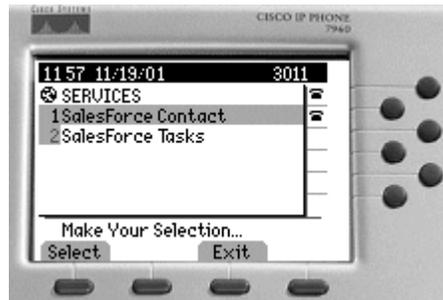
By deploying phone services on their converged network, Frederick County Public Schools resolved the two problems they had and leveraged the Cisco AVVID IP Telephony solution to achieve the following additional benefits:

- More efficient management of their student rolls.
- A method to keep parents informed about their child's attendance.
- Access to student pictures.
- Reduced paper waste by eliminating the need to print daily class sheets for attendance.
- No more hall passes.

- Greater hallway security.
- Accountability of students in the school.

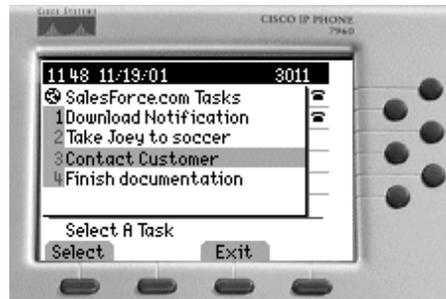
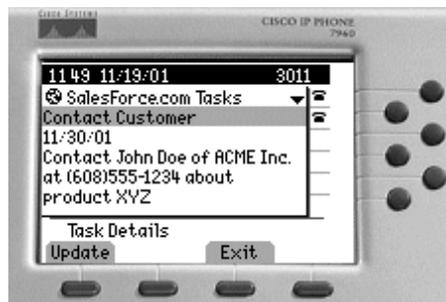
Keeping track of children while they are in school is a complex problem, but so is managing a large sales organization with many leads. Precious time is wasted searching through contacts on the computer, setting reminders to call customers, and jotting down phone numbers when talking with customers. Berbee attacked this business problem using the technology already provided by the Cisco phones in their office. Berbee's desires were two-fold: first, eliminate wasted time; and second, ensure consistent customer contact. Berbee considered several systems for customer relationship management (CRM) and chose salesforce.com because they proved easier to integrate with than other similar companies and provided the ability to track leads and opportunities, manage task lists, and store contact information. Berbee developed an application that interfaces with salesforce.com so that when a customer visits the Berbee Web site and downloads a free evaluation copy of their software (including certain Cisco phone services), a task is created at salesforce.com, including the contact information and the date of the download. Account managers (AMs) can use their Cisco phone to retrieve contact or task information, as shown in Figure 1-12.

**Figure 1-12** *Main Menu for CRM Application*



When an incoming call is received by an AM, pressing 1 retrieves the contact details. Contact details are returned, as shown in Figure 1-13, when the caller ID matches a number defined in the customer profile.

By demand or on a daily basis, Berbee's Cisco phones poll the salesforce.com Web site to gather task lists for the account managers. The AM can either call up the task list as shown in Figure 1-14, or, when the free trial expires, the AM is flagged to call the customer as shown in Figure 1-15.

**Figure 1-13** *Contact Details Based on Caller ID***Figure 1-14** *Viewing Tasks for an Account Manager***Figure 1-15** *Task Details*

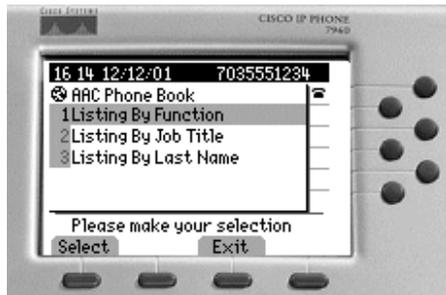
The service allows the account manager to mark the task as complete, as shown in Figure 1-16. Completed tasks are removed from the task list.

