Application Guide for Siebel Communications Billing Manager (Consumer Edition)

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1 Overview

1.1 Siebel Customer Self-Service

Siebel is the world's leading provider of customer self-service and e-billing software and services. Its solutions help service providers increase customer loyalty while reducing the overall cost to serve their customers. Service providers use the software to move customer service interactions from expensive paper and call center-based channels to lower-cost and more responsive self-service and assisted care channels like the web, e-mail and IVR.

Siebel software has been deployed in some of the most challenging business and technical environments in the world and has proven to be the industry's most scalable and reliable solution. The applications have been continuously developed and refined to deliver the most comprehensive functionality available. As a result, Siebel customers consistently gain the highest adoption and ROI in the communications industry – typically 5-10 times higher than companies using in-house or competing packaged solutions.

Self-Service for Consumers and Businesses

Many billing and customer care processes today are expensive, inefficient and unsatisfactory for both communication service providers (CSPs) and their customers. With Siebel's customer self--service and e-billing solutions, carriers empower their business and consumer customers to serve themselves and address all of their account and service-related activities online, instead of going through a call center, account rep, or retail outlet. For end customers, this makes doing business with a service provider more convenient, more efficient, and more satisfying. For service providers, it means improved competitive differentiation, significantly reduced customer care costs, increased customer loyalty and streamlined billing/payment processing.

Contact centers provide the key to unlocking the potential business benefits of customer self-service. Contact center statistics show that 60-80 percent of customer service issues relate to a customer's account. For this reason, Siebel's customer self-service solutions provide direct access to detailed account information, and interface with complementary front-and back-office systems to provide access to a variety of account-related services.

1.2 Siebel Communications Billing Manager

Communications Billing Manager Features Overview

Communications Billing Manager is the leading electronic bill presentment and payment (EBPP) solution for communications service providers. Communications Billing Manager provides the mission-critical application platform required for securely managing customer account information such as bills, statements, and other data. With Communications Billing Manager, carriers can provide business and consumer customers with highly personalized online account information and self-service capabilities that can be served across multiple channels (Web, PDF, hand-held devices and e-mail). It serves as the foundation for managing recurring customer relationships.

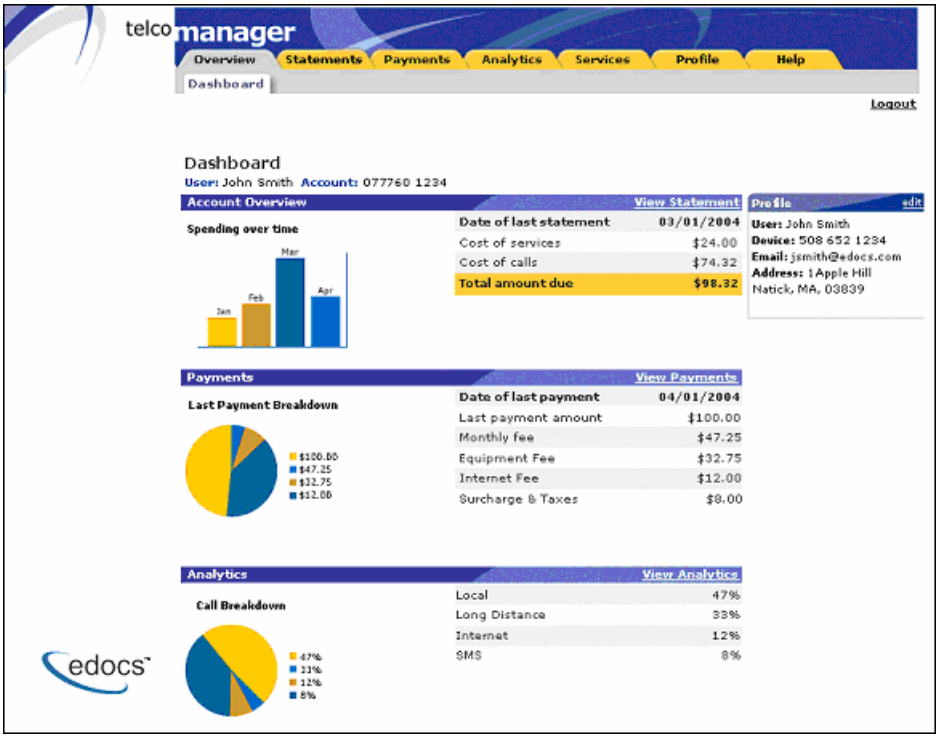
Communications Billing Manager is specifically designed for organizations with large numbers of customers, high data volumes and extensive integration with systems and business processes across the enterprise. With its sophisticated data access layer, platform services and data stores, Communications Billing Manager is uniquely capable of powering the most complex EBPP and Customer Self-Service solutions.

Realizing that consumer and business customers have very different service needs, Communications Billing Manager is available in a consumer edition and business edition with specific features and functionality designed for each user base.

The core capabilities of the Communications Billing Manager application editions are detailed below.

Communications Billing Manager Consumer Edition

Communications Billing Manager Consumer Edition dashboard



Communications Billing Manager Consumer Edition is focused on the self-service needs of a large consumer base. The core features of the application are described below.

Customer Account Dashboard

Bills or statement data is dynamically presented within the application dashboard. Once properly authenticated, users can easily and conveniently navigate and view their billing statements, account summaries and call details.

Electronic Bill Presentment and Consolidation

Consumer customers can access their bills or invoices online, including historical bills stored for as many years as the service provider prefers. Each monthly bill, for a single service or consolidated for multiple services, is presented in dynamic fashion using HTML and can include up-to-date account information such as current balance, bill details, unbilled-usage, last payment received, last payment date, etc. Customers can sort table columns, filter and drill-down into the call detail to further validate charges.

Electronic Bill Payment and Posting

Customers have the complete flexibility to control how and when payments are made. Payment is set up via bank and/or other credit accounts within Communications Billing Manager to execute instant payments or to schedule future automatic payments. Customers have the ability to view the status and record of previously made payments. Communications Billing Manager also provides an accounts-receivable settlement file for the service provider with the following information: payment amount, payment date, statement number, account number, payment account, payment type (one-time/recurring) and return status (yes or no with corresponding negative amount). Users can change their payment options and user preferences within the application. They can also establish multiple payment methods and payment notification preferences, make one-time payments, automate recurring payments, and set payment thresholds and reminders.

User Profile Management and Notifications

User information and settings are presented and modified within the application. Users may update their profile information, correct personal data, and manage password or notification options, email addresses, and other personal preferences.

Customer profiles may be updated on a real-time basis at anytime while the customer is properly authenticated. Profile information such as the customer's preference for account notifications can be set. Communications Billing Manager manages and sends e-mail messages concerning individual accounts or transaction events. A variety of conditions or circumstances can trigger email notifications. Service providers may wish to enable some common notifications:

- Current statement available
- Payment reminders
- Payment confirmations
- Payment rejections
- Payment overdue
- Threshold exceeded on recurring payments
- Credit card expiration pending

Users may establish multiple notification or alert options and modify their settings at any time.

Unbilled Data Presentment

Unbilled account charges can be viewed online prior to bill cycle closing within the application. Users can view their charges as well as analyze to-date spending for the current billing period.

Personal Address Book (PAB)

Using Communications Billing Manager, customers can create a list of phone numbers and assign name pairs allowing them to view call detail with meaningful names exchanged for frequently called numbers. With this feature, users can associate bill detail with more familiar, meaningful identifiers. Once entered in the PAB, names may be toggled on to replace corresponding numbers on the bill, making online account management easier, more convenient and more valuable for users.

B2C Reporting

Specific reports come with the application whereby users may view summaries, analyze charts, and access their complete statement history using built-in reporting features. Furthermore, users may also drill-down through account information, bill or statement data within the application. Specifically, they can page through call details, sort across pages, sub-total and filter account information viewing dynamic reports.

Print Friendly Views, PDFs and Downloads

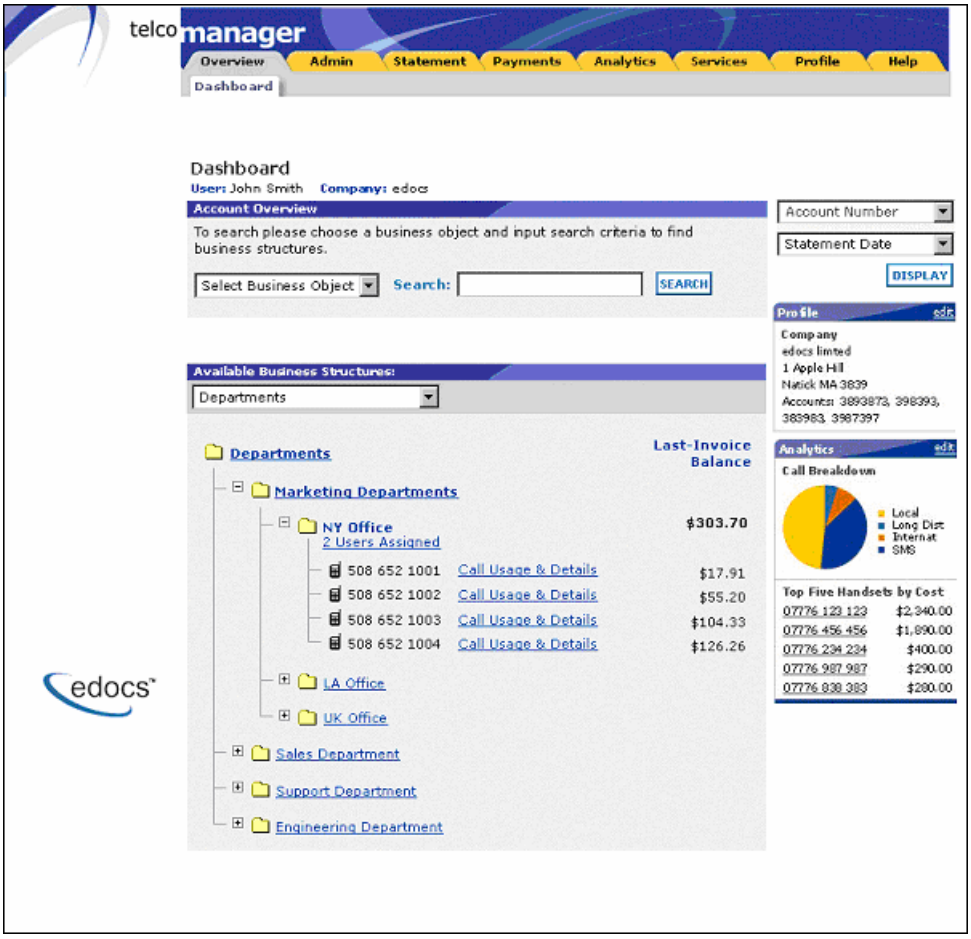
Users may access print friendly views, request a dynamic PDF of their statement, or select to download a dataset. These features are all available for key application views. Communications Billing Manager's versioned, disk-efficient and high performance bill archiving feature along with its print-friendly views makes generating hard-copy reprints simple and efficient.

Customer Service Representative (CSR) Views

Communications Billing Manager also provides a lightweight solution for customer service management. CSRs can also "impersonate" the user to facilitating the efficient servicing of online accounts. For example, representatives may have roles that provide application access to execute payments, reset passwords or simply search accounts to view the customer statement. The application may also be extended for complete case management with Siebel CSR Manager Application, providing additional case creation, routing and tracking, status views of cases, escalation workflows and queuing. Cases can either be completely automated without agent intervention based on predetermined business rules, or routed appropriately to engage an agent for resolution.

Communications Billing Manager Business Edition

Communications Billing Manager Business Edition Dashboard



Communications Billing Manager Business Edition is focused on the self-service needs of an enterprise customer base. The core features of the application are described below.

Corporate Account Dashboard

Account information, bills or statement data is dynamically presented within the application by the business billing structure. Once properly authenticated, managers, administrators and users may view consolidated account summaries, sub-accounts, individual statements or all call details based on their access permissions for the billing structure.

Hierarchical Billing and Business Structures

Billing structures are presented within the application as account hierarchies. Managers or administrators may search, view and update their billing structure by assigning other attributes to hierarchy nodes, such as, meaningful names or device IDs, etc. Users are assigned within the billing structure, defining navigation within the account and sub-accounts of billing data. Administrator assignment in the billing structure may provide access to the entire enterprise or limit a single user to viewing their individual statement only. By creating separate business structures within the application, users may maintain multiple hierarchies of their own. Billing structures and user created business structures offer different views of account information for segmentation, payment, analysis and reporting.

Electronic Bill Presentment and Consolidation

Business customers can access their bills or invoices online including historical bills stored for as many years as the service provider prefers. Each billing period, for a single service or consolidated for multiple services, is presented in dynamic fashion using HTML and can include up-to-date account information such as current balance, bill details, last payment received, last payment date, etc. Furthermore, accounts can be consolidated across disparate system using either full data consolidation via an external data store or summary consolation by dynamically linking the accounts. Customers can sort table columns, filter and drill-down into the call detail to further validate charges.

Cross Invoice/Sub-Invoice Payment

Payment options and enterprise preferences can be presented and modified within Communications Billing Manager. Administrators may establish multiple payment methods and payment notification preferences, make one-time payments, schedule automated recurring payments, and set payment thresholds and reminders. Administrators may also make a single payment across multiple invoices, defining the payment allocation, even allocating payment to sub-invoice charges. Administrators have the complete flexibility to control how and when payments are made. Payment is set-up via bank and/or other credit accounts within Communications Billing Manager to execute instant payments or to schedule future automatic payments. Administrators also have the ability to view the status and record of previously made payments. Communications Billing Manager integration provides an accounts receivable settlement file to the service provider with the following information: payment amount, payment date, statement number, account number, payment account, payment type (one-time/recurring) and return status (yes or no with corresponding negative amount).

User Roles and Permissions

User roles and permissions can also be presented and modified within the application. Administrators may update user role or access, establishing view only permissions, accounts receivable roles, managerial access, etc. This feature may be configured based on the provider business requirements or back-off ice integration needs.

Corporate and User Profile Management and Notifications

Corporate profiles are managed by designated administrators, whereas users may update their own profile information, correct personal data, and manage password or notification options, email addresses, and other personal preferences.

Corporate and user profiles may be updated on a real-time basis at anytime while properly authenticated. Profile information such as the corporate contact preferences for account notifications can be set. Communications Billing Manager manages and sends e-mail messages concerning accounts or transaction events. Notifications may be aggregated for account and sub-accounts events and limited to administrator or managerial roles. A variety of conditions or circumstances can trigger email notifications, so service providers may wish to enable some common notifications:

- Current corporate statements are available
- Payment reminders
- Payment confirmations
- Payment rejections
- Payment overdue
- Threshold exceeded on recurring payments
- Credit card expiration pending

Corporate administrators and users may establish multiple notification or alert options and modify their settings at any time.

Unbilled Data Presentment

With Communications Billing Manager, managers, administrators and users may view unbilled account charges prior to bill cycle closing. All users may view their charges and analyze to-date spending for the current billing period. This feature may be configured based on the provider business requirements or back-office integration needs.

Corporate and Personal Address Book

Administrators may create a global list of phone numbers and assigned name pairs within the application for their accounts. Individual users may also create and maintain a personal address of their own. Users may implement both address books and then view call detail with meaningful names exchanged for frequently called numbers.

Advanced Reporting

Specific reports come with the application whereby users may view summaries, analyze charts, and access their complete statement history using built-in reporting features. Additional business reports are also provided whereby administrators may view a set library of summarized call cost reports and charts. These “roll-up ” reports provide for broad analysis of account activity for corporate managers. Furthermore, managers, administrators and users may drill-down through account information, bill or statement data within the application interface. Users can page through call details, sort across pages, sub-total and filter account information viewing dynamic reports. More complex reporting can be performed with Siebel Communication’s Analytics Manager including extensive call, cost, cost-center, and variance reporting.

Print Friendly, PDFs and Downloads

Users may access print friendly views, request a dynamic PDF of their invoice, or select to download a dataset. Managers and administrators have greater access to account summary PDFs and datasets for the accounts they supervise. Communications Billing Manager’s versioned, disk-efficient and high performance bill archiving feature along with its print-friendly views makes generating hardcopy reprints quick and easy.

Customer Service

CSRs may create corporate administrators for an organization, thereby enrolling a corporate account and establishing designated internal administrators. Service representatives and corporate administrators may create, manage and search the business organizations and accounts under their supervision. The designated administrators accessing corporate billing statements use Communications Billing Manager’s on-line self-service application features to manage their own organization and users.

