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Delivering Support Services Via the World Wide Web

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Datapro Summary

The role of the traditional help desk has expanded to include support for customers, partners, and suppliers, as well as employees. Many companies seeking a more efficient and economical approach to delivering support find that the Internet--specifically the Web--can extend the availability and reach of their various support operations. This allows companies to use their resources more effectively while meeting the support needs of all constituents. The Web may be used to deliver several types of support, including technical support, self-support, customer relationship management, and quality management. These support capabilities are available separately from multiple vendors or may be available as an integrated solution from a single vendor.

—By Nathan J. Muller

—Analytical Source: Peggy Mattern

Introduction

First generation help desks provide technical support for internal corporate users, including mobile professionals, telecommuters, branch offices, and international locations. This allows the return on investment for networks, systems, and applications to be fully realized throughout the organization. In making technical assistance available to all who need it from appropriately staffed help desks, problems can be resolved in a timely fashion so high levels of employee productivity and organizational efficiency can be sustained. As corporate structures become increasingly flat and distributed, using the Web to augment support delivery overcomes the time zone problem.

Second generation help desks expand support capabilities to external constituents, including customers, partners, and suppliers. In recent years, corporate customers have become quite demanding with regard to support. The ability to deliver timely support has become a key factor in the vendor selection process. After spending a considerable amount of resources acquiring and installing products, customers want expert assistance when problems arise, regardless of business hours. Web-based customer support has a lower cost per transaction than traditional telephone support delivered over toll-free 800 lines.

Increasingly, companies are including partners and suppliers within the scope of their support operations. With so many products resulting from the joint efforts of multiple companies around the world, the Web provides an economical and convenient way to coordinate the efforts of partners and suppliers. Opening the help desk to those beyond corporate boundaries via the Web allows companies to fulfill the support needs of all constituents more economically and efficiently, especially when self-help mechanisms are made available.

The characteristics of the Web make it well suited to the delivery of technical support for both internal users and customers. The Web itself can best be described as a dynamic, interactive, graphically oriented, distributed, platform-independent, hyperlinked, client/server information system. Businesses contend that speeding up problem resolution via the ubiquitous Internet makes the cost of setting up a support site on the Web well worth the effort and expense. Support systems that integrate with the Web streamline administrative tasks, greatly enhance service

personnel productivity, and ensure highly responsive service delivery.

Internal Support Tasks

Many companies are finding that the Web is an ideal medium for enhancing internal systems and network support. Routine tasks that are well suited for implementation over the Web include:

· LAN managers at distributed locations can access a database stored in an internal Web server to troubleshoot system and network problems. The Web server can make a valuable adjunct to the help desk, especially when corporate locations are spread across multiple time zones.

· Service requests and trouble tickets can be dispatched electronically to carriers, vendors, and third-party maintenance firms via standardized forms written in the HyperText Markup Language (HTML) and processed with programs written in Java or the Practical Extraction Report Language (PERL).

· For remote sites that are too small to be economically tied into the corporate backbone network, the use of HTML forms can convey move, add, and change information to a central management console to expedite asset management and inventory tracking. Among other things, forms also can be used to report trouble and request technical assistance.

· Remote employees can access the Web from any location to obtain the latest device drivers, software patches, applications, and upgrades. Online configuration assistance and troubleshooting advice enables remote users to solve their own problems--even during non-business hours. Remote sites too small to afford private lines or switched digital services can call the local number of an Internet service provider (ISP) to access the corporate help desk. All that is required is an account from an ISP, which can cost as little as US$10 per month, per user. Access to the corporate help desk can be secured through user IDs, passwords, and site IDs to prevent unauthorized usage and break-ins. An additional level of security can be provided by a firewall, which protects the corporate network from intruders by filtering out unwanted traffic from the public Internet. Companies with secure Virtual Private Networks (VPNs) may also allow remote users to dial-in for automated support assistance.

Support Delivery

The traditionally centralized help desk is giving way to a more distributed approach, in keeping with the trend toward increasingly flatter, decentralized corporate operations, with its emphasis on client/server and remote access technologies. Accordingly, new ways of delivering help desk support are being implemented.

Years ago, many companies relied on bulletin board systems (BBSs) which enabled remote users and customers to dial into databases that provide answers to common problems. The big advantage of BBSs is that they are available 24 hours a day and can provide answers to the most frequently asked questions (FAQs), thus conserving corporate resources. The disadvantage of such systems is that they are often difficult to navigate. Since users typically pay long-distance phone charges while they attempt to learn arcane commands, they are reluctant to use such systems.

To reduce costs to consumers companies turned to the Internet, allowing users to access File Transfer Protocol (FTP) sites to obtain software upgrades, patches, and configuration information. However, this did not do away with text-based commands and the need to access directories of cryptically named files.