**Figure 1-16** *Completing a Task*

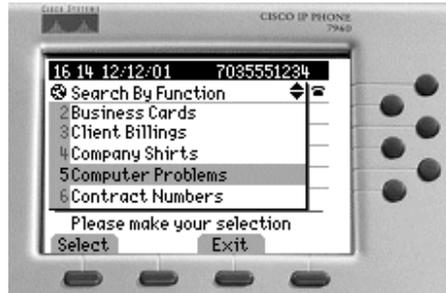


Helping new employees determine who to call when they need help represents another common problem easily solved using a phone service. The Functional Directory developed by AAC Associates integrates with the company's email system and provides phone extension information based on job function or title rather than an individual's name. The main menu is shown in Figure 1-17.

**Figure 1-17** *Directory Listing by Job Function*



Listed in alphabetical order, new employees (or students because this application could easily be adapted to the university environment) scroll through a list of functions such as Payroll, Human Resources, and Computer Support as shown in Figure 1-18. When the desired function is located, the user selects it from the menu and is provided with the contact name and number, which can be conveniently dialed with the press of a soft key. Figure 1-19 shows the person to contact to report computer problems.

**Figure 1-18** *Locating a Contact by Function***Figure 1-19** *Functional Directory Results*

So far, we've examined services created to increase productivity by making routine tasks more integrated and more efficient. But phone services can also help you position your company or organization ahead of competitors by enhancing user experience or increasing convenience.

## Gain the Competitive Advantage

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"By leveraging the power of XML applications on Cisco phones, organizations enhance the user experience by providing convenience and customization. This ability represents a tremendous advantage over the competition."

—Doug Bowlds, AAC Associates

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Continental Airlines gained a competitive edge by deploying Cisco AVVID IP Telephony as part of their “airport of the future.” Cisco phones provide a high tech voice solution for business travelers with the added bonus offered by the customer-oriented phone services created by Continental engineers. Available today in the Houston, Texas President’s Club, Continental plans to deploy phone services in President’s Clubs worldwide. The services include checking flight status, viewing weather information at Continental hubs, and completing customer satisfaction surveys.

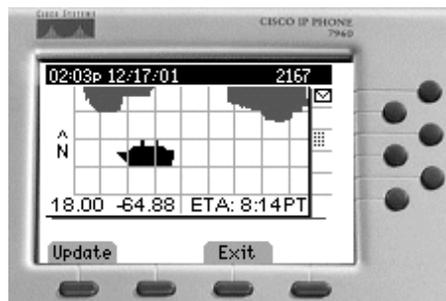
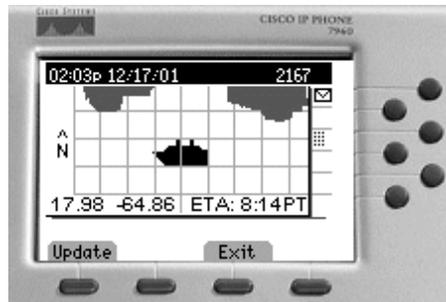
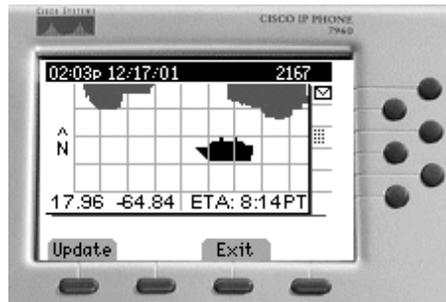
Calence, an internetworking consulting company specializing in IP telephony, has developed a suite of hospitality services. Geared toward cruise ships in this example, the services can be redesigned for other hospitality industries as well. The services enhance the passenger’s experience and provide a competitive advantage. Figure 1-20 shows the main screen that displays when a passenger presses the **services** button.

**Figure 1-20** *Hospitality Services*



The suite of hospitality services includes a service that provides the passenger the ability to track the ship’s location using global positioning satellite (GPS) coordinates. With Cisco phones installed in each stateroom and cabin on a given cruise ship, the passenger can select **Maps** and watch images that use GPS to depict the ship’s current location and refresh automatically every few seconds, as shown in the series of screen captures in Figure 1-21.