Communications Billing Manager Edition Comparisons

Feature Comparison of Telco e-Billing Manager Editions	B2C	B2B
Bill Presentment	X	X
Unbilled Data Presentment	X	X
Service-level Consolidation	X	X
Account-level Consolidation/Linking		X
Hierarchical Navigation		X
Bill Payment	X	X
Cross and Sub-invoice Payment		X
Notifications	X	X
Consumer (Simple) Reporting	X	X
Advanced Reporting		X
CSR Access	X	X
User Profile Management	X	X
Roles Based Access Control		X
Personal Address Book	X	
Corporate Address Book		X
TSM Connector	X	X
TAM Connectors		X

1.3 Key Benefits of Communications Billing Manager

Solving Business Problems

Many billing and customer care processes today are expensive, inefficient and unsatisfactory for both communication service providers and their customers. With Siebel Communications Billing Manager, carriers empower their business and consumer customers to serve themselves, and address all their account and service-related activities online, instead of using expensive paper and call center based channels. For end customers, this makes doing business with a carrier more convenient, more efficient, and more satisfying. For carriers, it means improved competitive differentiation, significantly reduced customer care costs, increased customer loyalty, and streamlined billing/payment processing.

By combining comprehensive online account management functionality with the world's most scalable and reliable e-billing platform, Communications Billing Manager enables service providers to gain outstanding adoption and ROI typically 5-10 times higher than companies using in-house, customer or competing packaged solutions. Some of the primary benefits Communications Billing Manager enables include:

Business Benefits

Call Center Deflection

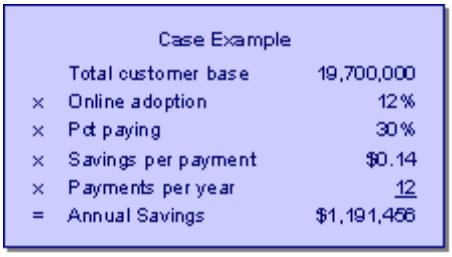
By enabling customers to serve themselves online, Communications Billing Manager moves expensive call center interactions (globally these costs translate to $5-$10 USD per consumer interaction; $10-$30 USD per business customer interaction) to the web site where costs run at less than $1 USD per interaction.

Reduced Paper, Printing and Postage Costs

In countries where paper turn-off is a legal option, providers are saving enormous printing, post-age, reprint and logistical costs. Even when rules do apply, to guarantee postage revenues, paper may be reduced for reprints services and logistical savings realized.

Streamlined Payment Processing

Online payments are proven to reduce payment time as well as errors associated with them. In addition, it is less expensive for the carrier to process an electronic payment when compared to all the manual handling required to process a paper-based payment. Online payment eliminates lockbox fees, minimizes exception processing, and replaces the costly and time-consuming procedure of processing paper checks.



Some recent metrics:

- Adoption: 5%-60%
- Percentage paying: 30%-85%
- Savings per transaction: $0.11 -$1.08 USD

Given these numbers, an attractive ROI can be rapidly achieved.

Improved Days Sales Outstanding (DSO)

By making statements easier to access and read, and speeding approval cycles, Communications Billing Manager reduces the time it takes for customers to pay their bills. This improves cash f low and reduces DSO.

Increased Customer Satisfaction (Reduce Churn)

By providing the option for 24/7/365 online service, carriers make it more convenient and more satisfying for their customers. Although somewhat more difficult to measure, increased customer satisfaction may ultimately be the most critical differentiator. This is particularly true in the B2B world of electronic invoice presentment and payment (EIPP). As evidenced by an independent AMR Research report, “The ROI exercise that generally launches EIPP projects cites process automation and cash f low as key benefits, but the biggest appeal of electronic billing, as it is used today, is its account management and customer support functionality. In reference to calls we conducted, Siebel users remarked that the main benefit of implementing EIPP is the dramatic improvement in customer service they can provide. In some cases, where the supplier took the extra step of helping customers incorporate EIPP into A/P workflows, satisfaction went through the roof. Reduction in DSO and paper-based billing costs – the quantifiable benefits of EIPP – paled as suppliers basked in the warm glow of happy customers.” In today’s economy of high customer acquisition costs, providing a robust online account management and electronic payment experience is critical to doing business and keeping your existing customers satisfied.

Application Benefits

Communications Billing Manager is a packaged enterprise software application with support, training, and regularly scheduled product enhancements and upgrades. Standard deployments are predictable and deliver “quick wins ” for the service provider.

Modularity

Communications Billing Manager may be deployed and additional Siebel Self-Service for Communications Suite applications added to the deployment, all using the complementary Siebel platform services.

Open Standards Based

Communications Billing Manager is built on a Java 2 Enterprise Edition (J2EE ™) architecture making it highly scalable and flexible. Based on leading Java standards like Enterprise Java Beans ™ ((EJB ™), Java Server Pages ™ (JSP ™), and Java Servlet application programming interfaces (APIs), users of Communications Billing Manager can leverage all the sophisticated application management tools, enterprise-class performance, scalability, portability, and easy extensibility this environment provides. The Siebel applications presentation layer use struts and tiles standards and may be easily “re-skinned” for branding, internationalization, or customized look and feel.

Proven Scalability

Communications Billing Manager has a linearly scalable architecture that supports millions of complex accounts and thousands of concurrent users. Its flexible data access layer provides for truly massive scalability in a way no competing architecture can claim. In fact, data volumes do not impact the real-time performance of the core Siebel solution at all. This means organizations can retrieve, process, and archive tens of millions of accounts, but only need to scale the application server tier to handle the growing user adoption. These services scale linearly, meaning the platform can easily be extended to accommodate growth in volumes, users, or additional application services. Independent scalability reports from Sun Microsystems and IBM that demonstrate this power can be provided upon request.

Ease of Deployment

The off line authoring components of the Self-Service for Communications Suite visual development environment provide menus and wizards that dramatically reduce the time required to configure and deploy Communications Billing Manager Simulation capability is built-in allowing developers to test designs prior to deploying an application. Early testing lowers risks and costly late changes. Through the intuitive, easy-to-use graphical development environment, users can analyze the data sources, define the essential data, map the account data to presentation templates, and define business rules for one-to-one marketing and customer service messaging. Designers can create any aspect of account presentation for the Web, wireless, or other delivery devices.

Unmatched Data Access Flexibility

Siebel provides a flexible Business Services Layer (BSL) that can leverage a wide variety of data sources for account information/Tariff analysis. Extensible APIs provide a full suite of integration services for robust comprehensive functionality. Simply stated, Communications Billing Manager transforms account data for Internet consumption. But Communications Billing Manager is not a simple data translation application: it re-purposes available account data, dynamically retrieving only the information required for the new presentation media.

Simple Integration

Communications Billing Manager preserves investment in and extends capabilities of existing infrastructure through enterprise wide integration. The Siebel design environment allows designers to develop and integrate custom features with existing system processes into the Customer Self-Service solution. Integration of custom functionality or external legacy systems can be accomplished quickly and easily using standard tools and technologies. Siebel eXtensible Modular Architecture (XMA) and Platform Service’s APIs are Java-based with XML-interfaces detailed in the Communications Billing Manager Software Developer’s Kit (SDK). Integration is straightforward for linking existing enrollment and authentication systems, payment processing, order management processes, accounts receivable systems, customer service and CRM systems, middleware infrastructure, and third-party operational tools.

Operational Oversight

The Command Center console provides a single production management browser application for the Self-Service for Communications Suite including scheduling of services, statement and account application configuration, customer statement notification configuration, auditing and event logging with general system administration and reporting.

Proven Performance

Communications Billing Manager delivers superior performance without regard to data volumes or user loads.

Multiple Communication Channels

Communications Billing Manager supports a multi-channel deployment paradigm for data delivery via, HTML, XML, IVR, PDF, Email, and devices.

Personalization

Any Communications Billing Manager application view (or the entire template itself) can be replaced or modified based on business logic. By leveraging the account information contained in the data stream, Communications Billing Manager can present highly personalized and dynamic views of a customer's account. Designers define logical expressions based on actual account data that will modify the presentation to the customer. This means that all account data can be used as variables in the dynamic of the rendered account view. The mapping of data elements to logical expressions is encapsulated in an XML file used at run-time.

Architecture Benefits

Reduced Storage Requirements

Competing approaches generally only offer transforming and storing statement data as XML or as normalized rows and columns in a database. The XML tags, which need to be stored as part of the data file, can increase file sizes by 30-40% in most cases. Siebel solution may store data in native file formats, and convert it to delivery formats (including XML) only on-demand. This dramatically reduces storage requirements. Data compression may also be optionally provided to further reduce storage by a ratio of greater than 3:1.

A Tunable Application

Billing information is the corner stone of any Customer Self Service solution, it is the data held within the bill that affects the bottom line of a customer's business or a consumer's likelihood to delay payment or switch providers. Communications Billing Manager manages arriving bill data, processes it for storage, and archives the statement files into an extensible statement repository. A data store of account tables are also maintained in a relational database along with user management information and logging and tracking information. This data store may be "dialed down" using a lightweight metadata index to dynamically access statements, or "dialed up" creating a content repository of billing data. Communications Billing Manager offers this option of loading meter detail or account summary information into a content repository for sophisticated customer reporting and analysis. The Communications Billing Manager application and platform is therefore "tunable," providing a flexible approach to managing account-based communications for multi-channel delivery.

Reduced Database Licensing Requirements

Siebel data store generally comprises only 3% of the size of the raw statement data. Competing architectures, on the other hand, require a massive database deployment as the full content of each statement is stored as database rows. Database licensing implications can therefore add a significant cost load to competing solutions.

Enhanced Performance and Memory Management

Siebel utilizes dynamic data extraction and transformation for presentation of statement data. In addition, individual statements are decomposed into "views" such as summary, detail, sub-accounts, etc. Only the view being requested by the user is extracted and transformed. By carefully tuning view size, the developer retains complete control over the application's real time performance profile.

Improved Reliability and Data Quality

Competing architectures require batch data transformation to convert data formats. Any time data transformation occurs, there is a risk of user or system error where data will be "left on the cutting room floor," improperly truncated, or generally mis-mapped. Since transformation occurs in large-scale batch jobs, error recovery is very expensive. In the case of error, all of the errant data needs to be identified and purged from the database, the source data needs to be recreated, transformation rules corrected, and the batch jobs rerun. If the batch cycle is long, the correction may be impossible if several days have passed before the error was detected. Siebel utilizes "dynamic data transformation" whereby data is transformed on the fly by dynamically applying extraction and presentation rules. As such, if an error should occur, the rules can be fixed and re-published on the fly without having to rerun the batch process or drop data.

Reduced Batch Cycle

Siebel batch cycle consists of scanning and indexing arriving batch files. Depending on the file format, the batch process typically runs at 7.5 GB of source data per hour. The process may even be configured to run parallel across server clusters for greater throughput. Competing architectures are simply not able to achieve this load time, leading to consumption of additional system resources and higher stakes for error recovery.

Robust Version Management

Siebel realizes the frequency with which businesses change: new products are introduced, statements are redesigned, and old products are discontinued. As such, Siebel makes extensive use of a template-based architecture and provides robust capabilities for versioning templates. Essentially, rules for transforming and presenting data are versioned by date and stored with the source files they correspond to. As such, if a new service offering or bill format is introduced, a developer need only publish new templates which accommodate the changes and need not worry about affecting historical statements. Competing approaches to changing fixed relational database schemas are far more complicated to manage. These advantages translate in to a lower total cost of ownership, which offers returns every day that the system is in production.

1.4 Siebel Self-Service for Communications Suite

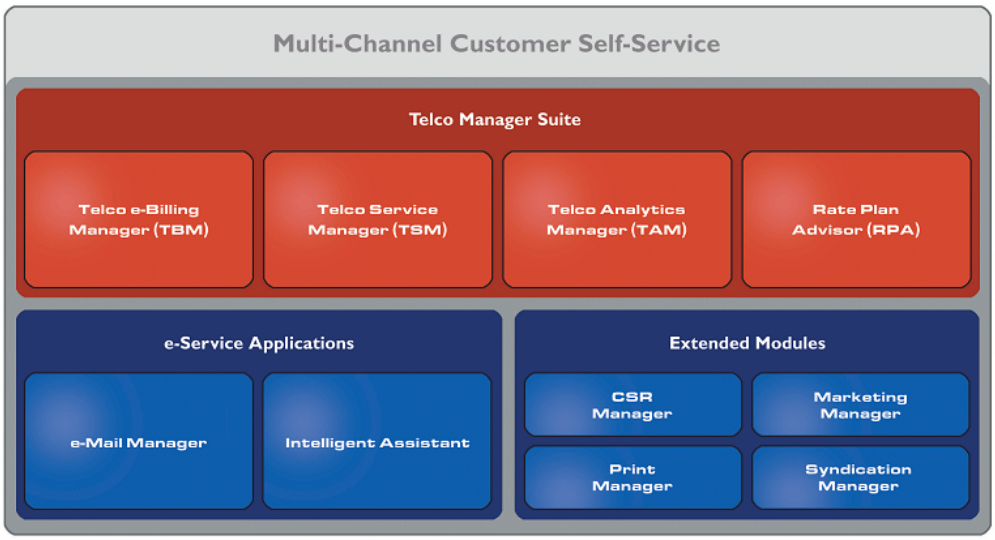
Siebel Self-Service for Communications Suite is a set of packaged software solutions designed specifically for the communications industry. These applications enable service providers to realize the full benefits of customer self-service and e-Billing.

The suite includes a rich set of applications and functionality that give providers a complete multi-channel customer-self service capability. The suite includes packaged solutions for:

- e-Billing and Payment
- Service and Order Management
- Reporting and Analytics
- Rate Plan Advice

Siebel solutions are packaged applications with sophisticated out--of-the-box capabilities. They can be tailored to meet specific customer requirements and business concerns, while establishing a solid platform for future business development.

The Siebel Self-Service for Communications Suite



The Suite includes the products described below.

Communications Billing Manager – Business, Consumer, and Split Billing Editions

Siebel Communications Billing Manager is a complete e-billing application for communications service providers that gives business and consumer customers valuable and convenient access to their communications bills along with the ability to easily make online payments. Communications Billing Manager Split Billing Edition contains powerful rules engines that “split ” business and personal calls or services allowing service providers to identify and recover personal usage charges by their employees.

Communications Self-Service Manager – Business and Consumer Editions

Siebel Communications Self-Service Manager enables business and consumer customers of communications service providers to manage every aspect of their service relationship online. From a single convenient interface, customers can easily activate and manage subscriptions, order new products and services, and report and resolve problems. Business customers are able to complete these activities for individual employees, as well as company departments and divisions, across the entire organization.

Communications Analytics Manager

Siebel Communications Analytics Manager is a reporting solution for business customers that empowers both individual employees and business managers to analyze and understand their communications costs and usage by investigating and identifying trends and patterns across multiple views of their own unique organization.

Rate Plan Advisor (RPA) – Business and Consumer Editions

Siebel Rate Plan Advisor is a web-based application that recommends the ideal rate plan for wireless subscribers in real-time. Individual consumers as well as large businesses can analyze their actual historical voice/mobile/data usage, find the best-fit rate plans, and compare the features offered by those plans. With its intuitive wizard user interface, RPA quickly guides end-customers or customer service representatives through the entire analysis process. In addition, a service provider's customer care and marketing groups can also use RPA to identify pre-churn subscribers, simulate new rate plans, and run predictive analytics.

1.5 e-Service Applications

Whether customers are visiting an organization's web site, communicating by email, or seeking to chat real-time with a CSR, Siebel e-Service Applications ensure the ability to deliver knowledgeable and exceptional customer service. Driven by sophisticated intelligence engines and automation technologies, these solutions replicate the knowledge of an organization's most experienced personnel, providing timely, accurate responses to customer inquiries.

e-Mail Manager

e-Mail Manager is an automated e-mail response management system that determines the intent of the incoming e-mail messages and composes personalized answers that can be automatically dispatched to customers or routed to service agents for a single-click review.

Intelligent Assistant

Intelligent Assistant is an advanced natural language-based self-service application that empowers customers, prospects and customer service representatives (CSRs) to leverage all of an organization's knowledge assets -web pages, account data, documents, databases, existing legacy data sources, and knowledge bases -to quickly and accurately find answers to their specific billing, account, product and service questions.

1.6 Extended Customer Service Modules

Siebel Extended Customer Service Modules augment its core online self--service and e-Billing capabilities and extend them to your customers' other preferred service channels. This enables carriers to provide more effective and efficient service regardless of what channel your customers choose.

Print Manager

Print Manager is a complete solution for data consolidation, visual statement formatting and design, and print output generation that significantly reduces the cost and complexity of producing paper bills, invoices and statements. Siebel combined electronic and print output solution handily solves the challenge of account consolidation avoiding the need to alter complex back-end legacy systems to present a consolidated account view online or on paper.

Syndication Manager

Syndication Manager is an account content distribution system that handles all the complexities of securely distributing summary account information to any endpoint, while also enabling customers to go back to the billing organization's website to take advantage of more comprehensive self-service capabilities.

CSR Manager

CSR Manager enables customer service representatives (CSR) to access critical account data and service-related information and capabilities to effectively service both online and off line customers.

CSR Manager is a browser-based application that couples traditional customer-facing online self-service capabilities with CSR-specific features including case management, facilitating better service at the point of customer contact.