Today, the Web makes it easy for vendors to deliver software and product information in a more customer-friendly manner. Powerful search engines make finding relevant updates quick and easy. Wizards guide users through an automated installation process immediately upon

completion of the download. Even product registration is automated. Some vendors require proof of ownership before certain files and software upgrades can be accessed. That ensures that only paying customers have access to certain software and product documentation.

Unlike BBS and FTP, the Web uses a standardized--almost intuitive--method of navigation through browser software installed on the client machine. Netscape Navigator and Microsoft Internet Explorer are the two most popular Web browsers vying for market dominance.

Since virtually every client machine is now equipped with a Web browser, a mobile user, telecommuter, or branch office worker that is not directly connected to the corporate backbone network, can dial into the company's Web server and fill out a standard help request form. By clicking on the form's "send" button, the completed form is processed by the server's program and sent via e-mail to the help desk, where it is logged and answered according to the reported severity of the problem.

Another way to deliver support is to post a Frequently Asked Questions page on the corporate Web site. This gives users the opportunity to quickly find solutions to their problems and it frees support staff to handle more pressing concerns. FAQ usage can be encouraged by organizing it into various problem categories, keeping the page updated with new problem resolution information, and by adding a notice to the assistance request form to check the FAQ page first. The FAQ page should contain a notice that invites users to fill out the assistance request form if they cannot find a solution to their particular problem.

Discussion groups are still another way of providing support over the Web. Implemented with programs usually written in PERL, these discussion groups operate much like Usenet newsgroups in which related comments are posted and threaded so others can follow the conversation. Conversations may be between users of the company's products or between product experts within the company and customers.

Web-Enabled Knowledgebases

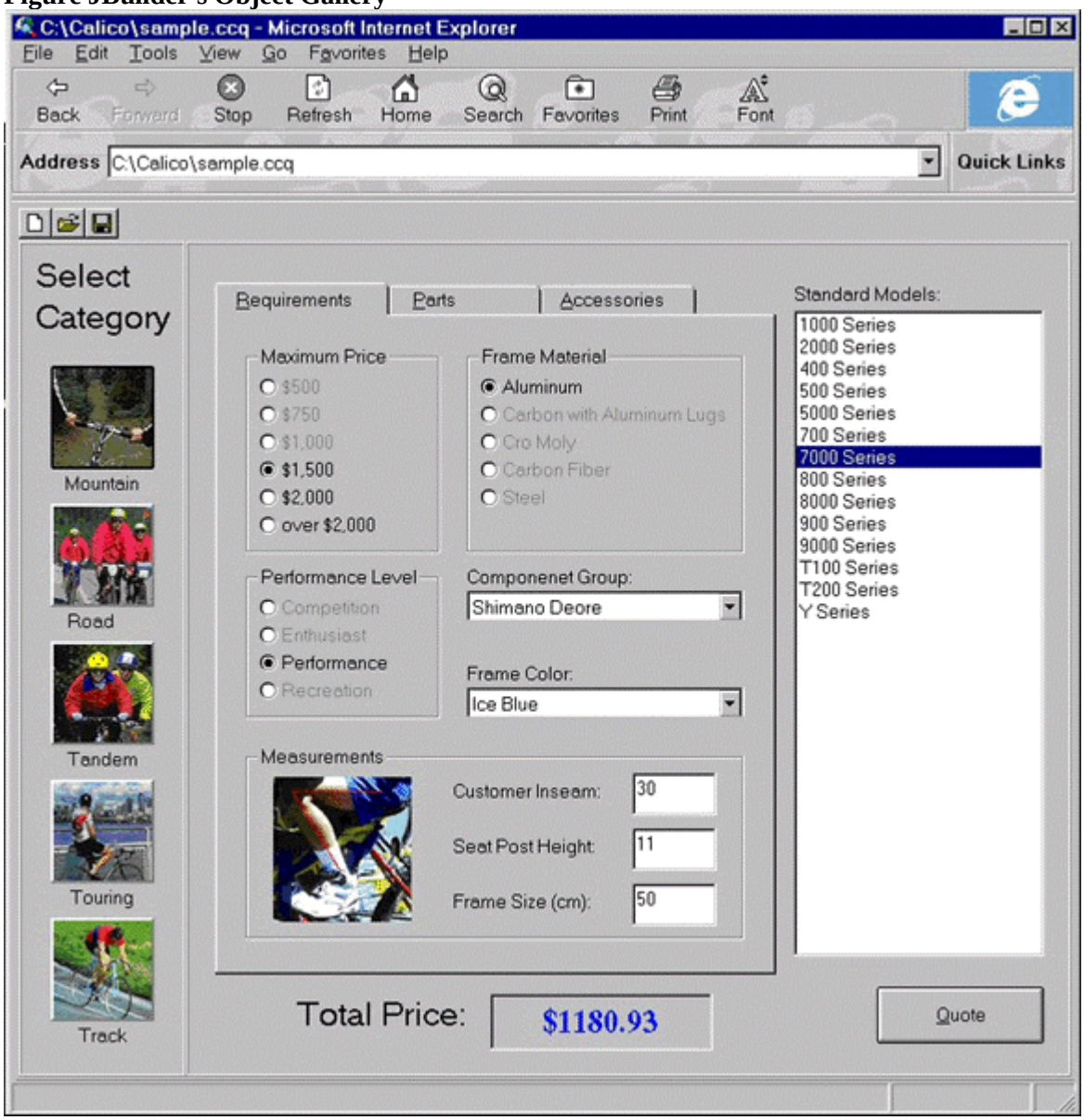
Still another way to provide help desk support over the Internet is to Web-enable an existing database of problems and solutions. These expert systems "knowledgebases" are essentially catalogs of all previously reported problems and known solutions. Compiling and maintaining the knowledgebase is usually the responsibility of the help desk staff, who record their problem-resolution experiences in a standard electronic format. When a remote user has a problem, he or she accesses the company's Web server to submit a help request. The request is routed to the application server via the Common Gateway Interface (CGI) or an application-programming interface (API). The application server translates HTML requests into calls or SQL statements it can submit to the knowledgebase. The application packages the result and returns it to the Web server in the proper format. The Web server forwards the result to the client, which is rendered by the browser in a user-friendly format.