Passengers can use the hospitality services to enhance their cruise ship experience. By integrating the service with a database application based on the Web, passengers can specify favorite types of restaurants or entertainment prior to departing. Then when they embark on their journey, the phone in their cabin displays only those restaurants or activities that match their interests. Figure 1-22 shows the restaurant menu for a passenger who has specified preferences for French and Chinese food.

**Figure 1-21** *GPS Cruise Ship Service*

**Figure 1-22** *Restaurant Selection*

The competitive advantage can also be earned by deploying services designed for the convenience of visitors to your campus. Many organizations have operations that are spread out over a large campus environment, sometimes making it difficult to locate an individual. To solve this problem, AAC developed a Cube/Office Locator service that provides directions from the you-are-here location to the specified cube or office. Used in conjunction with extension mobility (a CallManager release 3.1 feature), the cube locator service enables someone to locate an individual by finding the phone assigned to that person or to which he or she has logged into. Users can search by name or location, as shown in Figures 1-23 and 1-24.

**Figure 1-23** *Using the Office/Cube Locator Service*

When the desired user or location has been identified, the service displays directions to the cube from the present location. Figure 1-25 shows the directions in text format, but future releases of the service will provide graphical displays and direction printouts (for a printer that plugs into the RS-232 port on the back of Cisco IP Phone models 7960 and 7940 or Web-enabled network printers).

**Figure 1-24** *Specifying the Destination***Figure 1-25** *Directions for a Search by Last Name*

If the person looking for an office loses his or her way or needs to check the directions, he or she can perform the same search on a nearby Cisco phone. The directions to the office or cube will be provided using the current location as the new starting point.

In addition to enhancing productivity and user satisfaction, phone services can also be used to generate revenue for businesses and organizations.

## Generate Revenue

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“Cisco IP Phone service technology creates a unique ability to drive revenue using the Cisco AVVID IP Telephony solution customers and organizations have already purchased to solve their telephony needs.”

—Doug Fink, Calence

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Profit-thinking organizations and enterprises can develop phone services that, when invoked by the user, generate revenue. The large display on the Cisco phone can also be utilized to display advertisements; revenue is generated by businesses paying a fee to be featured on the phone. Consider what Calence plans to do for the hotel industry, or what some universities around the country have already done in dorm rooms. By deploying a menu-driven service that displays local restaurants such as pizza joints, or activities such as bowling alleys, movie theaters, or pool halls (complete with hours of operation and phone numbers to call for directions), the hotel or university can charge local businesses to be included in the listings. Doing so provides a much-needed service for visitors and students alike, while providing the option of revenue generation. You can use the `TD1eURL` command to display a banner on the phone when it is idle for more than ten seconds. The banner can be any form of message or advertising, from a listing of important numbers such as reception, wake-up call, and hotel restaurant, to a logo for the Pizza Hut located just down the street from the dorm room.

Hotels in Reno and Las Vegas can add to their bottom line and continue on the gambling theme by providing games on the phone. Users can access a selection of games for a small fee assessed by the hotel. This concept can be implemented with success anywhere gamers can be found, and a wide range of games can be developed using services. At the Cisco office in Dallas, one of this book's co-authors developed (and deployed on our internal system) a version of Black Jack that provides a nice diversion for the lunch hour.

## If You Want Something Done Right . . .

After reading the success stories of other businesses or organizations, you may find yourself questioning how to go about developing services for your enterprise. Do you build it yourself? Do you contract someone to build it for you? Do you consult with a company that specializes in service development to create a custom service or suite of services for you? Are you an individual application developer considering the likelihood of making a living developing phone services? For those matching the latter description, be sure to read the section, "Can I Get Rich Developing Services?" later in this chapter. For everyone else, consider the following.

Many companies are perfectly capable of developing services in-house using the information and tools provided by the Cisco IP Phone Services SDK and this book. The development itself is not overly difficult. Often times you will be best positioned to create a service that fulfills your needs because you are in a unique position to evaluate those needs. Best of all, using application developers already on staff means no additional cost associated with creating the service. If you do not have application developers on staff, you can always contract someone to build the service to your specifications.