Marketing Manager

Marketing Manager is a personalization, campaign and content management solution that weaves personalized marketing and customer service messages based on specific account information throughout the customer self-service and e-billing experience. The browser-based application facilitates collaboration between internal marketing and customer service departments as they create, deploy and track the performance of campaigns.

1.7 Conclusion

Siebel Communications Billing Manager is the proven software platform for scalable, high-performance self-service and e-billing applications that enable organizations to manage account relationships with business and consumer customers online. Communications Billing Manager application solutions:

- Reduce support and processing costs
- Improve operational effectiveness
- Increase customer satisfaction
- Enhance marketing effectiveness

Communications Billing Manager's out of the box consumer and business applications for data access, online account composition, analytics, one-to-one messaging, and business hierarchy dramatically decrease time to market for deploying self-service solutions. Developed on J2EE technology, the Communications Billing Manager platform is flexible, extensible, and easy to manage, and is the proven platform for online consumer and business applications.

Communications Billing Manager leverages available data from transactional systems to dramatically reduce the costs associated with producing, delivering, and paying account communications, while simultaneously transforming accounts into dynamic, interactive self-service and marketing tools.

Communications Billing Manager goes far beyond bill presentment solutions providing packaged applications with many e-billing features, including online account and statement composition, payment, business logic, one-to-one marketing, hierarchy, customer service access, and service messaging with application management.

Communications Billing Manager's EJB platform architecture has been proven scalable in production and through independent testing. This is a key differentiator in comparing packaged solutions.

Finally, because of Communications Billing Manager's flexibility and methodology, time to market with a Self-Service for Communications Suite solution is extremely rapid, stable, and scalable resulting in a total cost of ownership lower than competing or home grown solutions.

2 Business Processes and Application Logic

2.1 Business Processes and Application Logic

The objective of the B2C application is to provide online account management and customer self service for telecommunications provider's consumer customers.

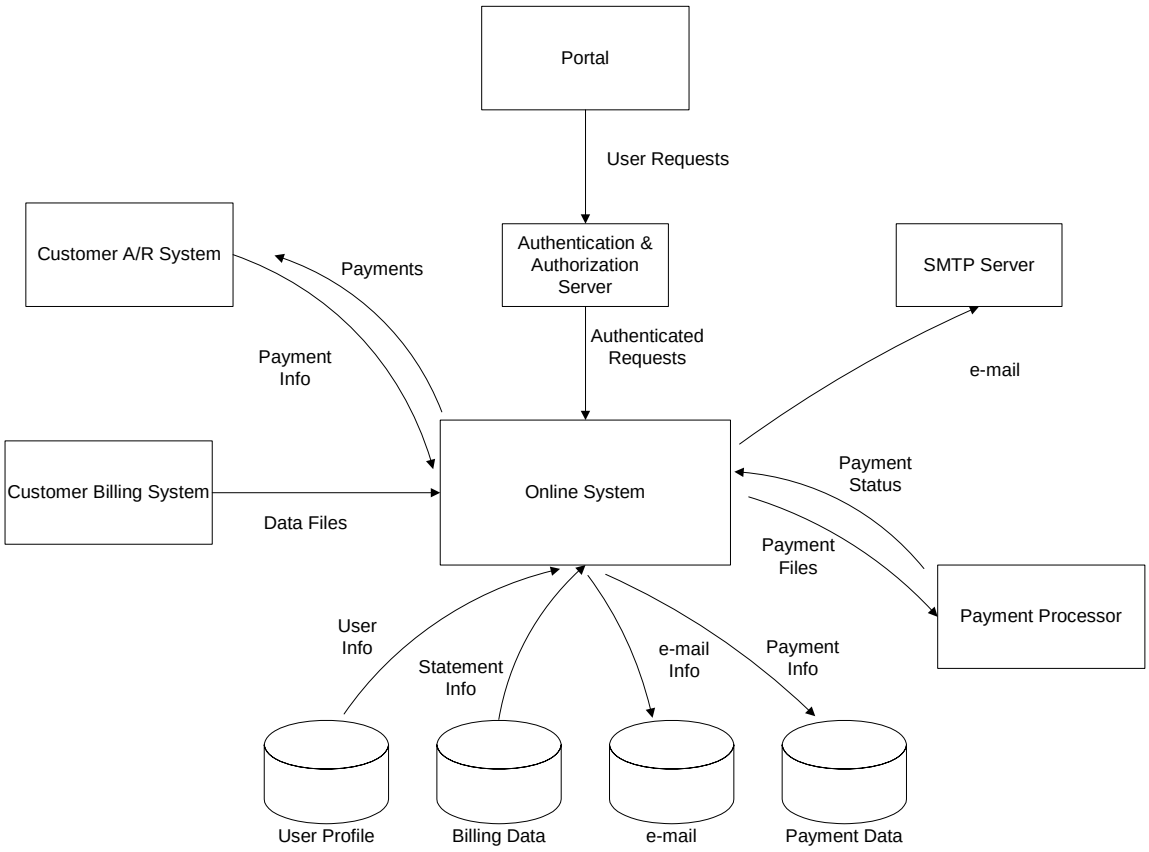
The main features of Communications Billing Manager – Consumer are:

- **Statements** – Consumers can view summary and detailed statements on accounts, devices, and usage.
- **Payments** – Consumers can set up payment accounts for recurring and one-time payments, which historical payment activity for a configurable period of time.
- **User Profile Management** – Users can manage personal profiles and address books, user names and passwords, and notifications.
- **CSR Management** – Siebel's standalone application for CSR management lets customer representatives search accounts and impersonate company users.
- **Analytics** – You create reports with standard account, device and usage reporting functionality. Advanced reporting and report creation is available in a separate application (Siebel Communications Analytics Manager).

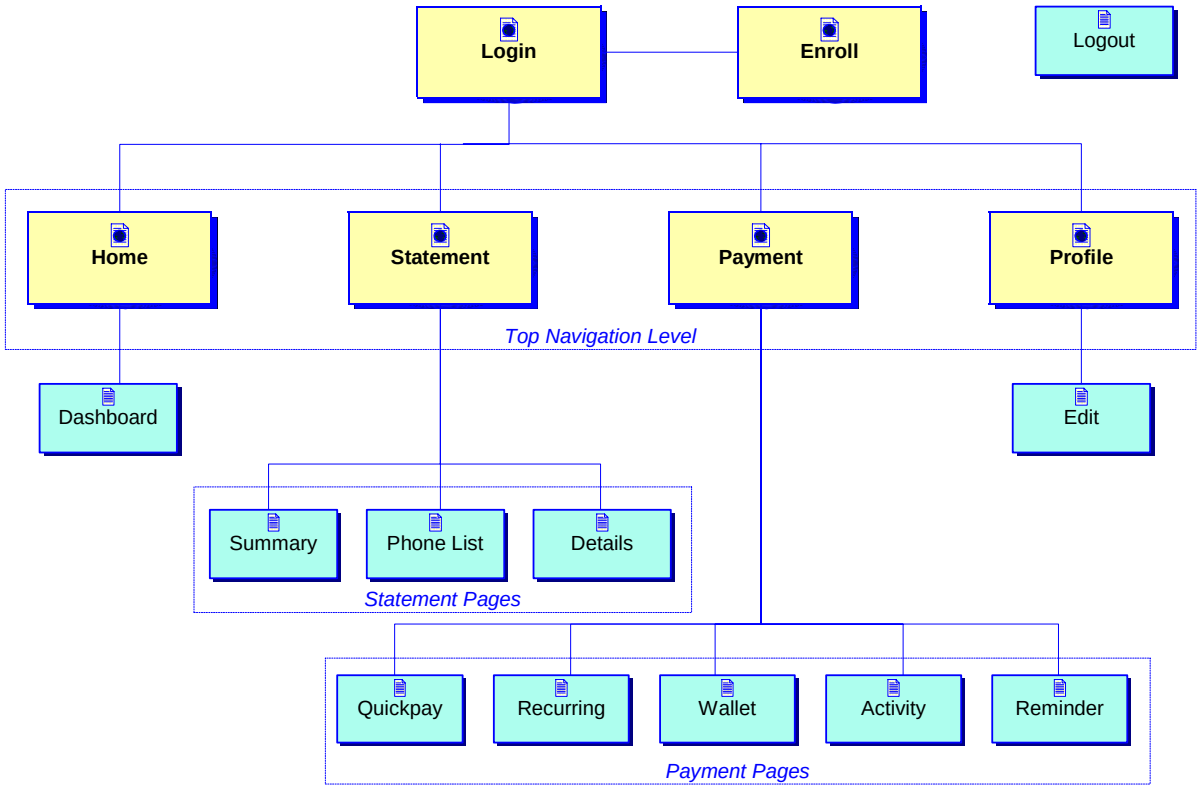
Details about individual use cases for the various tasks that users perform as part of these functional areas appear in the next chapter.

2.2 System Context Diagram

The following diagram shows the main Communications Billing Manager application functions in the context of the entire system:



2.3 Navigation Flow Diagram

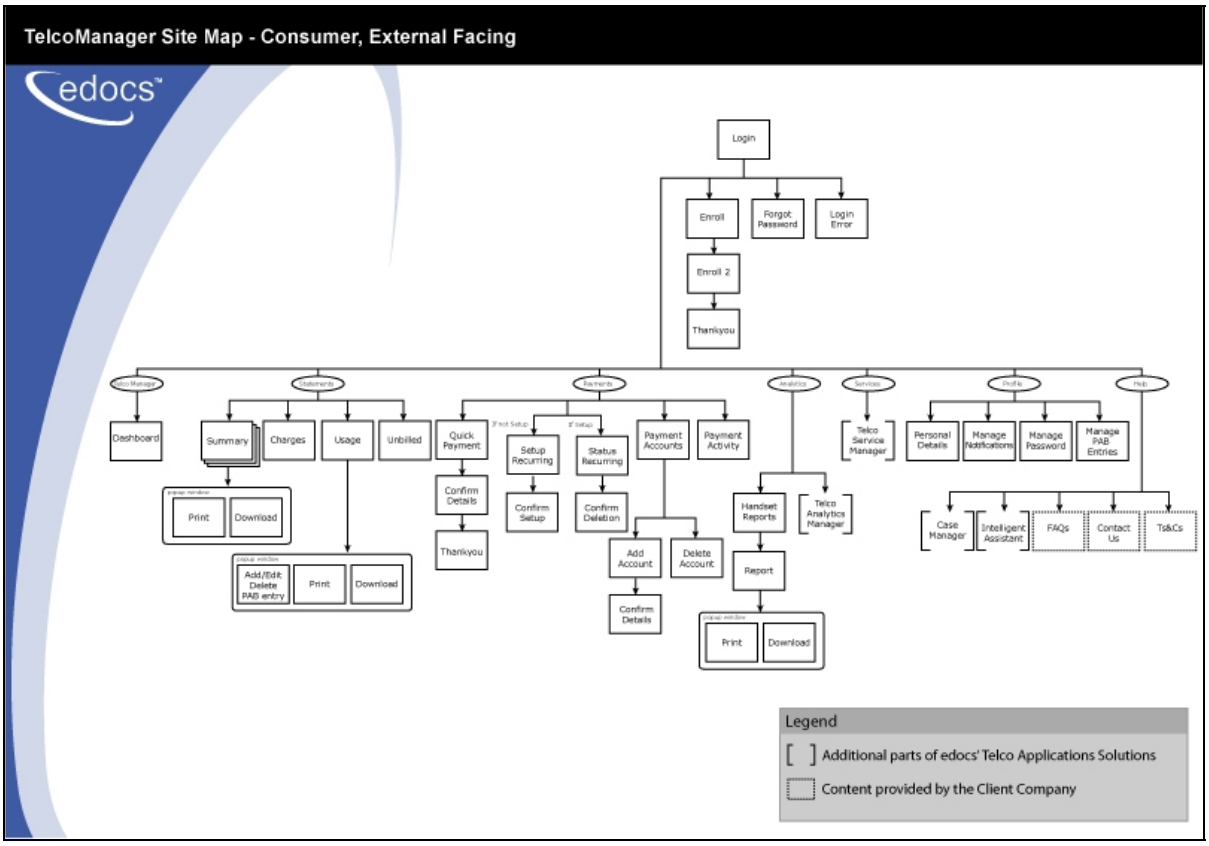


The Communications Billing Manager uses a simple hierarchical navigation. The Navigation Flow diagram, above, shows the top levels of navigation, which are implemented using a horizontal navigation bar with tabs for the top navigation level and sub-tabs for the next level of navigation.

2.4 Menu Navigation Diagram

2.5 Communications Billing Manager UI Site Map

The following diagram shows the overall structure of the user interface (UI) for a Communications Billing Manager application:



2.6 Users

Generally, a few different people use the Communications Billing Manager functionality:

USER	NOTES
Consumer User	A Communications consumer customer that uses the B2C application to manage, view reports, print, edit, add, delete account(s) and telecommunications devices.
CSR Administrator	Internal Communications Customer Service Representative Administrator that has all associated privileges, including managing internal users.
CSR	This user is the Communications company's internal Customer Service Representative that assists the Communication's consumer customers with overall account and device management.

3 Site Webflows

3.1 About Site Webflows

The site webflows in this chapter describe the essential interaction between the user and the system. The system is based on Communications Billing Manager and a customizable set of screens. The User Interface (UI) consists of a set of screens and navigation elements with interfaces (APIs) to Communications Billing Manager platform functions, which provide access to statement and payment information. The user presentation is driven by a set of HTML templates (Tiles). The navigation and control is driven through a standard Java framework (Struts).

Each use case specifies a set of activities performed by a user, or other type of actor, to complete a task. Use cases describe the flow of contingent actions the user takes.

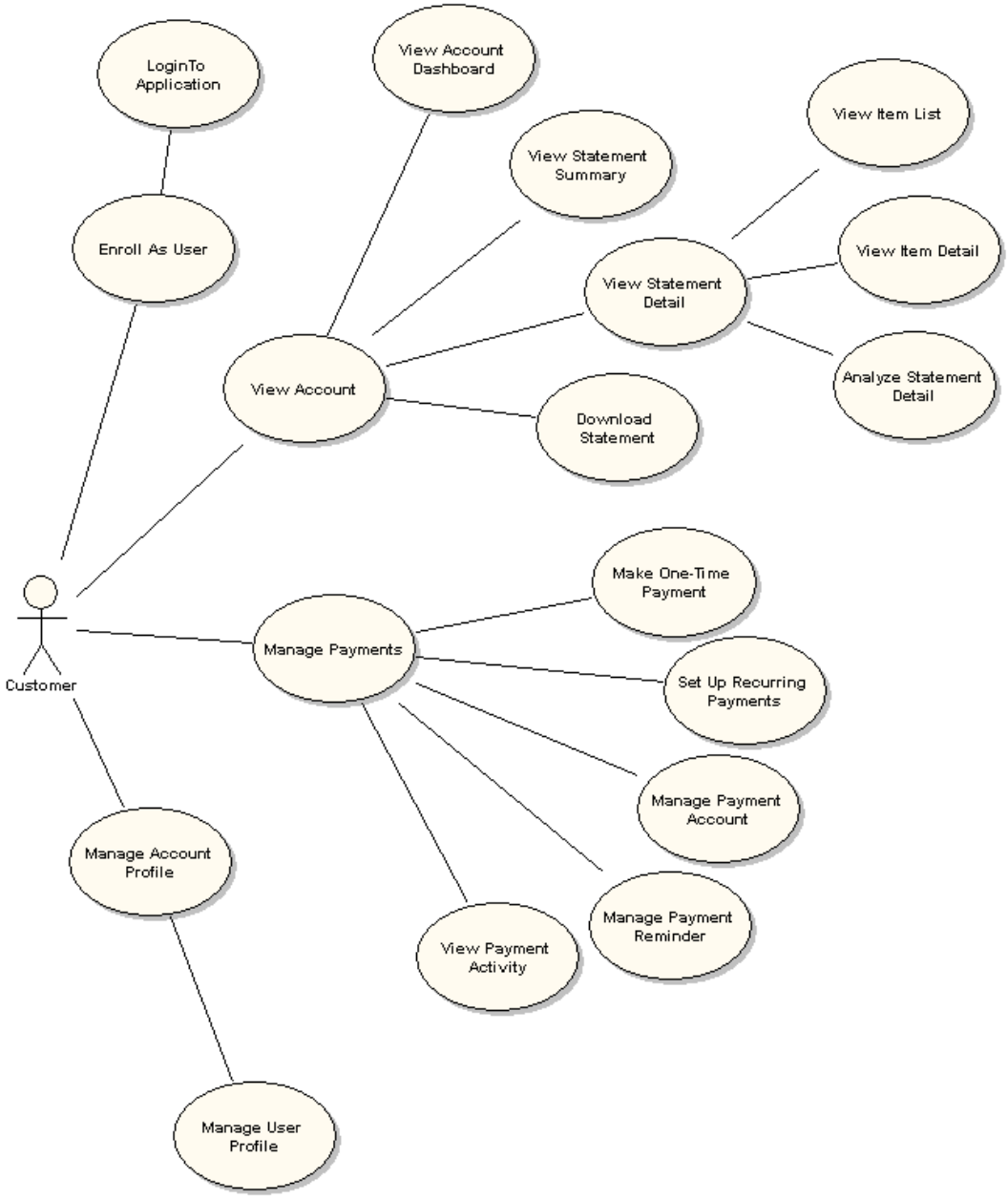
There may be many possible paths through a site webflow:

- **The Main Path** – This describes the successful completion of the use case without encountering any exceptional conditions.
- **Alternate Paths** – These describe one or more related paths through the use case (for example, add, edit and delete) that are considered not part of the common flow of the use-case.
- **Exception Paths** – These describe exception conditions and how they are handled.