This model can be enhanced with Java. For example, the query form can be presented as a Java applet, rather than the usual HTML form with an embedded CGI that is processed by PERL. Among the advantages of a Java-based query form is that error checking can be performed locally rather than at the server. If certain fields are not filled in properly, for example, an appropriate error message can be displayed before the query is allowed to reach the server. This helps control the load on the server and avoids unnecessary traffic on the network. An all-Java approach provides even more advantages because connecting clients and servers at the network and transport layers is much more efficient than doing so at the application level using CGI scripts. This means users can design and execute queries and reports much more quickly than they can with other types of tools. Further, since the Java applet is maintained at the server and does not take up permanent residence on the client machine, users are assured of the latest version of the applet whenever they use it to access the knowledgebase.

The creation of Java applications is made easier through the use of visual tools, such as

Borland International's JBuilder, which includes an Object Gallery that lets the developer quickly manufacture such things as applets, applications, frames, dialogs, panels, data modules, classes, and HTML files simply by dragging and dropping them into a workspace. As the objects are selected and linked together, JBuilder assembles the Java code in the background.

Figure JBuilder's Object Gallery



External Support Tasks

Many of the support capabilities and technologies used to address the needs of internal users are being applied to supporting external constituents such as customers, partners, and suppliers. The global reach of the Internet and the multimedia capabilities of the Web have created new opportunities for enhancing external support. This reduces overall support costs, while providing each type of constituent with a higher level of satisfaction. The following are some of the support

tasks that are well suited for implementation over the Web:
· Customers can access the Web from any location to obtain the latest device drivers, software patches, applications, and upgrades. Online product configuration assistance and troubleshooting advice enables customers to solve their own problems--even during non-business hours--relieving company staff from routine calls so they can focus resources on more urgent customer concerns.
· Customer inputs from Web pages can be tracked for managing product defects and feature requests. Not only can the information be used to increase product quality, it can help guide product development to better meet customer needs. A self-service Web interface allows customers to report and check on product issues.
· Partners can access Web server(s) set up on a multi-company extranet to retrieve documents, spreadsheets, applications, and other resources needed for joint product development and marketing. This self-help arrangement expedites problem-solving and relieves staff pressures among the participant companies, whose resources would otherwise be consumed in telephone tag, overnight document delivery, and travel for meetings.
· Suppliers that are too small to be economically tied into electronic document interchange (EDI) networks can use the Web for electronic commerce transactions. Since there may be hundreds or thousands of suppliers, all the forms and support they need can be made available online so that they do not pose an undue administrative and technical burden on the hub company.

Interactive Support Case Study

Ascend Communications, based in Alameda, CA, offers a glimpse into how vendor support services will be delivered to customers in the future. The company, a leading provider of wide area network (WAN) and Intelligent Network (IN) products, has enhanced its Web site to provide interactive self-service technical support. Using third party tools and applications from such companies as Acuity and Documentum, the company incorporates a Web-based service delivery model that enables customers to manage and maintain Ascend hardware and software products through assisted self-help. At the same time, the service delivery model enables Ascend to make the most efficient use of its service and support resources.

Through the application of real-time text conferencing, push, and streaming audio and video technologies, Ascend Online Services (AOS) allows customers to proactively manage their networks and work directly with an Ascend network support engineer without leaving the company's Web site. AOS also enables customers to obtain information that provides them with a clearer understanding of the company's new products and technologies.

Central to AOS is an extensive self-help library that includes software downloads and thousands of pages of continuously updated technical information such as FAQs, configuration help, and troubleshooting tips. AOS customers can quickly and easily search for the information they need or click on an icon to begin a live session with an Ascend technician. During the session, the engineer can push the appropriate pages and links directly to the customer's browser, speeding service by eliminating the typing errors and tedious site or file searches that often bog down telephone-based support.