However, the old adage, "If you want something done right, do it yourself," does not necessarily hold true in this case. Consulting companies with experience evaluating business needs and developing services targeting those needs can often take a basic

problem and expand on it to create a robust suite of services that solves multiple productivity or user satisfaction issues. The value provided by a consulting company is experience, expertise, and support. You can learn more about the consulting companies discussed in this chapter in the section, “The Horse’s Mouth,” later in this chapter. You can learn more about locating development resources in the section, “Forum on HotDispatch.”

## Can I Get Rich Developing Services?

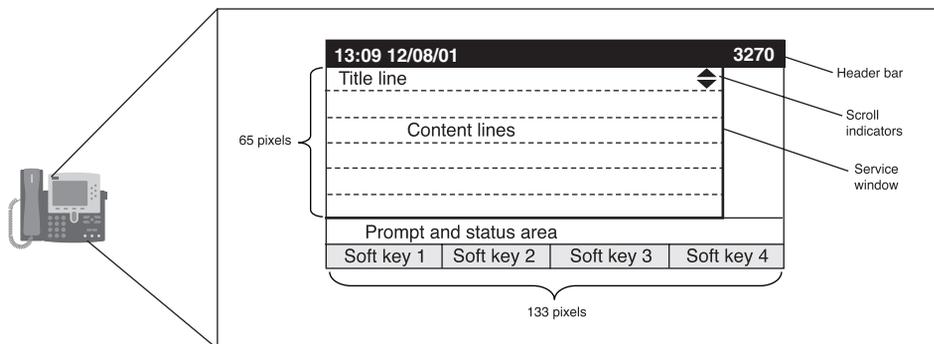
Well that’s a good question. Like any innovator who creates a product people really need, you could stand to earn a satisfactory income by developing a much-needed service or suite of services. How successful you are at earning money by developing services depends on the effort, planning, and marketing you put into it. Like the other professional companies out there already doing it, you must provide reliable code, documentation that effectively describes how to use the service, and customer support. Alternatively, you can develop the service and sell it to another company to market, thereby passing the administration headache onto someone else.

## Deploying Services on Cisco IP Phones

Cisco IP Phone models 7960 and 7940 provide a display plane that can be used by services. Because the phone can be used to answer or place calls while a service is displayed, portions of the display are considered hands-off for services. The first line (showing the date, time, and extension) cannot be overwritten by a service. This information will always display along the top. Also, the message and status area flashes to the caller ID information (if available) during an incoming call. The area along the right side is also reserved so that users can press the appropriate line button or speed dial even while a service is displayed.

The area used by services (133 x 65 pixels) is defined in Figure 1-26.

**Figure 1-26** *Services Panel and Number of Pixels*

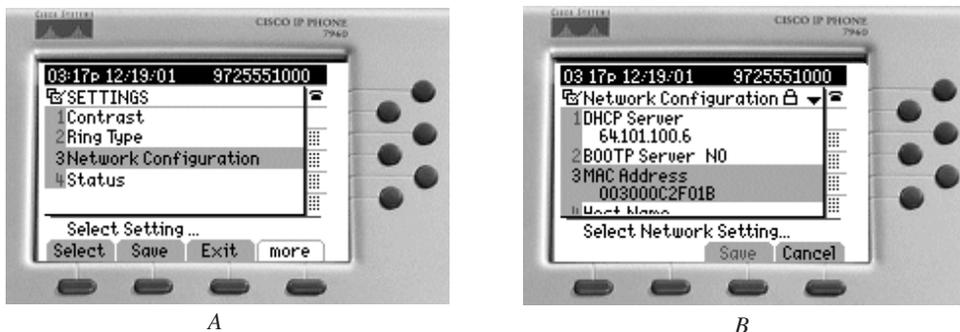


## Tips for Building Successful Services

The following tips and tidbits of information have been passed on from experienced service developers and usability studies performed by Cisco.