A use case may also interact with external systems, which are systems that are outside the boundary of the Communications Billing Manager implementation.

3.2 Catalog of Application Logic

This diagram shows how the use cases relate and tie back to the overall application logic and navigation.



3.3 Functionality Overview

The following table provides a complete list of the web flows that specify the functionality and site navigation of the application:

Requirement Category	Description	Use Cases
Enrollment & Authentication	Enroll users and manage the login user session. The *Log In To Application* use cases is a pre-condition for all customer use cases.	Enroll As User Log In To Application Log Out Of Application Forget Password
Statement Presentment	Functions related to presenting and accessing the customer's statements.	View Dashboard View Statement Summary View Charges for Device View Usage Detail for Device View Unbilled Activity for Device Manage PAB Entry Print Current View Download Account Data
Payment	Handle user payments.	Make One-Time Payment Set Up Recurring Payments Manage Payment Accounts – Add Credit Card View Payment History
Analytics	Summarize data in a variety of reports.	View Report Download Report
Profile Management	Manage user account and profile information. Send e-mail notifications as appropriate to customer.	Manage Personal Profile Manage Personal Address Book (PAB) Manage Password Manage Notifications
Customer Service	Customer Service Application that enables critical account management access and capabilities to customer service representatives.	Manage Internal Users Search for an Account Impersonate User
System	Tasks required to administer the application.	Self-Enrollment SAF Secure Access Framework Use Cases

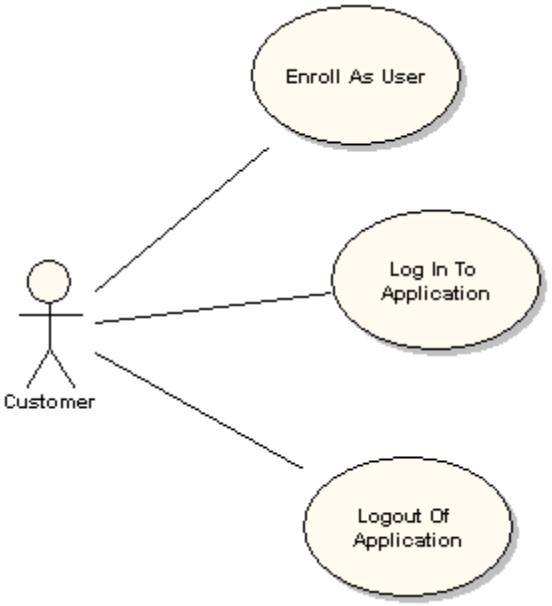
		Process Recurring Payment Email Notifications

3.4 Enrollment and Authentication Use Cases

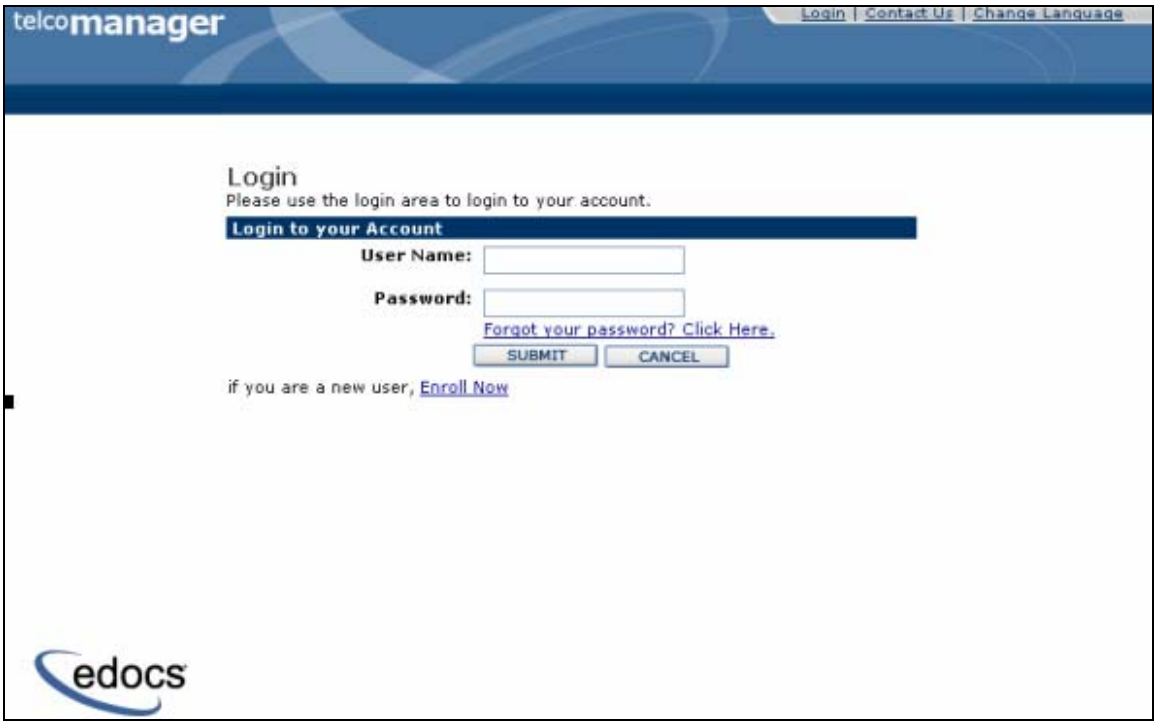
The enrollment and authentication use cases cover the business requirements for allowing customers to access the system.

This section describes the following use cases that allow consumers to:

- **Login to Application** – Access the system as an authenticated user.
- **Logout of Application** – End user session.
- **Enroll as User** – Provide user profile information and user credentials.
- **Forgot Password –** Lets user reset their password.



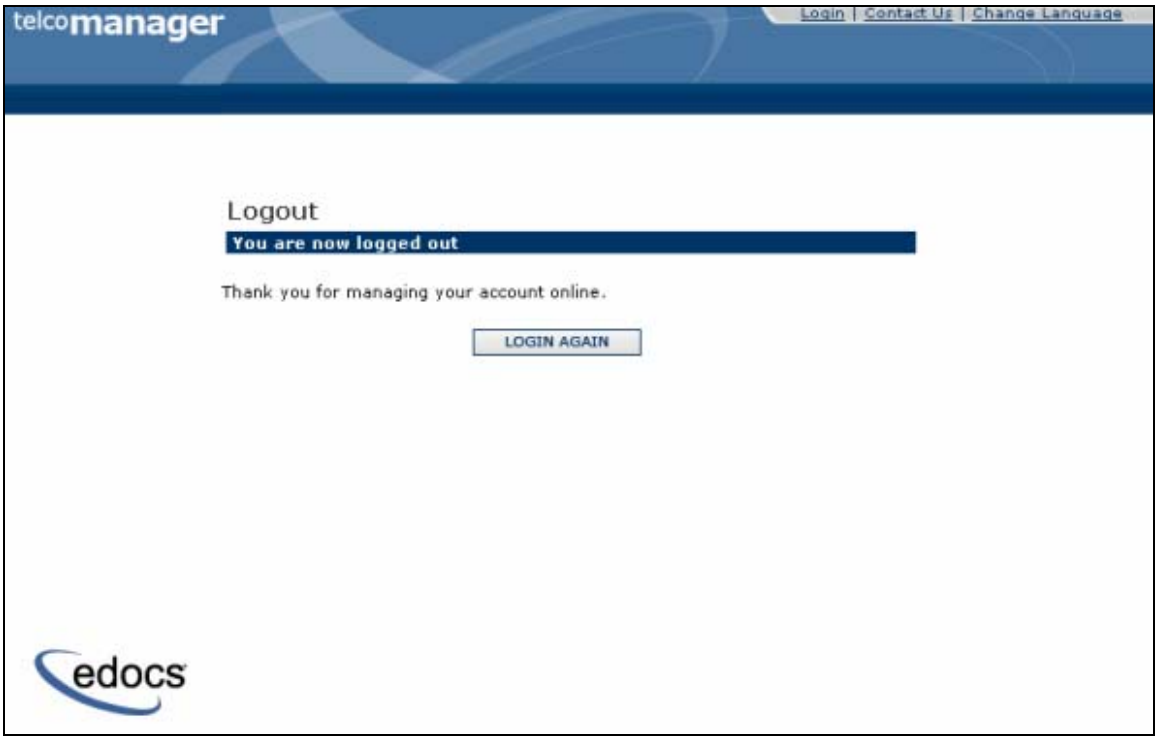
Login to Application



Name:	**Login To Application**
Brief Description:	Consumer user logs in to the application.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when a user navigates to the login page. 2. System displays Login page displaying a form for entering user name and password. 3. User enters login information. 4. User submits data. 5. System validates data. 6. System displays the Account Dashboard page.
Alternate Paths:	3a) User has forgotten their password and selects the Forgot Password operation: 1. System invokes Forgot Password use case. 3b) User has not enrolled and selects the Enroll Now operation: 2. System invokes Enroll User use case. 5a) System determines that customer credentials are invalid: 1. System displays a message “Login incorrect: Please try again”

Standard Features:	1. Authentication of User Name and Password 2. Forgot Password link
Configuration Points:	1. Messaging instructions around the login form. 2. Communications Billing Manager ships with a default enrollment and authentication model for user management. This framework for user management may be configured via a plug-in to use available systems for authentication and other user information.
Notes:	1. Default implementation stores the enrollment information within the Communications Billing Manager application.

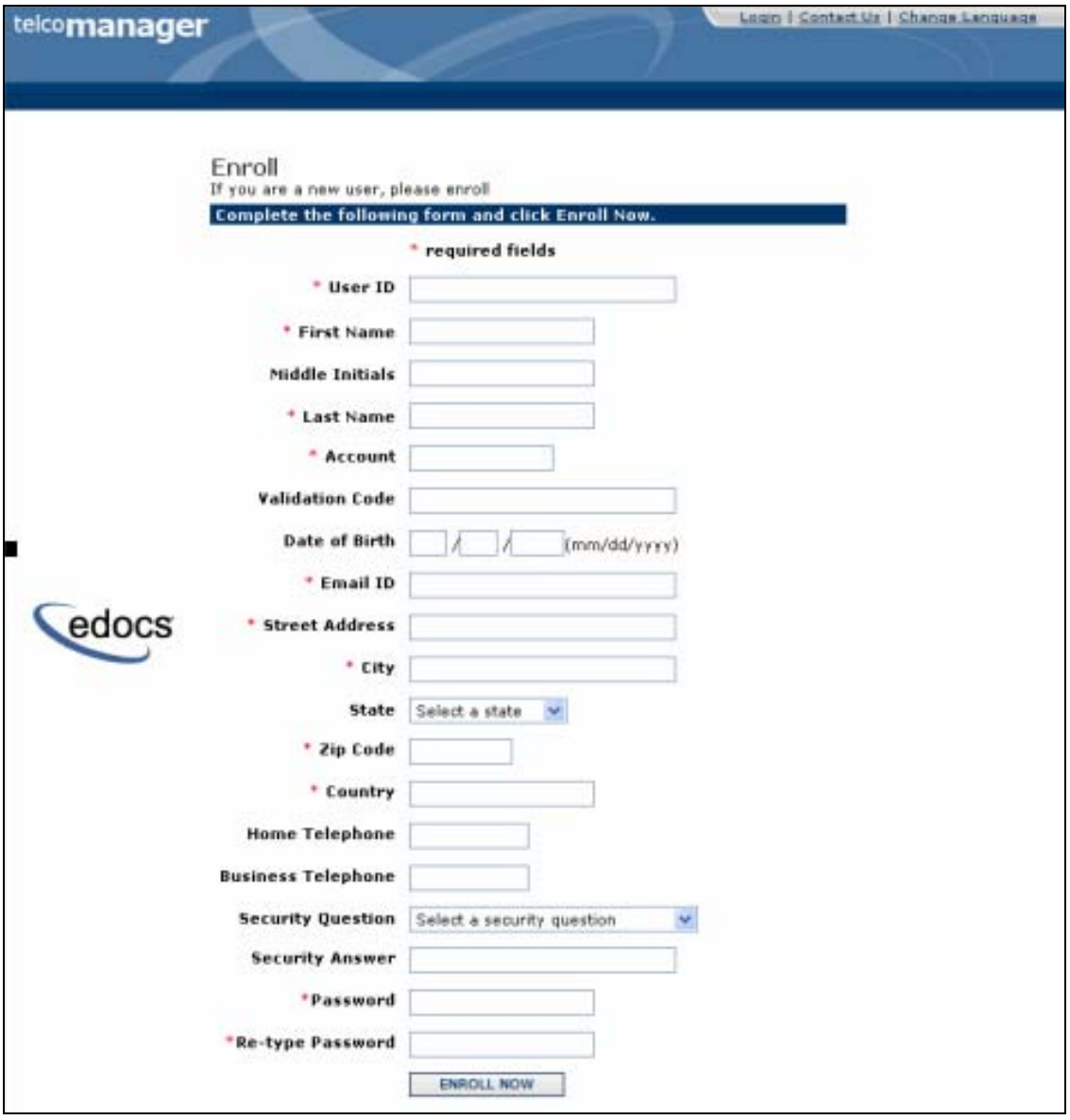
Log Out of Application



Name:	**Log Out of Application**
Brief Description:	Consumer user logs out.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when the user invokes the logout operation from the navigation menu. 2. System ends the user's session 3. System displays a logout message and prompts the user to login again to the application.

Alternative Paths:	1a) User is inactive on the site for 15 minutes: 1. System ends session
Standard Features:	1. Session timeout. 2. Customer logs out 3. Login Again link
Configuration Points:	1. Timeout period is configurable.

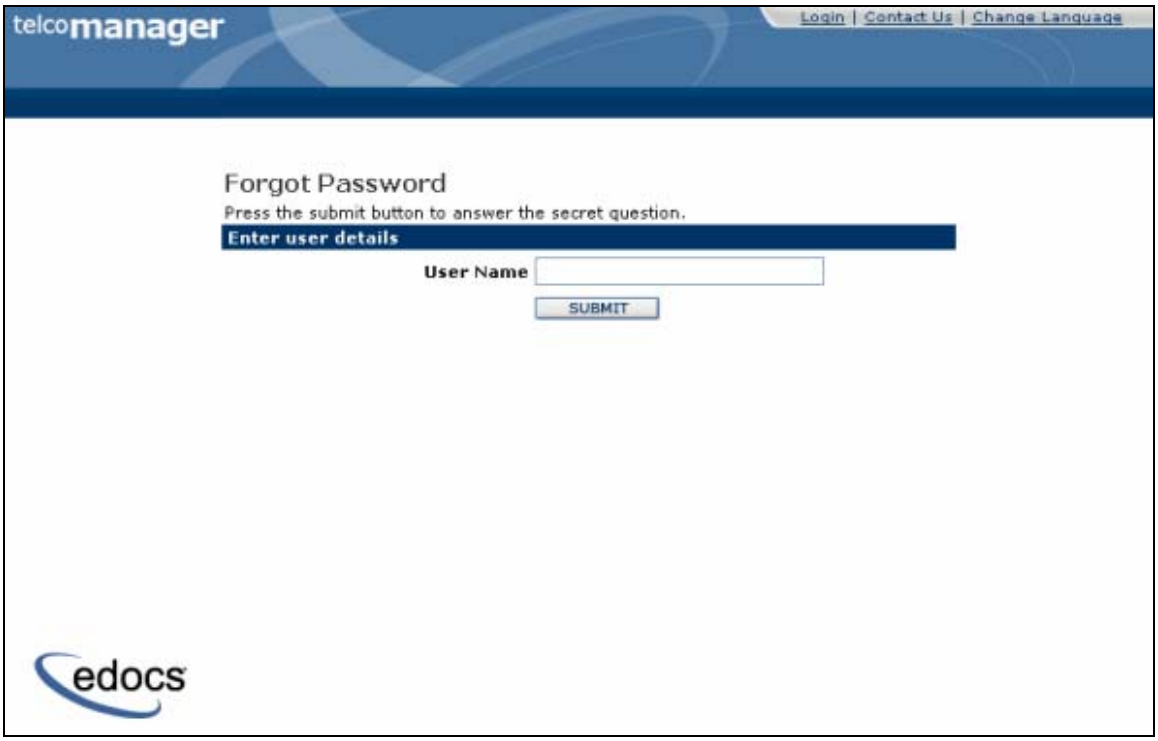
Enroll as User



Name:	**Enroll As User**
Brief Description:	Consumer user enrolls for online account access.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when a user invokes the Enroll Now operation. 2. System displays enrollment screen requesting user to provide the following information: a. User ID b. First Name c. Last Name d. Middle Initials e. Account Number f. Validation Code (optional) g. Date of Birth h. Email address i. Street address j. City k. State/province (optional if country NOT US or Canada) l. Zip or postal code m. Country n. Home Telephone o. Business Telephone p. Selection for Secret Question (optional) q. Secret Question response r. Password s. Confirm Password 3. User provides enrollment information. 4. User submits form data. 5. System validates the enrollment information via a Validation Code field from the billing data. 6. System displays an enrollment confirmation.
Alternate Paths:	4a) Username already exists. System displays a message informing the User that the selected Username already exists. 5a) User enters invalid information: 1. System displays a user-friendly error message. 5b) System cannot complete enrollment: 1. System displays a user-friendly error message. 5c) User does not provide required information:

	1. System displays a user-friendly error message.
Standard Features:	1. Password confirmation 2. Required fields 3. Form validation of enrollment fields
Configuration Points:	1. The system can be configured to force a user to change their password at first login. 2. Additional fields can be added to the profile management page based on client requirements. ▪ Password confirmation ▪ Required fields ▪ Form validation of enrollment fields ▪ Additional enrollment fields ▪ Field validation ▪ Secret question options Communications Billing Manager ships with a default enrollment and authentication model for user management. This framework for user management may be configured via a plug-in to use available systems for authentication and other user information
Notes:	1. Default implementation stores the enrollment information within the Communications Billing Manager application. 2. Sample validation and error messages provided.