Only those customers who purchase standard service contracts get interactive on-line access to Ascend staff. Support options include Advantage On.Line, a service package for customers who prefer to handle most support issues on their own, and which includes interactive Web-based support. There is also Advantage On.Guard, which offers an assigned network service engineer, up to 2-hour on-site response, unlimited telephone support as well as full access to AOS. Both support offerings are available on a 24×7 basis, with unlimited access to one or more of the AOS interactive features. These features include:
· AOS Live. This feature creates a private text chat session between a customer and an Ascend network support engineer. The engineer assists the customer in finding relevant information by pushing answers and instructions to their screen or by providing step-by-step troubleshooting and

configuration assistance. The solution is automatically entered into Ascend's online knowledge base and can be e-mailed to the customer for future reference.
· AOS Casts. This feature uses audio and video streaming to provide seminars and education on new voice and data services opportunities, configuration guidelines, troubleshooting tips, and other topics. These sessions are scheduled throughout the day and week, allowing customers to sign-up at their convenience. At the scheduled time, customers receive the multicast sessions on their computers. The AOS Casts are interactive using multicast chat technology, and the sessions may be moderated or unmoderated.
· AOS Alerts. This proactive network management tool uses push technology to automatically deliver information vital to the performance of customers' networks via e-mail. Customers are notified of such things as hardware issues and software bugs, and receive the information and patches they need to resolve problems before they impact their systems. Customers also receive troubleshooting and configuration tips as well as notification of new white papers and technical documentation.
· CaseView. This management system allows customers to open and close trouble tickets and track the status of open tickets online. A collection of technical tips is also provided to help customers resolve issues quickly.
Ascend's approach is user-friendly and customer specific, a combination that can reduce the average problem identification-to-resolution time by as much as 20 percent. This represents a substantial improvement over previous online support delivery methods, especially when customers are faced with network downtime if they cannot get systems up and running.

Vendor Offerings

A growing number of tools and applications are becoming available for developing and implementing Web-based support. Many are available as ready-to-run applications, requiring only a moderate amount of customization before they can be integrated with existing systems and databases. Some can be integrated with complementary Web-based support products from other vendors.

Acuity's WebCenter

Acuity Corp. offers two versions of its WebCenter for implementing interactive online customer support: WebCenter Enterprise and WebCenter Express. After installing the system on a Windows NT-based Web server, the administrator populates the self-help section and places the Acuity-supplied links on the Web site.

WebCenter Enterprise is an enterprise-class solution that enables companies to provide interactive self-service, automatic e-mail responses and routing, and live interaction through multiple online communication channels. It integrates with customer information systems, knowledge management applications, and telephone systems. It supports multiple forms of live communication, including real-time text conferencing, voice-over-IP, and telephone callback via ACD connectivity.

The e-mail response mechanism provides quick answers to recognized questions and routes unrecognized questions to the most appropriate agent for review. The WebCenter WebACD (Automatic Call Distributor) uses business rules to route work items--e-mail and requests for live help--to the most appropriate agent based on question content, customer attributes, agent skill sets, and availability. The WebACD also delivers the customer's profile and session history to the agent's desktop along with the customer contact.

The WebCenter ACD can be configured to route more than one customer to an agent at a time. While one customer is reviewing information, the agent can switch to help another customer

and go back and forth between them until their support needs are met.

The Events option allows companies to host moderated online conference for such things as promotions, product announcements, and training. As many as 20,000 simultaneous users can be supported.

WebCenter Enterprise includes all of the capabilities and features of WebCenter Express, a solution that interfaces with existing databases and traditional call centers to provide an integrated system for customer self-service that includes live help over the Internet. Customer interaction is enhanced by the integration of a searchable online knowledgebase with real-time customer/staff discussion forums that include search and browse capabilities. The forums, which can have unlimited threads, may be either open or moderated by a company representative.

A seamless escalation path can take the customer from the knowledgebase or forum to a live customer service agent. Through skills-based routing and multiple defined queues, customers are connected to the most appropriate agent. Customers in queue are notified of the estimated hold time. If required, the agent can transfer the session to another agent, without the customer having to re-establish the session.