- Try to build a service that does not require a lot of scrolling or use the status area to display a line of text that prompts users to scroll for more options. Inexperienced users often do not realize they need to scroll on a menu or do not recognize the arrows that indicate scrolling is possible.
- Use consistent wording. Because users may already be familiar with services provided by Cisco, use consistent terminology where applicable. For example, Cisco uses the term “Exit” on soft keys. Increase ease of use by sticking with known terms such as “Exit” (over another term such as “Close” or “GoodBye”) and use the same terms consistently.
- Use the same soft keys Cisco provides where applicable. For example, if you have a service that allows data entry or dialing of a number, it is wise to include the soft keys users are familiar with and have come to expect, such as **EditDial** and << (backspace).
- Test your service on people around you before subjecting the innocent masses to it. A lot of good usability feedback can be gained by letting your co-workers tear your hard work apart with their constructive criticism.
- Consider whether your service needs a main menu or a home page. Some services are simple enough to let the user jump right in, rather than forcing the user to wade through an opening screen to get to the functionality.
- Support type-ahead menu selection. A good menu provides numeric identifiers for each line item. By supporting type-ahead, you allow users familiar with the service to get deep into the service by entering a string of menu selections without waiting to see the associated menus. Figure 1-27 shows an example of the settings menu. To quickly find the phone’s MAC address, users can press the **settings** button, then press **3** for Network Configuration (A), and then press **3** again for the phone’s MAC address (B).

**Figure 1-27** *Type-Ahead Menu Selection*



- Write useful prompts. If your menu lists several items, be sure your prompt is generic enough to apply to all line items equally. “Make a selection . . .” is an example of a good prompt because it is a complete sentence yet is succinct, starts with an action (verb) and applies generically to all menu items when a **Select** soft key is also provided.
- Order tasks in a menu or list by anticipated popularity, listing those tasks that will be the most heavily used first. When popularity is not a concern, use such natural ordering as listing items alphabetically.
- Use common abbreviations. Because of the limited number of characters allowable on soft keys, you may feel compelled to get creative with your abbreviations. Determining understandable abbreviations is another time when bouncing ideas off your co-workers would be beneficial.

## About the CD-ROM

The CD-ROM included with this book supplements the information you will find in these pages. Refer to the CD-ROM interface for descriptions of the CD-ROM contents. The following items are included:

- **CallManager Simulator (CM-Sim)**—An application that provides a small subset of CallManager features, named CM-Sim, is provided for debugging purposes. CM-Sim supports phone-to-phone test calls, but not much else. You can develop services and then test them using CM-Sim. Of course to do this, you must purchase Cisco I P Phones if you do not already have any. No more than two would be required to effectively test your service. Read more about CM-Sim in Chapter 12, “Cisco CallManager Simulator.”
- **XML Validator**—The Validator is a command line tool that parses the XML content of a file or Web page and authenticates it against the schema for Cisco IP Phone XML objects. The Validator program discussed in Chapter 11, “XML Development Tools,” requires that you install Microsoft’s MSXML 4.0 parser component. Details on how to accomplish this and more information about the Validator are provided in Chapter 11.
- **Code samples, applications, services, and routines**—The previously listed advanced techniques are described in the book. A screen capture application is provided that captures the phone’s display in a Web browser. You can then use any screen capture utility to save the screen in the desired format for use in documentation or other explanatory text.
- **JavaScript routine that runs on IIS**—A JavaScript routine that runs on IIS is provided that uses the CiscoIPPhoneImage component for resizing images. You can use the routine to resize an image that is too large to display on the phone’s LCD. With

this routine, an image's height is resized to match the displayable area on the phone, and then the width is resized to match the ratio, maintaining aspect ratio on the display and allowing a larger image to display properly on the phone. This routine is useful because the `CiscoIPPhoneImage` object does not maintain aspect ratio. Read more about the applications and routines in Chapter 10, "Techniques for Advanced Services."

- **Voice Anomaly Tracking service**—A Voice Anomaly Tracking service, which is used as the example service in Chapter 7, "Building a Service," is provided for your use. When users encounter audio problems, they can use the VAT service to pull call statistics off their phone's Web server. VAT logs the statistics to a CSV file that administrators can access to assist with troubleshooting.
- **Code samples for various graphical uses**—Code samples for various graphical uses are provided. Among the samples are an explanation for using an Adobe Photoshop plug-in to draw graphics on the phone (such as a calendar) and an image navigation component that when integrated as part of a service allows a user to zoom in, zoom out, and navigate around an image (such as a map or weather picture). Read more about the applications and routines in Chapter 10.