Forgot Password



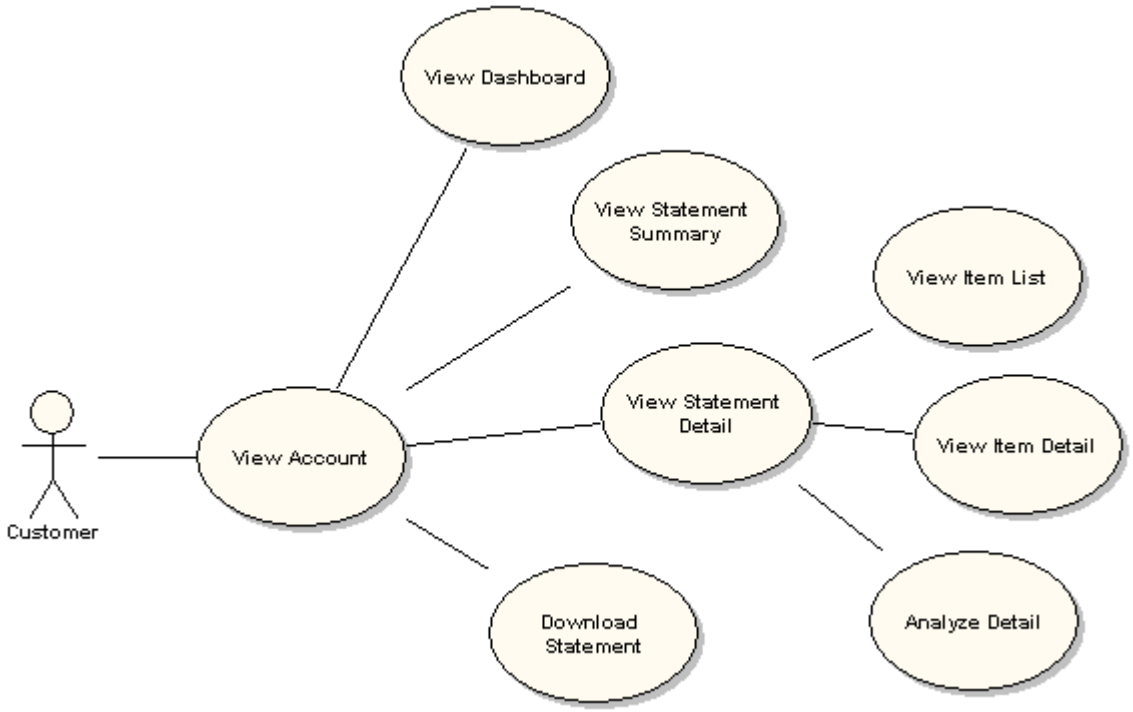
Name:	**Forget Password**
Brief Description:	Consumer user forgets password and systems presents a password reminder.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when a user has forgotten their password and selects “Forgot Password” feature. 2. System displays a page requesting the user to enter their username. 3. User provides username and submits. 4. System confirms the username exists. 5. System displays page requesting the user to answer the secret question associated with the username. 6. User answers the secret question and submits. 7. System validates the secret question answer to be correct and displays Password Reset page containing: a. New password b. New password confirmation 8. User provides new password and submits. 9. System records new password and logs user in.
Alternative	4a) Username does not exist:

Paths:	1. System displays error message stating the username is not correct. 7a) System is unable to validate the secret question: 1. System redisplays the error message stating the answer is incorrect.
Standard Features:	User Name and Device along with secret question are standard.
Configuration Points:	It is expected that authentication and validation can be provided via plug-in to external systems. Fields used in this scenario are configurable based on security guidelines of the client.
Notes:	

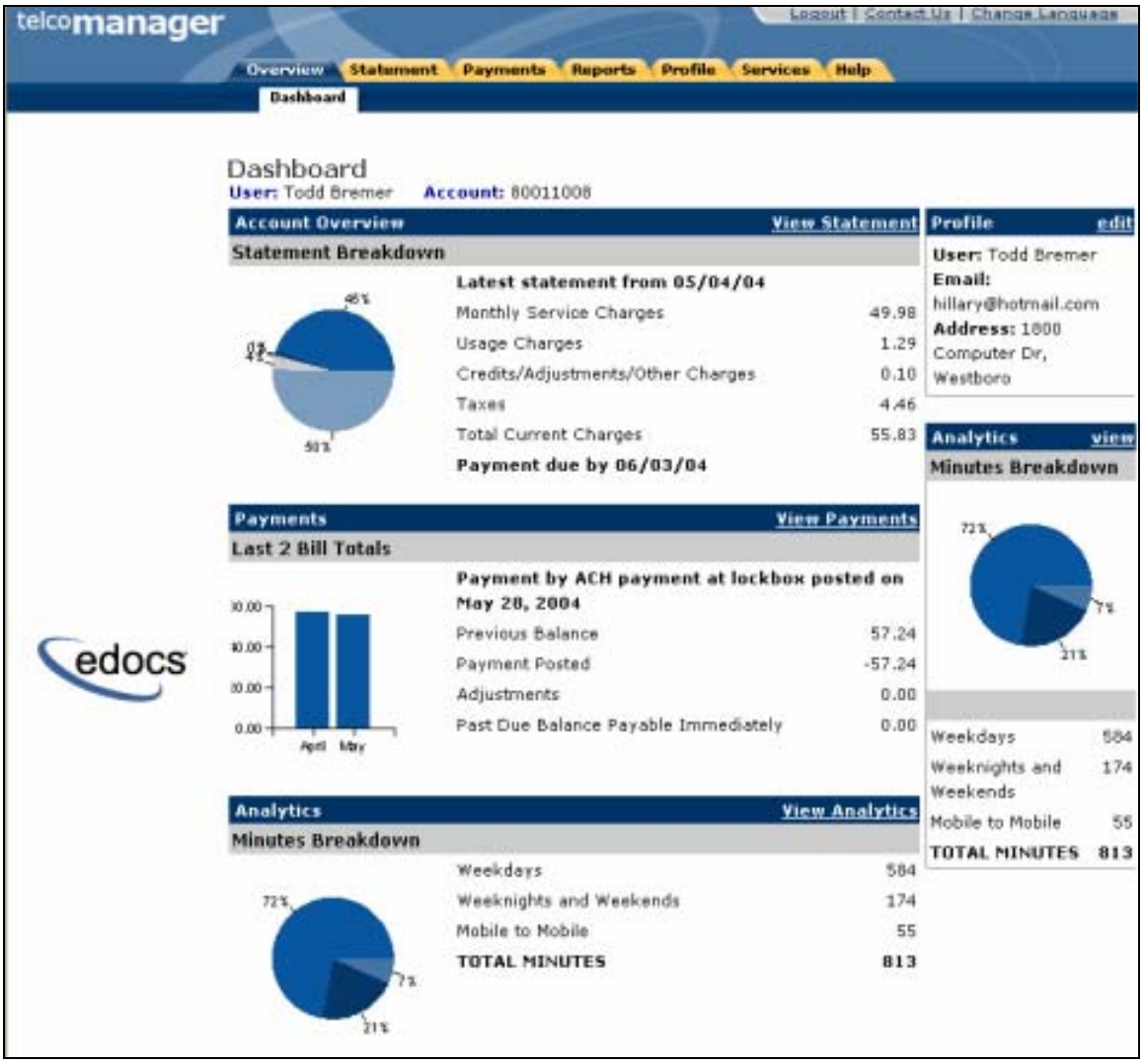
3.5 Statement Presentment Use Cases

The statement presentment features lets users to view their account summary and detail information, including:

- **View Dashboard** – Consumer User views the dashboard containing a high-level account overview.
- **View Statement Summary** – Consumer User views the summary of a statement.
- **View Device Summary** – User views summary charges for a device.
- **View Usage Detail for Device –** User views the detail associated with a single device.
- **View Unbilled Activity for Device** – User views activity that has been generated since their most recent billing statement.
- **Manage Personal Address Book Entry -** User manages contact information for a specific device number.
- **Print Current View -** User prints the current view.
- **Print Invoice -** User downloads the PDF of the selected bill.
- **Download Report -** User downloads account data.


View Dashboard
View Statement Summary
View Item List
View Statement Detail
View Item Detail
View Account
Customer
Download Statement
Analyze Detail

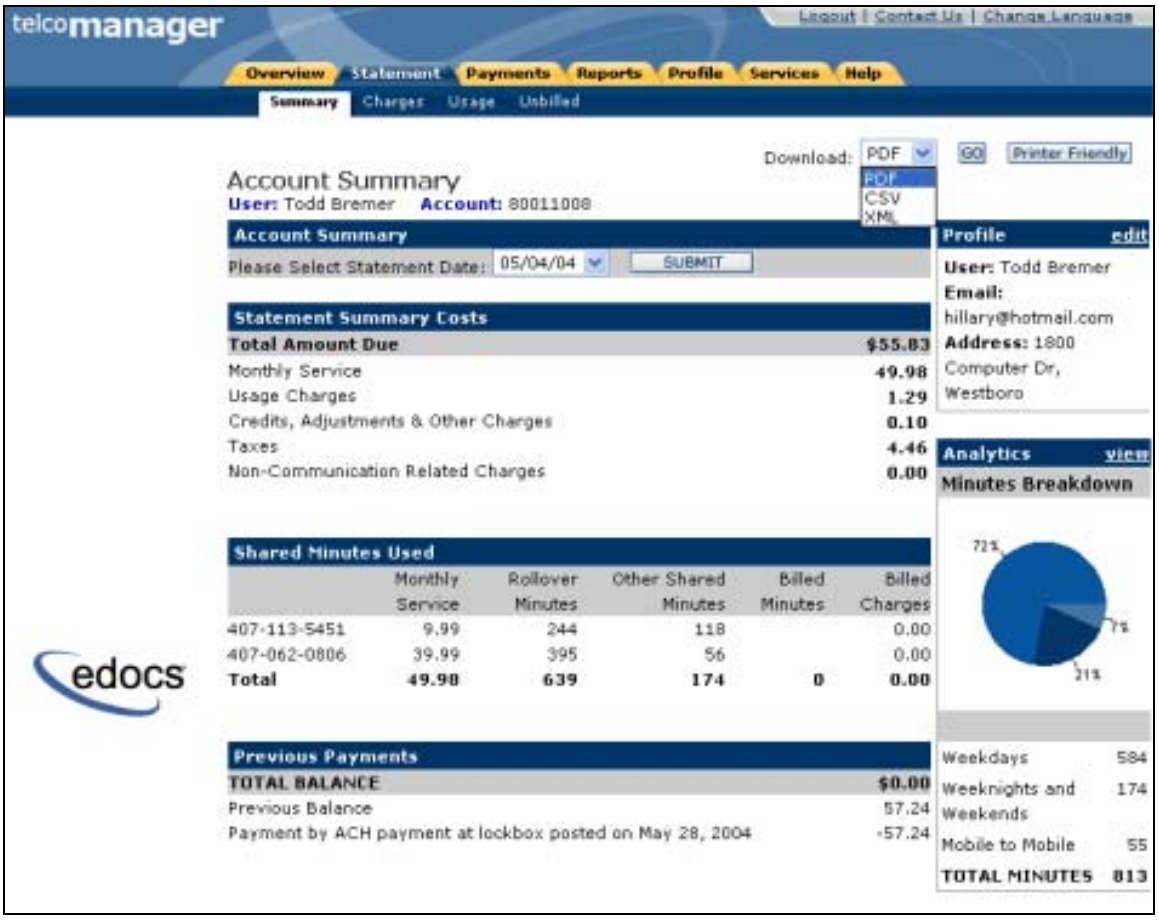
View Dashboard



Name:	**View Account Dashboard**
Brief Description:	Consumer user views the dashboard containing a high-level account overview.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when the user invokes the dashboard operation or logins successfully to the application. 2. System displays the Dashboard Screen including an overview and summary of account information. 3. The user selects to view the statement. 4. System displays the Statement Summary screen for the most recent

	statement date. 5. The user can select to look at any of the displayed items on the account overview page of the dashboard.
Alternate Paths:	3a) User selects the Edit Profile operation: 1. System displays the Profile page. 3b) User selects to view Payments: 1. System displays the Payment History page for the most recent payment activity. 3c) User selects to view Analytics: 1. System displays the list of available reports to the user. User can also select any of the available tabs
Standard Features:	1. The following components are dashboard modules for Communications Billing Manager: a) Account Information Summary b) Payment Information Summary c) User Profile d) User Reports Summary
Configuration Points:	1. Graph format is a configurable parameter. 2. Account number or device number may be displayed on dashboard user bar. 3. Additional Siebel products may be integrated and presented on the dashboard.
Notes:	Payment is optional and not all deployments require it, however the foundation application included with the product does demonstrate its use.

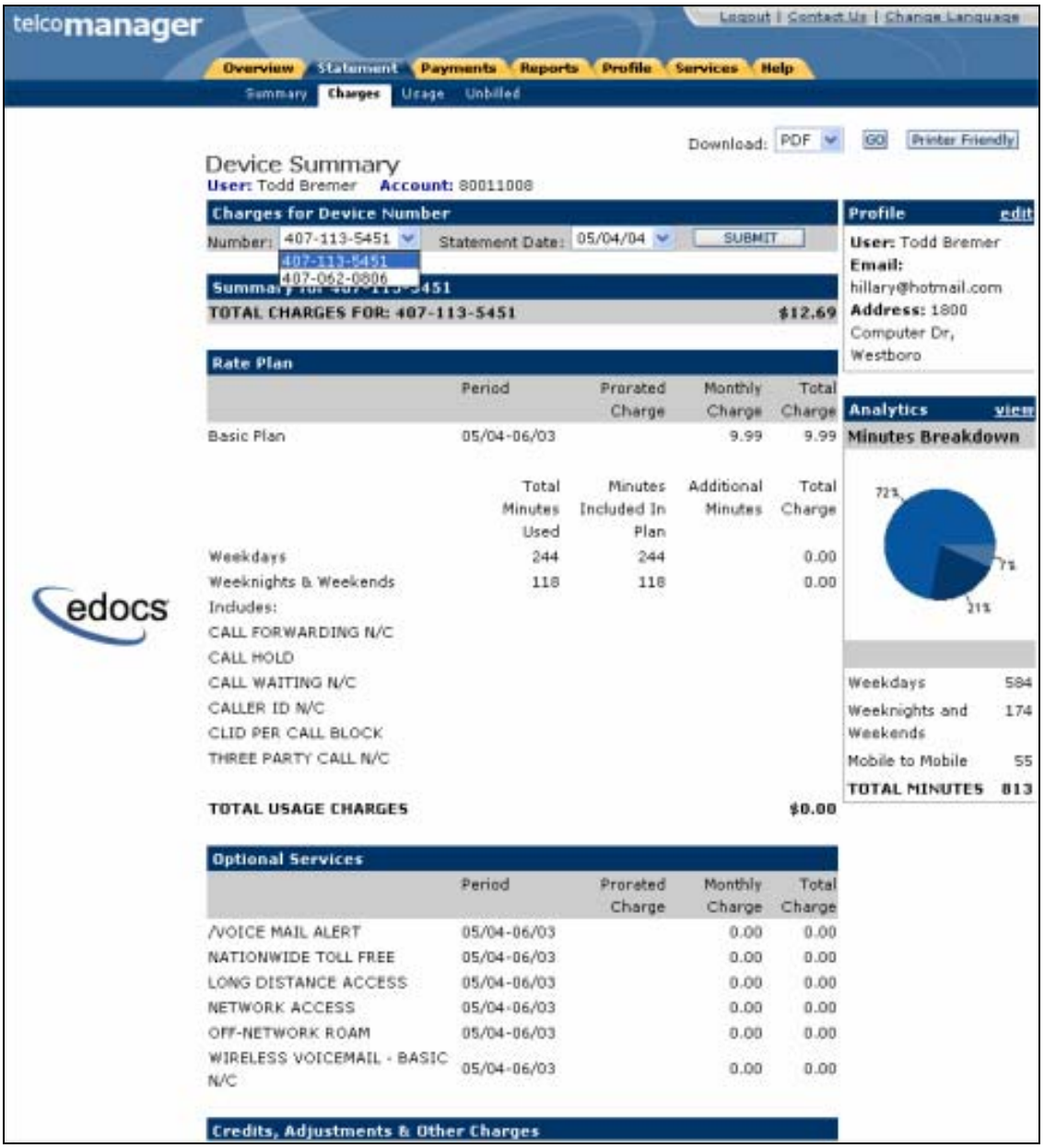
View Statement Summary



Name:	**View Statement Summary**
Brief Description:	Consumer user views the summary of an account.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when the User wishes to view the Statement Summary and invokes the View Statement operation. 2. System displays Statement Summary Screen with summary information for the most recent statement.
Alternate Paths:	3a) User selects download options: 1. System invokes Download use case. 3b) User selects an alternate billing date: 1. System displays the Statement Summary page for the selected billing date.
Standard	1. Print Friendly Invoice

Features:	2. Download Statement (PDF, CSV, XML)
Configuration Points:	1. The format of the statement is configurable based on the client's billing format.
Notes:	Service consolidation is configurable using multiple data sources, but is not currently demonstrated by the foundation application sample data set.