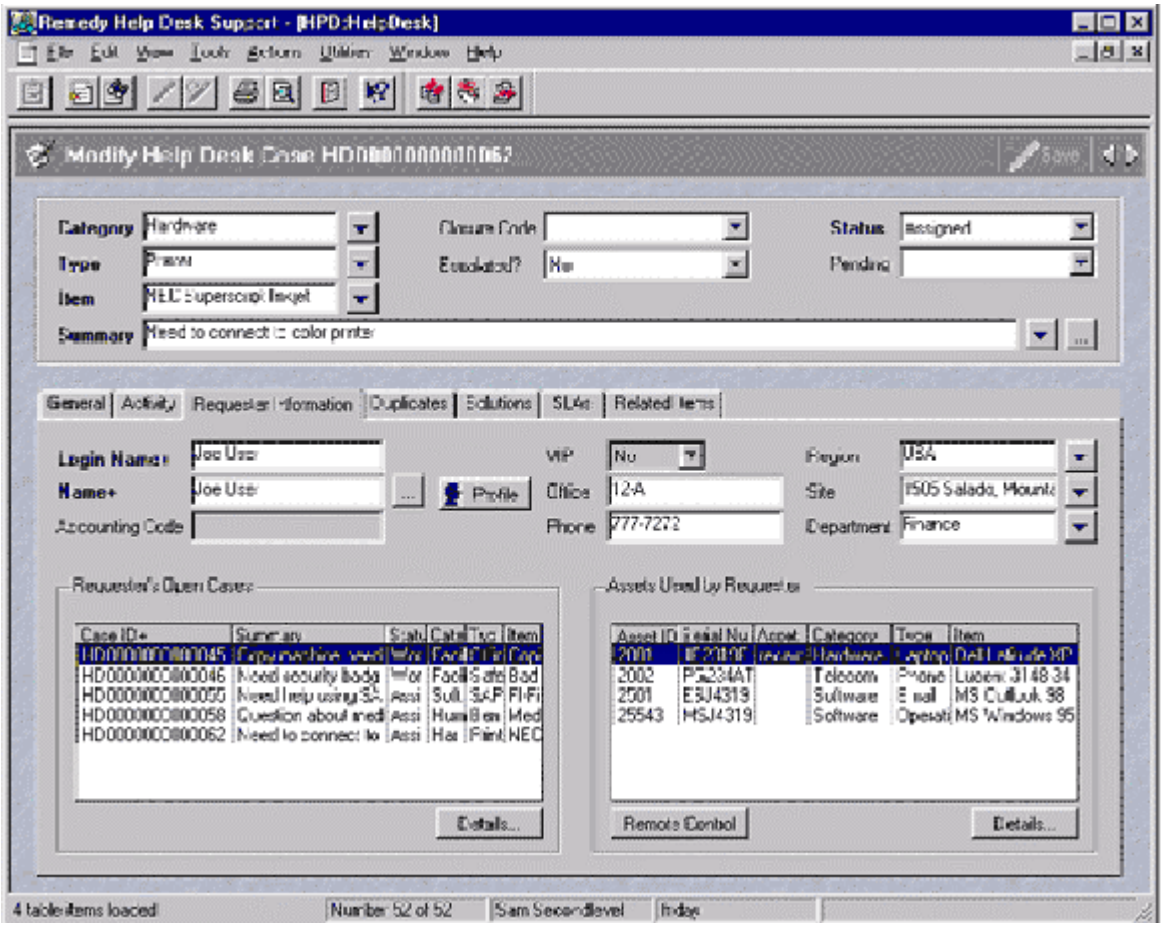
During a live customer interaction session, agents can push specific Web content to the customer's screen, including links to specific forum entries or external URLs. Agents can synchronize their browser with the customer's browser for "follow me" or "follow you" browsing. While synchronized, the customer and agent can maintain an ongoing text conversation. Transcripts of live text sessions can be sent to the customer and used as building blocks of new FAQs and knowledgebase entries. In sync mode, agents can even assist customers in filling out online forms.

Calico Technology's eSales Configurator

Calico Technology offers a guided selling solution called eSales Configurator, which helps customers configure complex products and services online.

Users access a company's configuration agent page on its Web, choose a particular product category, and build the product to meet their requirements. For a given price range, a bicycle, for example, can be customized in terms of frame material, frame color, components, performance level, and measurements. Error messages indicate if a particular configuration is invalid, and the system provides suggestions to help users arrive at the best product configuration. The bottom of the page shows the total price for the product as customized by the customer.

Figure Calico Technology's eSales Configurator, as viewed in Microsoft Internet Explorer



Developers can build product models into a logical structure that is tailored to their business. (Modeling is the process by which a knowledgebase that represents the product components to be configured is designed and implemented.) The relationship among the parts is then defined. eSales Configurator allows product models to be quickly altered to reflect new features, updated prices, or changing market conditions.

The ability to customize products and validate the configurations online results in fewer mistakes, faster order processing, lower costs, increased revenues for the vendor, and a higher level of satisfaction for customers.

Calico has integrated its eSales Configurator with complementary technologies from ActiveTouch, Acuity, eFusion, and WebLine Communications, enabling vendors to initiate real-time conversations with customers through telephony, text-based conferencing, application sharing, and voice-over-IP at any point in the buying process. By clicking on a designated button, customers can initiate live interaction directly over the Internet, eliminating the need to end the session and place a phone call. A service representative will be able to immediately view the point in the buying process where the customer initiated contact to further guide the customer to complete the buying process.