## Forum on HotDispatch

Cisco worked with HotDispatch to provide a community forum for exchange of ideas and services about Cisco IP Phone services. Figure 1-28 shows the Cisco home page on HotDispatch.

HotDispatch provides an infrastructure on the Web that companies such as Cisco can use to build a forum for discussion and exchange of ideas about products or services. HotDispatch has proven that users can save money using HotDispatch over purchasing technical support, receive speedy resolution to problem issues, and increase project savings over traditional out-sourcing methods. While Cisco offers reasonably priced support for your service development, you may also find the services of the Cisco site on HotDispatch to be of considerable value.

Figure 1-28 www.hotdispatch.com/cisco-ip-telephony



The Cisco site on HotDispatch provides the following options:

- **End Users**—The End Users area gives you several ways to access development resources for phone services. You can post a question and the amount of money you are willing to pay an expert for the answer. Experts in Cisco IP Phone services register with HotDispatch, and if an expert provides a solution or answers a question and the resolution is satisfactory to you, funds are transferred from your online account to the registered expert's account. You can also browse service solutions for sale or post a request for project outsourcing. For example, you have identified the service you need to solve your organization's goal, but do not have the resources to develop the service. You can post a project request and registered experts can bid on the job.
- **Developers**—The Developers area lets registered experts browse the list of questions posed by end users, along with the price to be paid for a satisfactory resolution. You can also browse service solutions offered for sale or bid on a request for project outsourcing.

- **OfficeFronts**—The OfficeFronts area lets third-party individuals and companies who develop Cisco IP Phone services market their products to the audience of HotDispatch users. Users can browse the OfficeFront to learn about services that are available for purchase. This service helps developers earn a living from their innovation and expertise and fulfills the business needs of various users.
- **Discussion Forum**—The Discussion Forum (a chat room) is a free-for-all discussion about Cisco IP Phone services. Users describe success stories, ask questions of other users to help in troubleshooting service development, lodge complaints, and more. The Discussion Forum is available in the End Users and Developers areas.

## The Horse's Mouth

To get more information about the services profiled in this chapter, speak to the best authorities on the subject: the people who developed those services. You can research additional phone service developers in the OfficeFronts area on HotDispatch ([www.hotdispatch.com/cisco-ip-telephony](http://www.hotdispatch.com/cisco-ip-telephony)).

## AAC Associates

AAC Associates ([www.aac.com](http://www.aac.com)) is a Cisco Premier Certified Partner and recognized by Cisco as a certified sales expert for Cisco AVVID IP Telephony.

## Berbee

Berbee ([www.berbee.com](http://www.berbee.com)) is a Cisco Gold Certified Partner and has been awarded Advanced IP Telephony Partner status by Cisco Systems.

## Calence

Calence ([www.calence.com](http://www.calence.com)) is a Cisco Gold Reseller and Cisco AVVID IP Telephony specialist.

## Conclusion

Cisco IP Phones expand the capabilities of the traditional phone. While the expected phone functions are provided (call connection, transfer, conference, hold, and so on), the addition of phone services enables you to use Cisco phones to solve complex business problems. In this chapter, you learned the value IP phone services can provide and read about services that other companies have developed to solve their own business needs or the needs of their customers. More than just a communication device, the Cisco IP Phone can be leveraged

for standard business functions including generating revenue, convenience, increasing productivity, entertainment, gaining a competitive advantage, and more. All it takes from you is a little imagination and some code. In this book, we provide the education for using the code to create services—you provide the ingenuity.

You also learned about the open community forum hosted by Cisco on HotDispatch. Using the information provided in this book, you should be able to develop services that solve business problems or your organization's goals.

In the next chapter, you will learn about the basics of Web development, the overall architecture of Cisco CallManager and the role the Cisco IP Phones play in that environment, as well as basic information about Web servers, Web hosting, and the XML message format.