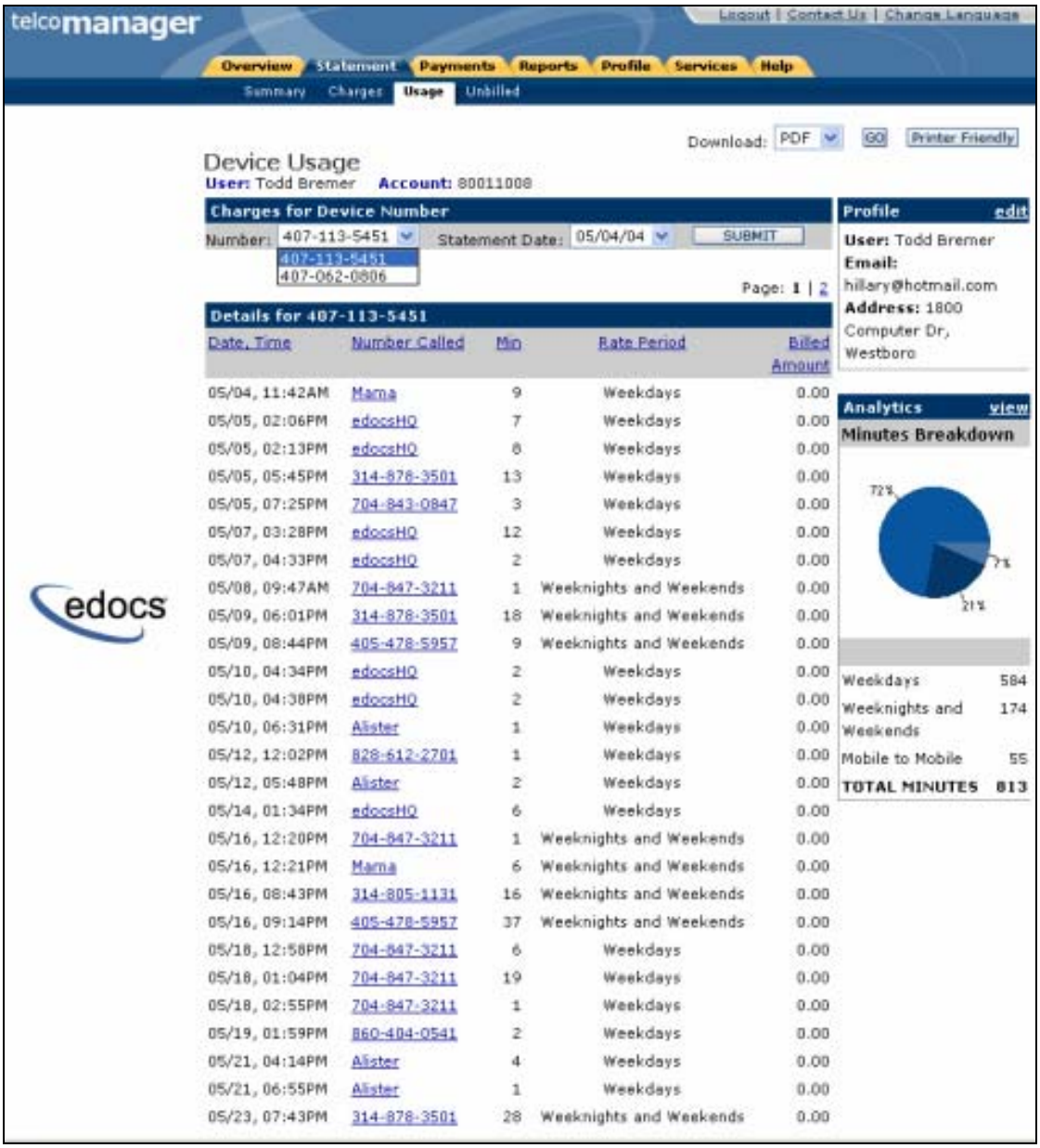
View Charges for Device



Name:	**View Charges for Device**
Brief Description:	Consumer user views summary charges for a device.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when the user navigates to the Charges menu.

	2. System displays charges for a specific device number. 3. User selects to view a specific call detail category and invokes View Usage for device use case.
Alternate Paths:	3a) User selects an alternate billing date: 1. System redisplays the Charges page for the selected billing date. 3b) User has more than one device and chooses to view another device: System redisplays the Charges page for the selected device. 3c) User selects download options: 1. System invokes Download use case.
Standard Features:	1. Print Friendly invoice 2. Download Statement (PDF, CSV, XML)
Configuration Points:	1. The format of the statement is configurable based on the client's billing format.
Notes:	

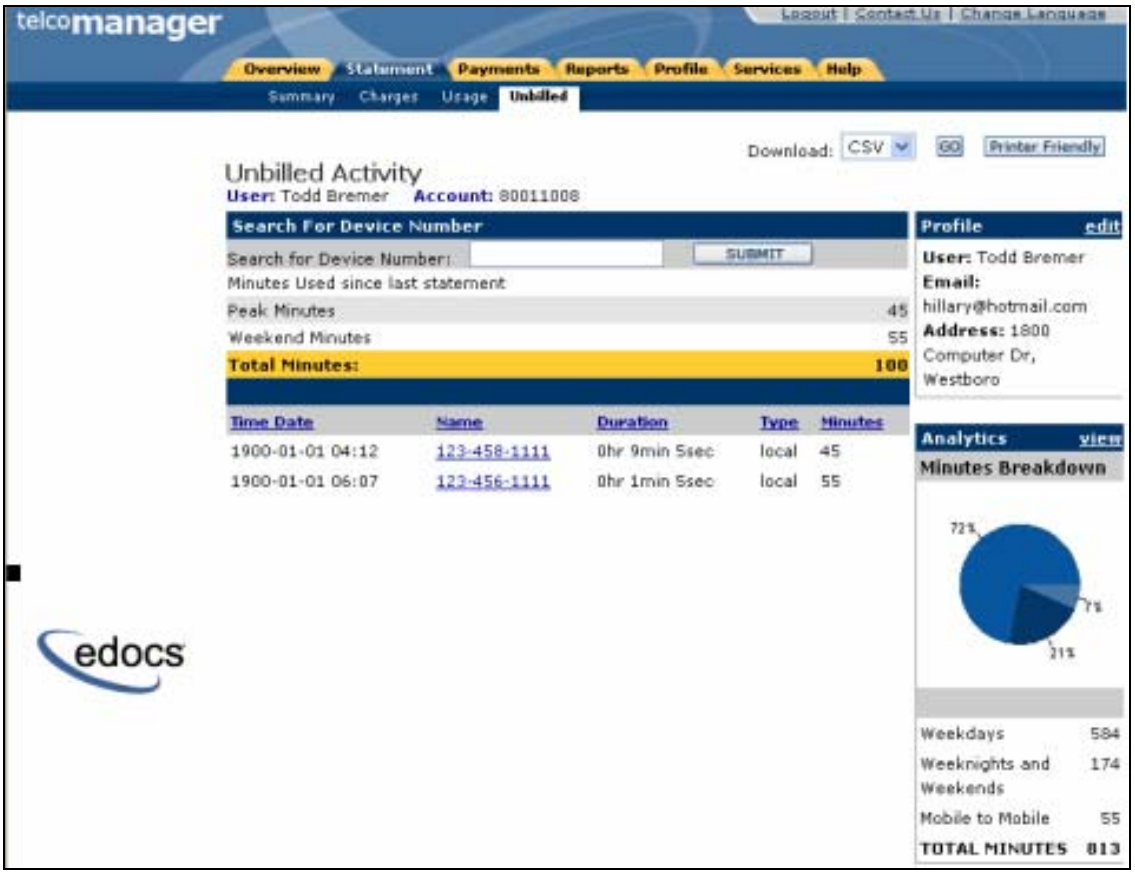
View Usage Detail for Device



Name:	**View Usage Detail for Device**
Brief Description:	Consumer user views the usage detail associated with a single device.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when the user selects the view usage detail operation for a specific device.

	2. System displays the usage detail information for the selected device and call detail category.
Alternate Paths:	3a) User selects an alternate billing date: 1. System redisplays the Charges page for the selected billing date. 3b) User has more than one device and chooses to view another device: 1. System redisplays the Usage page for the selected device. 3c) User selects download options: 1. System invokes Download use case.
Standard Features:	1. Download (PDF, CSV, XML) 2. Paging/Sorting 3. Personal Address Book 4. Printer Friendly
Configuration Points:	1. The number, type, and ordering of call detail columns. 2. Initial sort order for each column (ascending or descending). 3. Graph type.
Notes:	

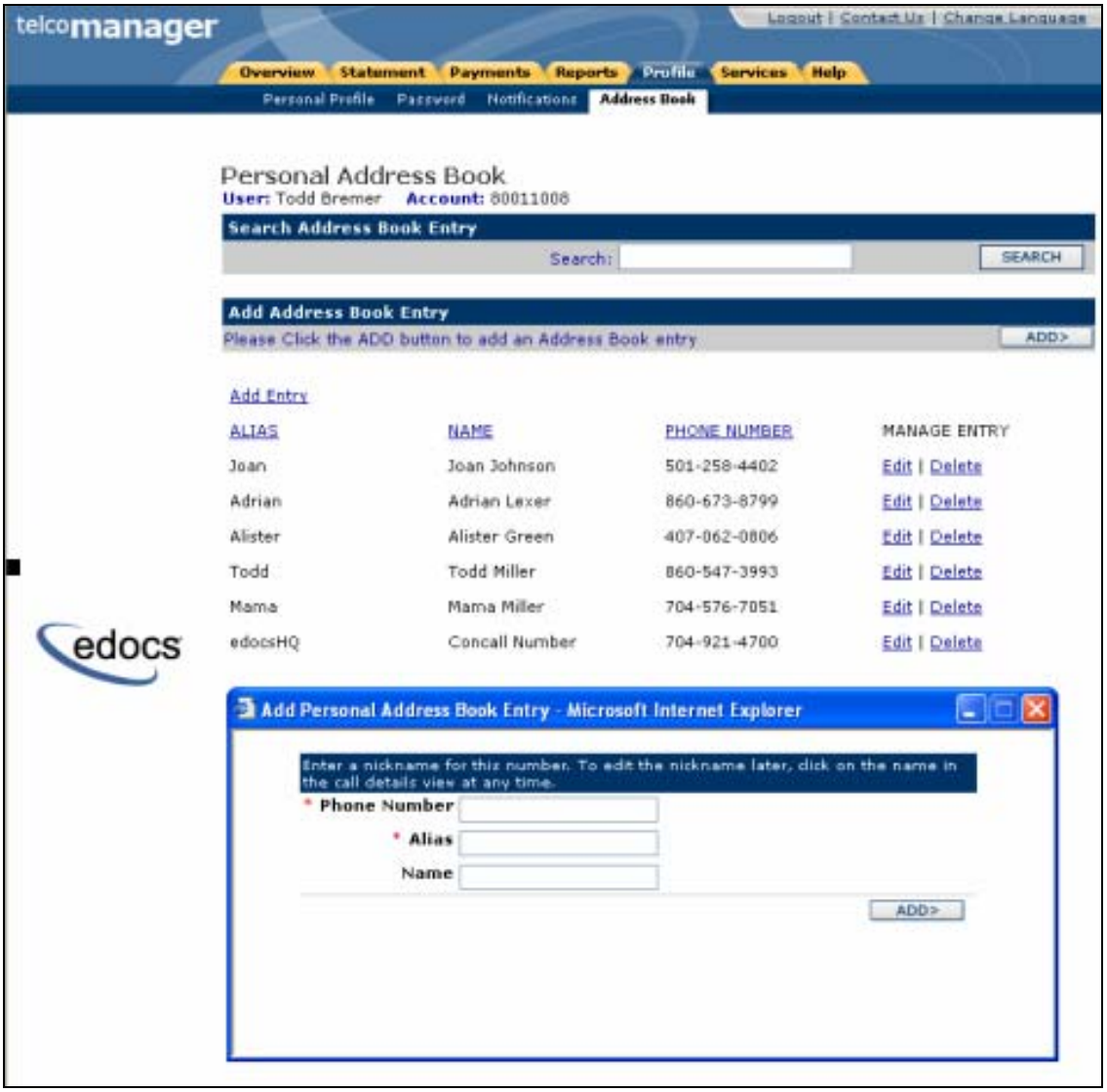
View Unbilled Activity for Device



Name:	**View Unbilled Activity for Device**
Brief Description:	User views activity that has been generated since their most recent billing statement.
Primary Actor	Consumer user
Main Path:	1. This use case begins when the user selects the View Unbilled Activity operation. 2. System displays the Unbilled Activity page including the following information: a. Summary of Unbilled Activity b. Detail generated since the most recent billing statement.
Alternate Paths:	2a) User has more than one device and selects to view a different handset: 1. System redisplays the Unbilled Activity page. 2b) System is unable to retrieve Unbilled Activity: 1. System displays a message informing the user that the unbilled data is unavailable at this time.