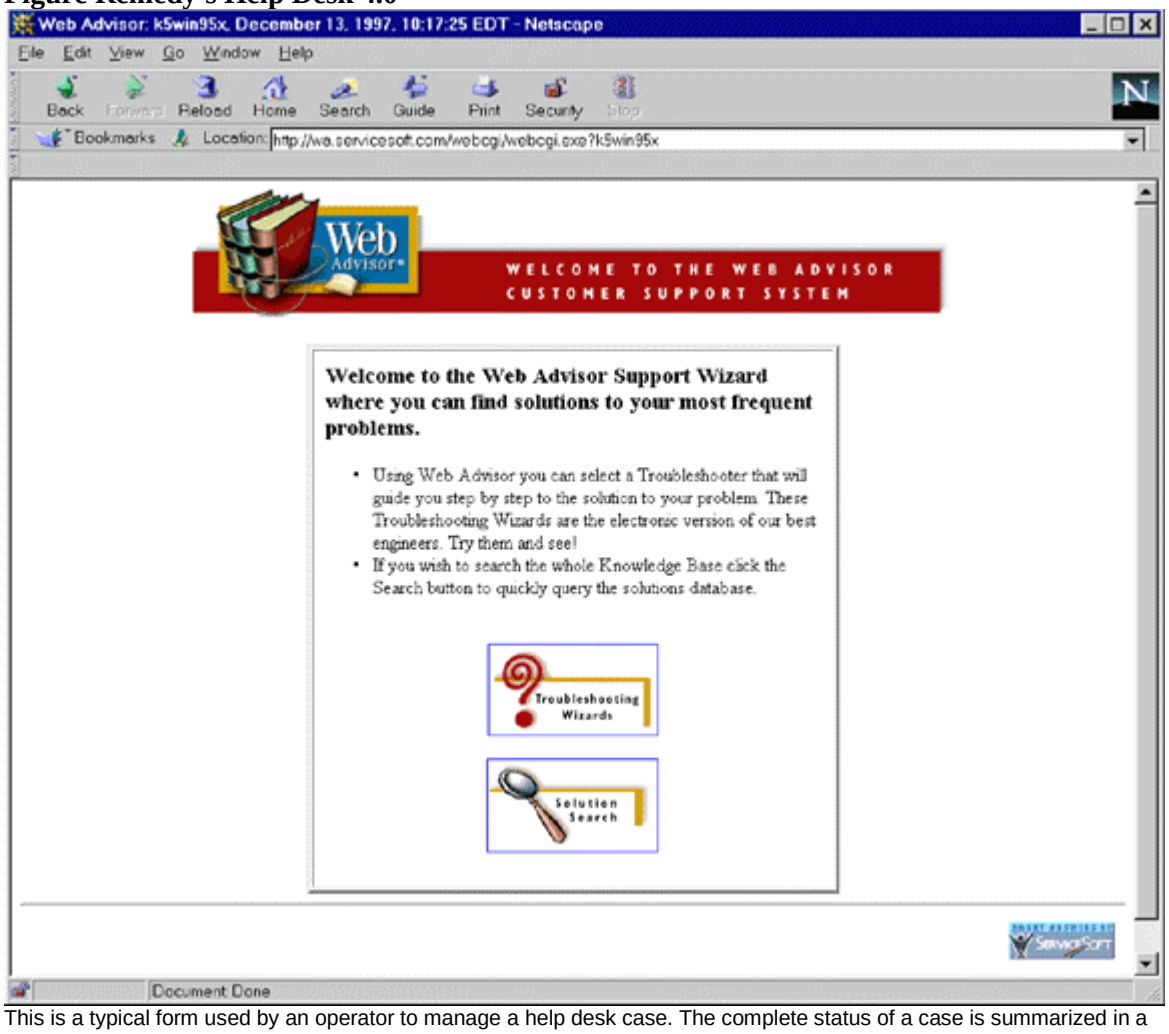
Remedy's Help Desk

To enable organizations to manage their internal support operations, Remedy offers Help Desk 4.0, which consists of four integrated applications for managing an organization's infrastructure: problem management, problem resolution, asset inventory management, and change management.

Help Desk 4.0 features an easy-to-use GUI that borrows from Windows 98 and popular Web

browsers. To facilitate remote access to Help Desk, a Java client option lets organizations deploy Help Desk clients via the Internet and private intranets.

Figure Remedy's Help Desk 4.0



This is a typical form used by an operator to manage a help desk case. The complete status of a case is summarized in a single window.

Pre-defined or ad hoc reports provide the means for measuring calls, service performance, and goals. Remedy Help Desk allows file integration with Seagate Crystal Reports. Using the Crystal Reports Viewer, more than 100 pre-built reports are available for the help desk staff.

Help Desk 4.0 includes an evaluation copy of Remedy Service Level Agreements 4.0, which lets users define and assign service levels in real business terms and utilize full SLA reporting capabilities for problem requests, assets, and change requests. The SLA application is integrated into the Help Desk management console and has the same reporting capabilities as Help Desk as well as real-time Web reporting capabilities with the Java client of Remedy's Flashboards.

Flashboards complements Remedy's Help Desk and is used for managing service levels for internal operations. The Java client in Flashboards gives managers detailed insight on performance and trends of their systems, enabling proactive management from anywhere at anytime. The Java client offers platform independence for immediate deployment across mixed platforms with the use of supported Web browsers.

With its dynamically updated meters, Flashboards charts and proactive notification features offer managers a real-time visual dashboard for monitoring SLA performance. Using Flashboards, IT departments can track real-time data and monitor operational trends in an effort to meet or exceed service level agreements for these processes.

The Java client in Remedy's Flashboards lets users monitor help desk response times to support service level agreements, or simply to see how busy the help desk might be at that particular time. For example, end users could see where they are in the queue, the length of a typical call, or how long it might take to resolve a particular problem. They can see the number of open calls and whether thresholds for response time have been exceeded. If their help desk has agreed to respond to calls within an hour and it is not meeting that goal, they will know about it. IT and help desk managers could also use the Java client in Flashboards to show senior executives they are meeting their performance goals or to help cost justify new expenditures on staff or equipment.

The availability of Flashboards on the Web also lowers enterprise-wide implementation costs by eliminating the need for installation on each desktop. Users just point their browsers to Flashboards on the Web without having to launch additional applications. Without Java, Flashboards requires that a special client be installed on each user's workstation in order to view the help desk data. Such an effort would be expensive and difficult to maintain for end users outside the data center. The use of a Java client also simplifies version control issues by centralizing the administration of Flashboards, since updates to the server will simultaneously update the Java clients.

A complete Web-enabled solution is available through the Remedy ActionCenter Suite. ActionCenter is a total help desk solution that combines the features of Remedy Help Desk 4.0, unlimited end-user Web access for self-support through an IT Service portal Web site, and a Java client for access to the system by support staff.

Servicesoft Technologies' Smart Answers on the 'Net

Servicesoft Technologies' Smart Answers on the 'Net provides organizations with the means to offer self-service support to customers and employees by guiding them to the answers to their questions via the Internet or corporate intranet. Web Advisor and Knowledge Builder implement this customer self-support solution.

By asking questions, Web Advisor guides each user to the correct solution. Java or ActiveX applets can even retrieve information from the end-user's computer or a corporate database to automatically provide information that end users would find difficult to find, such as the specific configuration of their machine. Along the way, the system dynamically authors HTML pages with appropriate questions and responses that help resolve the problem. Web Advisor can also incorporate multimedia files to provide descriptive information that is not possible to deliver over traditional phone support methods.

If Web Advisor cannot provide the solution, an escalation option lets the end-user transfer an unresolved problem directly to the organization's support team. Specific technicians can be assigned to receive the escalation. An attached self-service record helps the technician solve problems without repeating questions and steps that have already been tried. Web Advisor also compiles problem-resolution information during each interaction, so administrators can view all customer-reported problems. Multiple Web Advisors can work in parallel on high-traffic Web sites, thereby helping a greater number of end-users concurrently.

Knowledge Builder is an object-oriented authoring environment that facilitates development of the knowledgebase that Web Advisor relies on to enable users to interactively diagnose and solve their own problems. No programming skills are needed to build a knowledgebase--only problem-solving skills. Knowledge Builder accepts inputs in terms of problems, causes, questions, and solutions. The data-input forms lead the developer through the process of entering the appropriate information into the knowledgebase. The software's visual environment, graphical user interface, and drag-and-drop editing make it easy to visualize, understand, and maintain a self-service support site.

Information from existing sources can be imported into the knowledgebase and edited to add