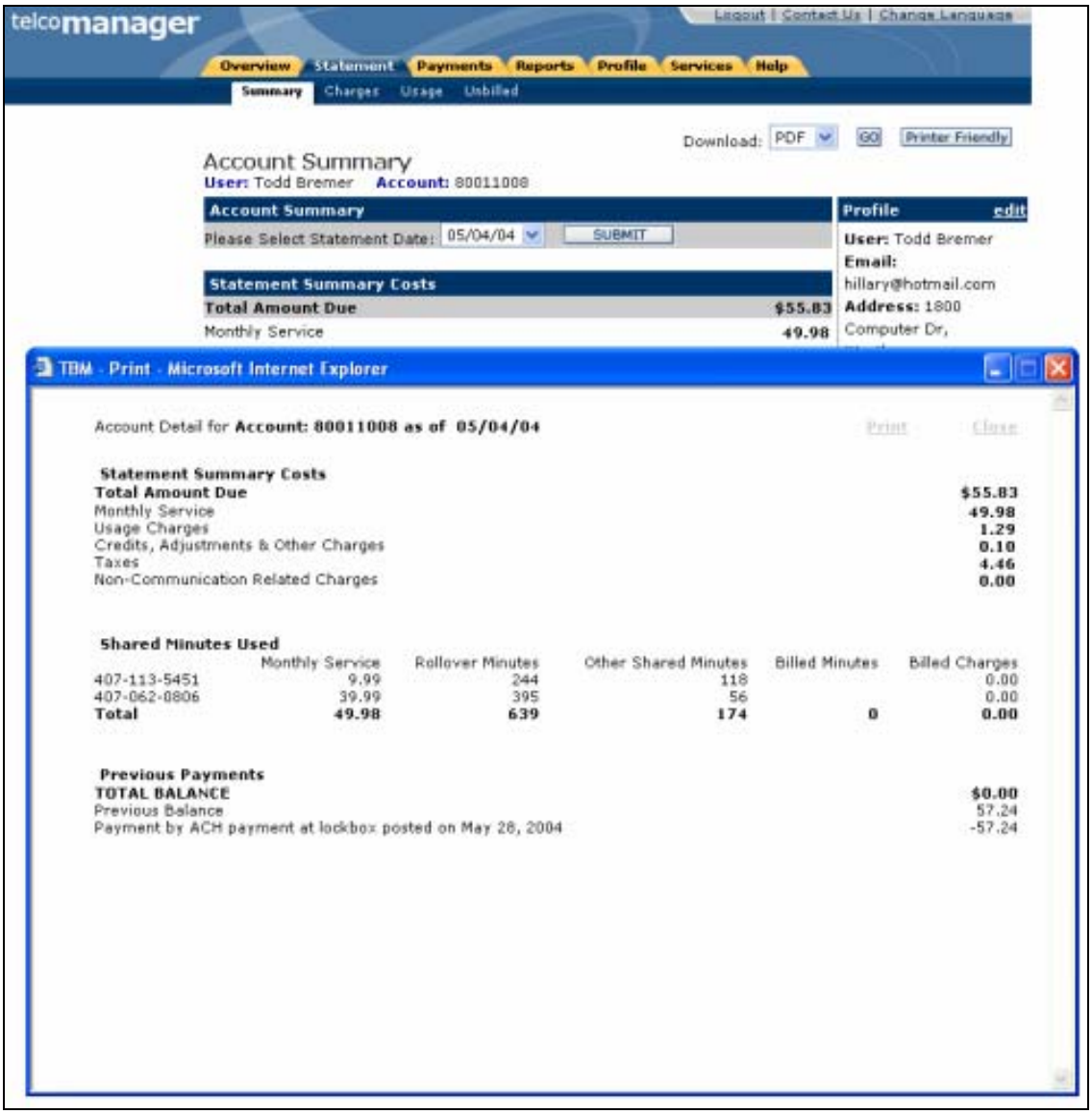
Standard Features:	1. Download (PDF, CSV, XML) 2. Paging/Sorting 3. Personal Address Book 4. Printer Friendly
Configuration Points:	1. The number, type, and ordering of call detail columns. 2. Initial sort order for each column (ascending or descending).
Notes:	

Manage Personal Address Book Entry



Name:	**Manage Personal Address Book Entry**
Brief Description:	Consumer User manages contact information for a specific device number from a detail screen
Primary Actor	Consumer user
Main Path:	1. This use case begins when the user selects a screen that allows for Personal Address Book entries 2. User selects a device number within the details section 3. System displays a form to enter the PAB details 4. User enters the information and submits the form 5. System stores an association between the details and selected device number 6. System displays the alias/name in substitution for the device number.
Alternate Paths:	2a) Customer selects an existing name from within the usage details. 1. System displays the existing details that are associated with the number. 2. User edits or deletes the details and submits the form. 3. System associates the new details to the device number. 4. System displays the alias/name in substitution for the device number.
Standard Features:	1. Personal Address Book entries contain the following fields a. Friendly Name/Alias b. Name 2. The following pages contain PAB functionality a. Usage Details b. Unbilled Calls c. Any CDR level Report
Configuration Points:	1. Additional fields can be added to the PAB entry form based on client requirements. 2. The application can support the display of both the number and the name at the same time. 3. It is possible to add a PAB icon based on a client's site guidelines. 4. Show/Hide Names is a toggle button option that may be configured on any PAB screen.
Notes:	

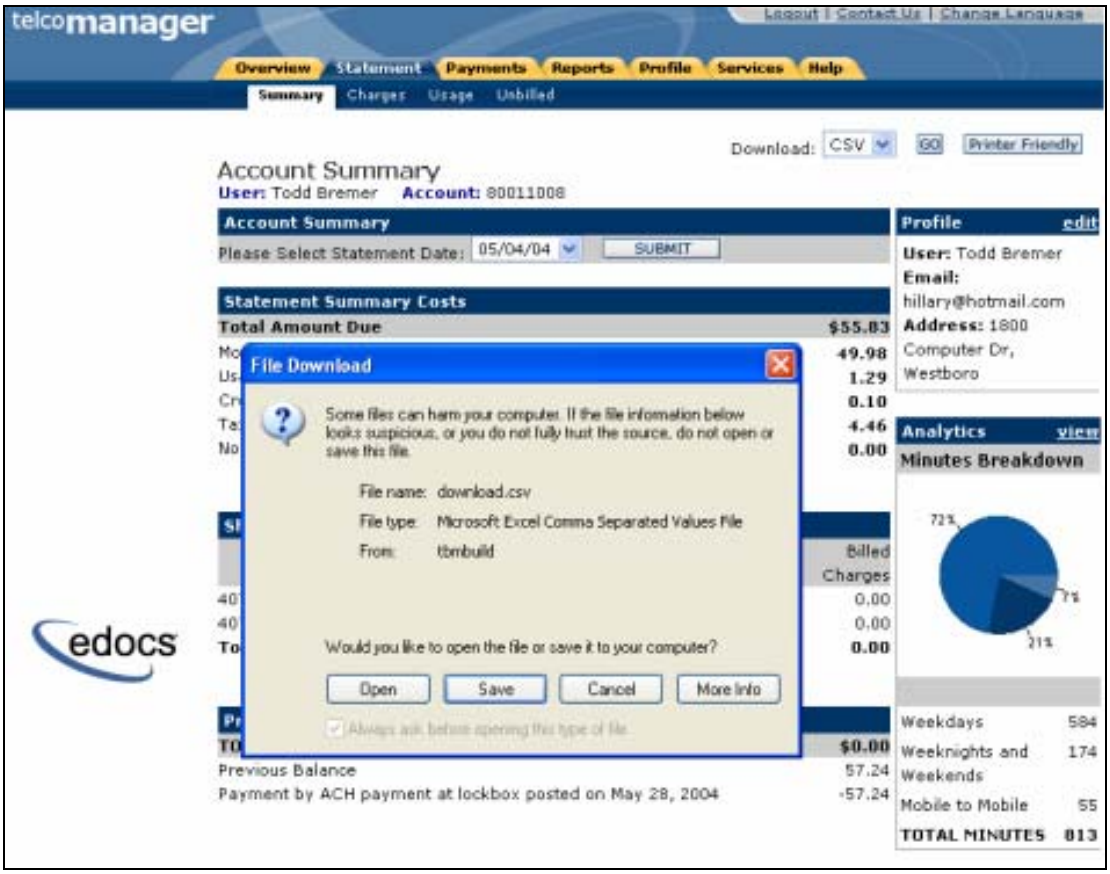
Print Current View



Name:	**Print Current View**
Brief Description:	User prints the current view.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when the user selects the Printer-Friendly operation on a given screen. 2. System opens a new window and displays a printer friendly version of the current view. 3. System displays a print dialog box to the user.

	4. User selects the print settings in the print dialog and submits the print request. 5. User closes the printer friendly version and returns to the application.
Alternate Paths:	2a) User closes the printer friendly view and returns to the original view: 1. System does not send anything to the printer and leaves the user viewing the application. 4a) User closes the print dialog: 1. System does not send anything to the printer and leaves the user viewing the printer friendly page.
Standard Features:	1. The following screens have the Print Friendly option: a. All Reports b. Invoice Summary c. Call Details
Configuration Points:	
Notes:	1. Printer Friendly pages do not have any of the navigation information. 2. The page sent to the printer is in greyscale.

Download Account Data



Name:	**Download Account Data**
Brief Description:	A Consumer user downloads account data.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when User downloads account data and selects the download function. 2. System requests user to select data type. 3. User selects the appropriate data type. 4. User confirms selection. 5. Systems display the standard file save or open dialogue box.
Alternate Paths:	4a) User cancels selection 1. System returns user to previous location.
Standard Features:	1. Dynamic PDF 2. XML data format

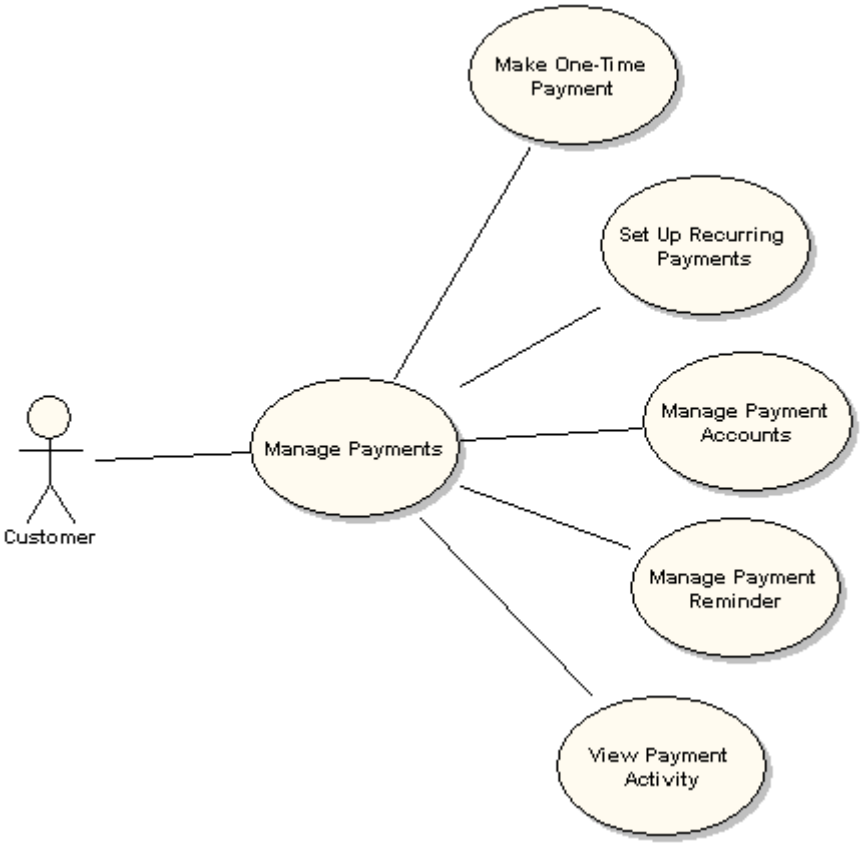
	3. CSV data format
Configuration Points	1. Generation of other formats using XSL 2. Columns of data to be downloaded
Notes:	1. Downloads are available within: a. All Reports b. Call Detail c. Unbilled Detail d. Account Summary

3.6 Payment Use Cases

The payment features provide the business requirements for allowing customers to pay charges from their statements. These user-level use cases specify the functionality required to satisfy these requirements in such a way that Communications Billing Manager can be configured, rules defined, screens developed, and any custom code developed to fulfill the use cases.

This section describes the following functionality:

- **Make One-Time Payment** – Consumer user makes a one-time payment.
- **Set Up Recurring Payments** – Consumer user configures rules to pay charges automatically on a monthly basis.
- **Manage Payment Accounts** – Consumer user can set up and manage multiple payment accounts for use in account/statement payments.
- **View Payment History** – Consumer user views a their payment activity.


Make One-Time Payment
Set Up Recurring Payments
Manage Payment Accounts
Manage Payments
Manage Payment Reminder
View Payment Activity
Customer

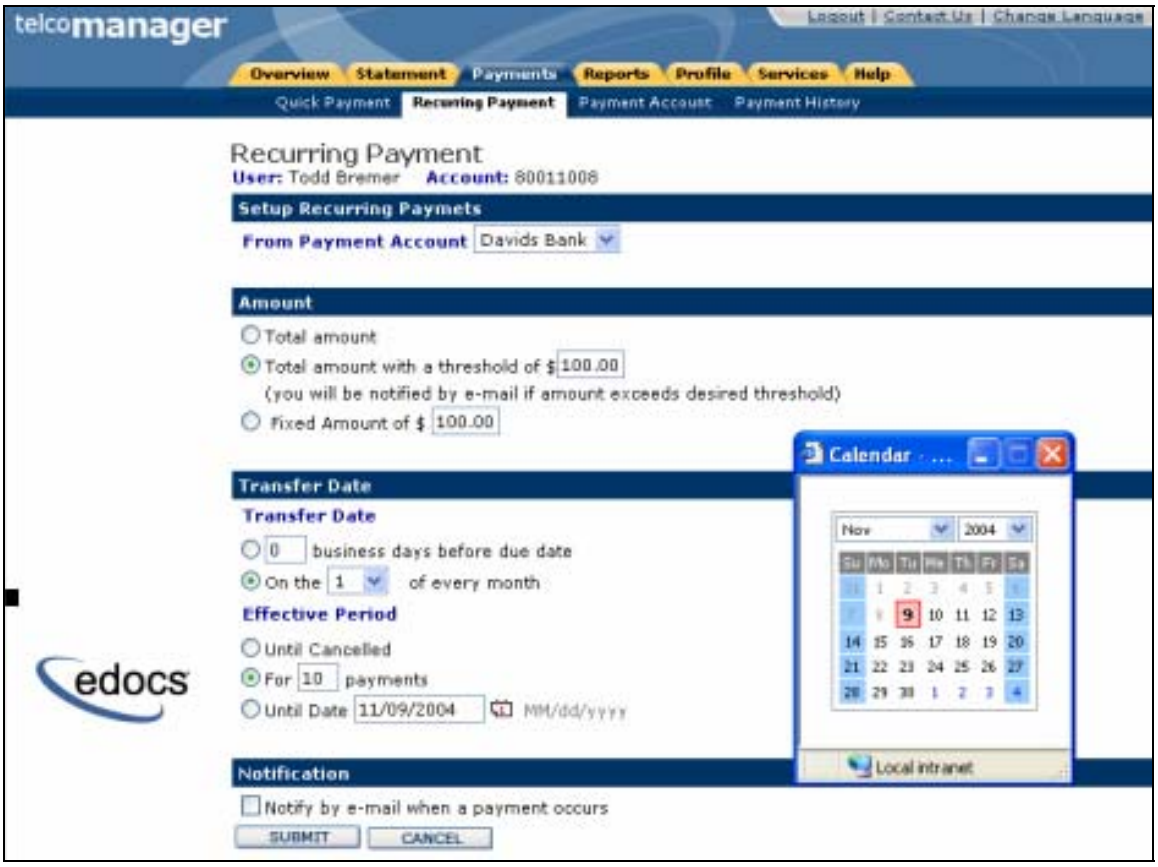
Make One-Time Payment

Name:	**Make One-Time Payment**
Brief Description:	Consumer user completes an online payment
Primary Actor:	Consumer user
Main Path:	1. This use case begins when a User selects the One-Time Payment operation. 2. System displays One-Time Payment screen, which allows the user to provide the following information: a. Payment Amount – Amount due or entered by user. b. Amount to Pay (defaults with Amount Due amount) c. The Payment Account: i. An enrolled Payment Account d. The Payment Date e. eMail Notification option 3. User makes payment selections using an enrolled payment method and submits. 4. System displays confirmation requesting the user to confirm the payment details along with appropriate terms and conditions (if applicable). 5. User confirms payment data.

	6. System processes payment. 7. System validates the request and displays a *Payment Confirmation* screen with the message of the form "You have scheduled a payment in the amount of <amount> from account <Account Alias> on <date>.
Alternate Path:	1a) User has not enrolled for Payment 1. System sends user to Payment Account screen for enrollment. 3b) User enters invalid information 1. System prompts the User to review the information and does not accept the transaction. 3b) User has setup a previous recurring payment 1. User is presented with a message warning them of a possible double payment and allows the user to cancel. 3c) User makes payment selection and chooses a new bank or credit card account 1. System displays the payment page allowing the user to enter a new account bank or credit card account along with agreeing to the terms and conditions of online payments. System carries over the previously made payment amount selection as an editable item. 2. User makes final selections and submits. 3. System displays confirmation page 4a) System determines one or more pieces of information is/are invalid. 1. System displays One-Time Payment page with appropriate error messages. The user can correct the errors.
Standard Features:	1. Date validation
Configuration Points:	1. The system can display any payable billing entity based on the client's permission to process payments accordingly.

	1. The effective date will be calculated based on the system date assuming that the payment should be completed by a specific time in the day in order for it to be processed that day and effective on the next day. 2. System checks if One Time Payment is scheduled during a Recurring Payment window. If a Recurring Payment is scheduled, the system will warn the user that a Recurring Payment is scheduled on date X and that by confirming payment on this screen, a double payment could be made. 3. Payment processing is assumed to occur only on business days.