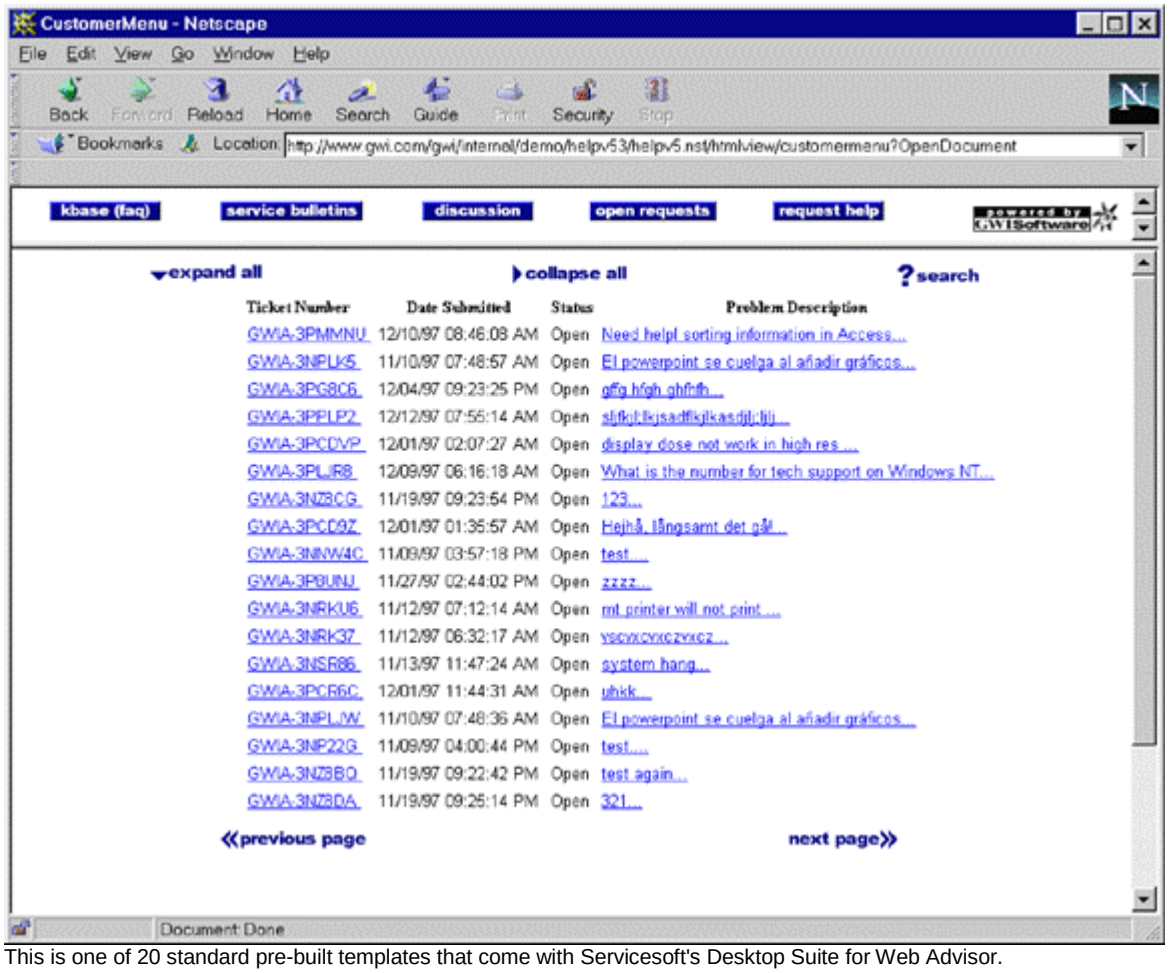
questions and incorporate solutions to common problems. The knowledgebase can be tested during development and implemented incrementally, while more information is added to grow the self-service support system.

Servicesoft offers several other tools to facilitate the creation of problem-solving information. The company's Team Authoring and Web Authoring tools allow different groups to easily work together across a LAN or over the Web. Workflow Designer offers the ability to manage the authoring of new information. Together, these three tools allow help desk agents to author new solutions using standard browsers. Editorial teams using Knowledge Builder can then review these suggestions and approve or reject them. If a solution is rejected, it automatically flows back to the authors who can use their browser to modify it. If approved, the solutions will be automatically published and immediately available in Web Advisor. This environment lets the team establish a review and approval process that ensures consistent, accurate advice from the most authoritative sources.

When users access Smart Answers on the 'Net, Servicesoft's expert reasoning technology comes into play by suggesting questions, processing answers, and guiding users to the most efficient solution. While traditional support databases require well-phrased queries and the ability to search through many possible solutions, expert reasoning interactively guides end users so they can determine their precise problem and find the correct answer. This step-by-step problem resolution lets end users solve their own problems and answer their own questions without prior knowledge of the subject.

The company also offers the Knowledge-Pak Desktop Suite, a ready-made knowledgebase that can be implemented out of the box. There is a Knowledge-Pak for each of the most commonly used software applications found in the corporate environment. These Knowledge-Paks are accessible over the Web to provide expert advice to users encountering problems with their applications.

Figure Servicesoft's Desktop Suite for Web Advisor



This is one of 20 standard pre-built templates that come with Servicesoft's Desktop Suite for Web Advisor.

Conclusion

Clearly, there is a trend toward leveraging the global reach of the Internet and exploiting the multimedia capabilities of the Web to extend help desk and customer support functions worldwide. By adding automated self-support to allow internal users, customers, and other constituents to locate resources and get answers to their problems, corporate staffs are freed from handling time-consuming telephone calls for routine problems. Delivering support electronically over the Internet can also lower stress levels among support staff and allow them to devote more attention to high-priority problems.

Nathan J. Muller is an independent consultant in Sterling, Virginia, specializing in advanced technology research, marketing, and education. In his 28 years of industry experience, Mr. Muller has written extensively on many aspects of computers and communications and has held numerous technical and marketing positions with such companies as Control Data Corp., Planning Research Corp., Cable & Wireless Communications, ITT Telecom, and General DataComm Inc.