Set Up Recurring Payment

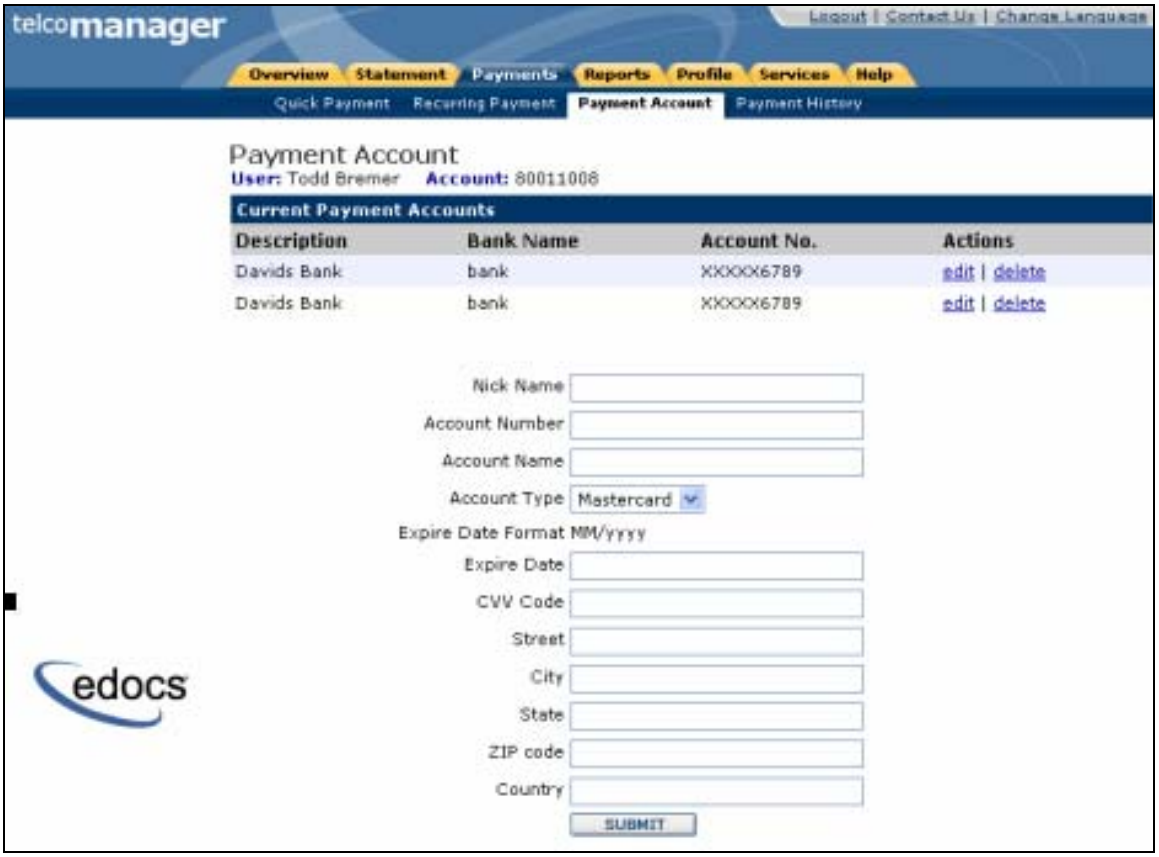


Name:	**Setup Recurring Payment**
Brief Description:	Consumer user intends to pay charges automatically on a monthly basis.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when the User selects the Recurring Payment operation from the navigation menu.

	2. System displays the recurring payment form to the User. 3. User selects an established payment account. 4. User selects Payment Account (defaults to a single Account), Payment Amount preferences, Transfer Date and Effected period preferences for the new recurring payment and submits form. 5. System displays a confirmation page requesting the user to confirm the recurring payment. 6. User makes their selections and submits. 7. System validates information and stores the recurring payment and adds recurring payment to list of scheduled recurring payments. 8. System redisplays the recurring payment page, if successful, and provides the User with a confirmation message..
Alternative Paths:	2a) User has an existing recurring payment set up. 1. System displays the recurring payment page allowing the user to edit the existing payment account, change to a new payment account, or cancel the existing recurring payment. 3a) User selects to use a new credit card or bank account and submits. 1. System displays the Payment Account page, allowing user to execute the Payment Account operation. 3b) User navigates to another page before submitting 1. System does not record the recurring payment set-up. 4a) User enters invalid information 1. System prompts the user to review the information and does not accept the transaction. 7a) User enters a recurring payment that conflicts with an earlier scheduled recurring payment. 1. System displays a notification that a conflict exists with the new payment and a scheduled recurring payment and notifies the user that if the payment is scheduled, a double payment could occur. a. User selects option to confirm or cancel payment.
Standard Features:	1. Multiple payment accounts. 2. Payment Amount Options: a. Total Amount Due b. Total Amount Within Threshold c. Fixed Amount 3. Payment Date a. X number of days before due date b. X day of the month 4. Recurring Payment Duration a. Until cancelled

	b. X number of payments c. Until X Date 5. Email notification of payment event
Configuration Points:	1. Recurring payment options may be suppressed or read-only.
Notes	1. Once the user has configured a recurring payment, a return to this page shows the recurring payment the user set up along with the ability to edit or cancel the recurring payments. 2. If a recurring payment has been schedule on an account and is conflicted with a newly set up recurring payment, the system displays a warning message and allow the user to correct/delete recurring payment conflict.

Manage Payment Accounts – Add Credit Card

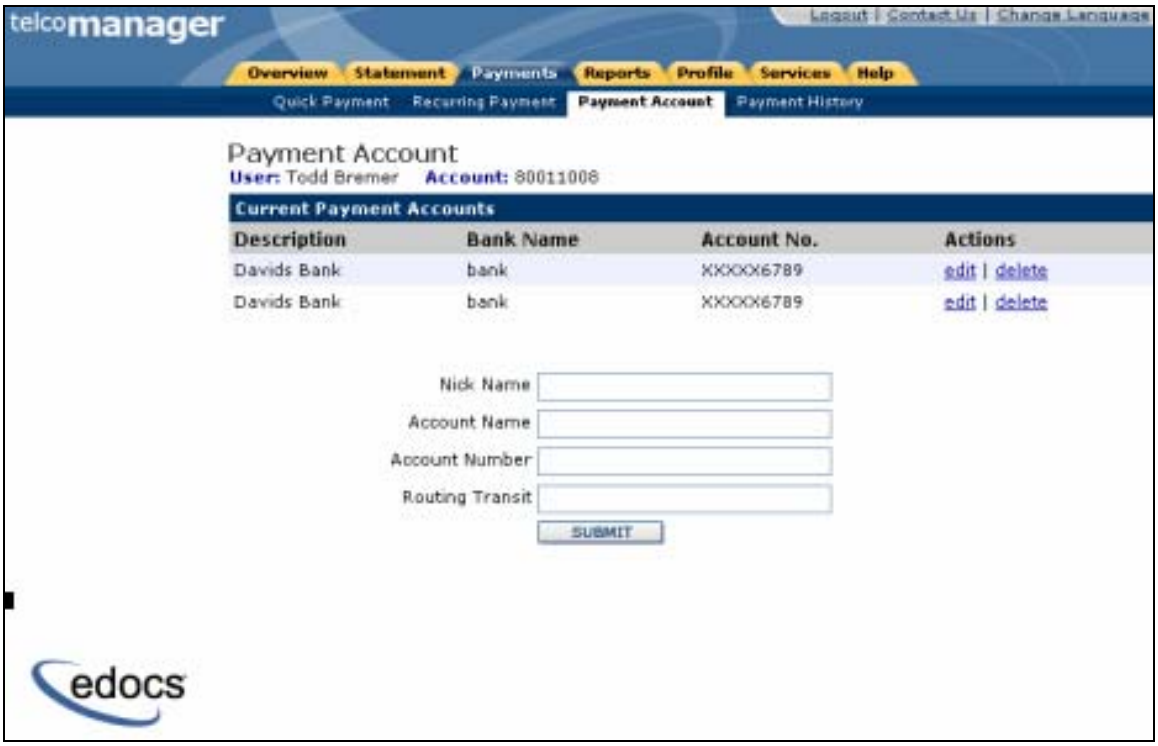


Name:	**Manage Payment Accounts – Add Credit Card**
Brief Description:	Consumer user adds credit card

Primary Actor:	Consumer user
Main Path:	1. This use case begins when the user selects the Payment Accounts operation from the navigation menu. 2. System displays a list of existing payment accounts and the ability to add/edit/delete those accounts. 3. User selects to a add credit card account. 4. System displays the form to add a credit card account that contains the following fields. a. Account Nick Name b. Account Number c. Account Name d. Account Type e. Expiration Date f. Card Verification Number (CVV) g. Name on Card h. Street Address (Line 1) i. City j. State/Region or Province k. Zip/Postal Code l. Country 5. User enters the information and submits the form. 6. System validates the information as being correct and updates the list of payment accounts.
Alternate Paths:	3a) User selects to add a bank account: 1. See separate use case. 3b) User selects edit credit card account: 1. See separate use case. 3c) User selects edit bank account: 1. See separate use case. 3d) User selects delete credit card account: 1. See separate use case. 3e) User selects delete bank account: 1. See separate use case. 3f) System is unable to validate the information: 1. System displays error message to user informing them of the specific issue.
Standard Features:	1. Add, edit, delete bank or credit card accounts 2. Form validation
Configuration	1. Additional payment methods can be configured via the payment cartridge framework.

Points:	
Notes	1. If a user deletes a payment account the recurring payments that have been setup to use that account are deleted.

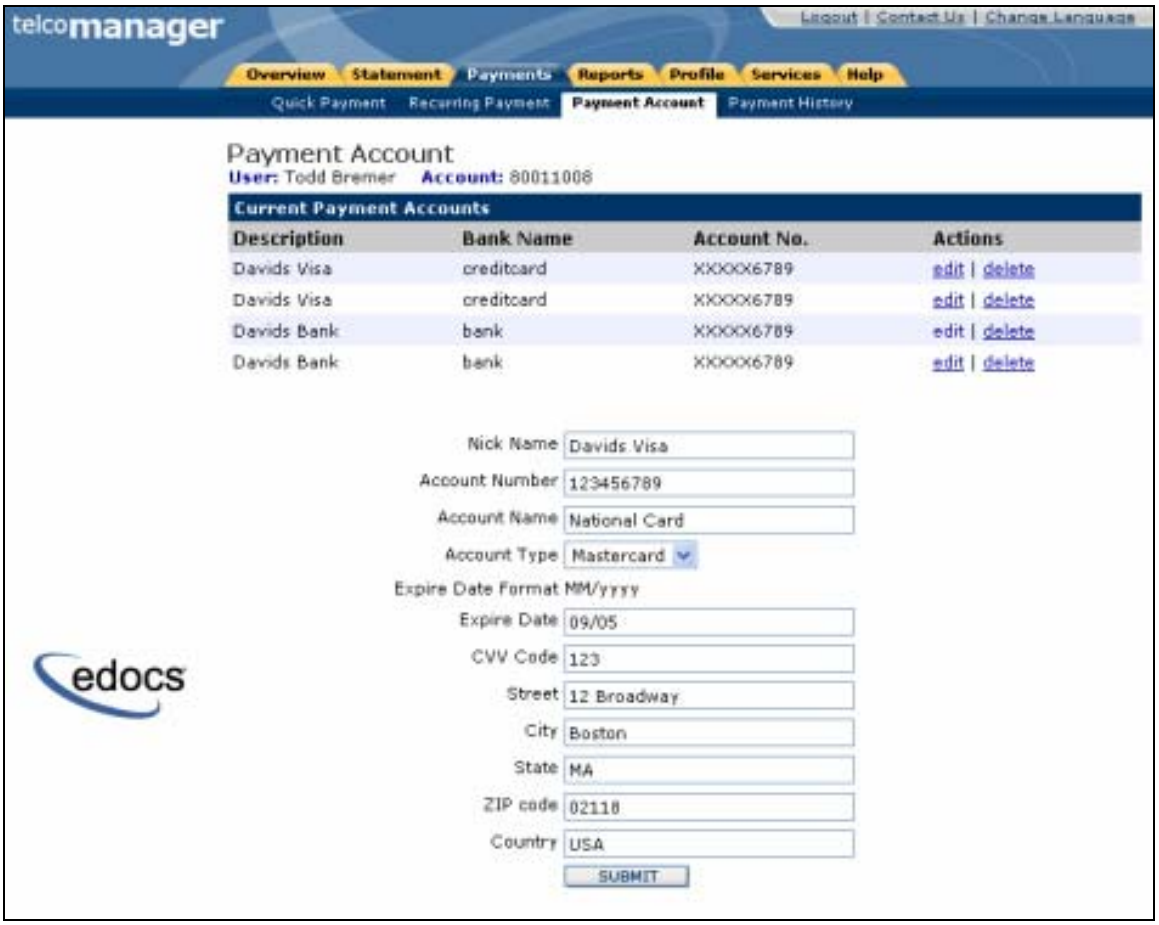
Manage Payment Accounts – Add Bank Account



Name:	**Manage Payment Accounts – Add Bank Account**
Brief Description:	Consumer User adds a bank account
Primary Actor:	Consumer User
Main Path:	1. This use case begins when the User selects the Manage Payment Accounts operation from the navigation menu. 2. System displays a list of existing payment accounts and the ability to add/edit/delete those accounts. 3. User selects to add a bank account 4. System displays the form to add a bank account that contains the following fields. a. Account Nick Name b. Bank Account Name c. Account number

	d. Routing Transit number 5. User enters the information and submits the form. 6. System validates the routing information as being correct and updates the list of payment accounts.
Alternate Paths:	3a) User selects to add a credit card account. 1. See separate use case. 3b) User selects edit credit card account. 1. See separate use case. 3c) User selects edit bank account. 1. See separate use case. 3d) User selects delete credit card account. 1. See separate use case. .3e) User selects delete bank account. 1. See separate use case. 6a) System is unable to validate the information. 1. System displays error message to user informing them of the specific issue.
Standard Features:	1. Add, Edit, Delete Bank or Credit Card Accounts 2. Form validation
Configuration Points:	1. Additional payment methods can be configured via the payment cartridge framework.
Notes:	1. If a user deletes a payment account the recurring payments that have been set up to use that account are deleted.

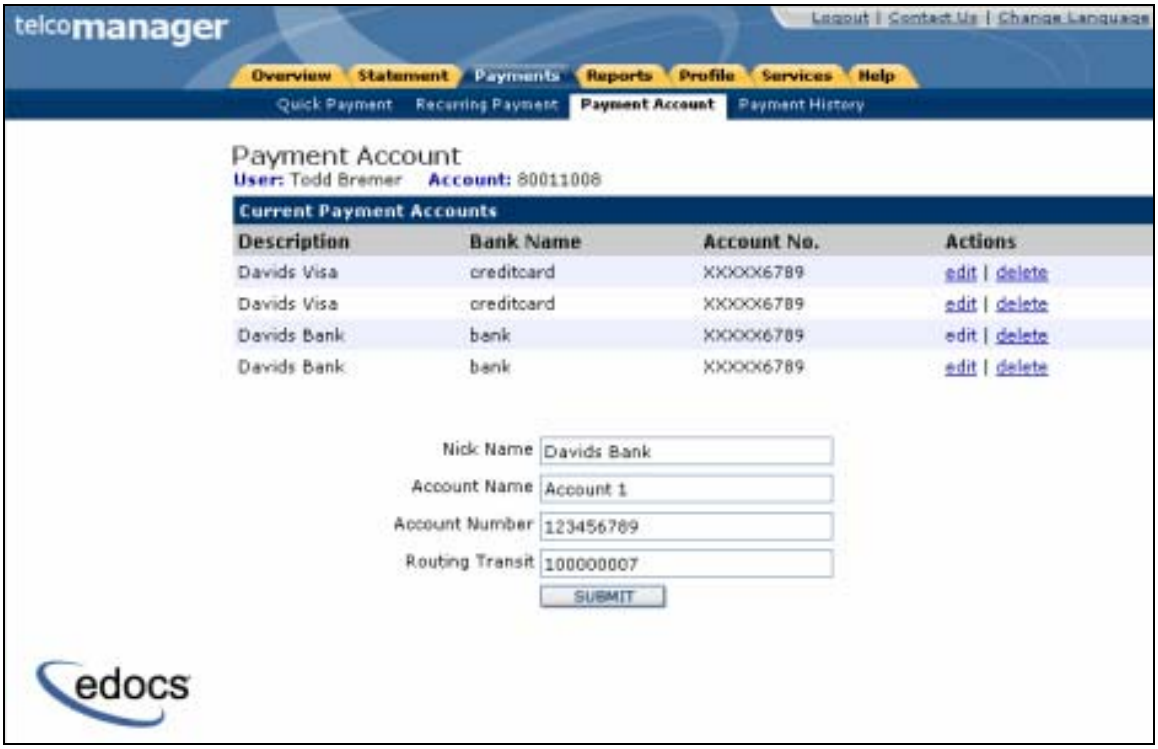
Manage Payment Accounts – Edit Credit Card



Name:	**Manage Payment Accounts – Edit Credit Card**
Brief Description:	Consumer User edits existing credit card information
Primary Actor:	Consumer User
Main Path:	1. This use case begins when the User selects the Payment Accounts operation from the navigation menu. 2. System displays a list of existing payment accounts and the ability to add/edit/delete accounts. 3. User selects to edit an existing credit card account information 4. System displays the form to edit a credit card account that contains the following fields. a. Account Nick Name b. Account Number c. Account Name d. Account Type

	e. Expiration Date f. Card Verification Number (CVV) g. Name on Card h. Street Address (Line 1) i. City j. State/Region or Province k. Zip/Postal Code l. Country 5. User edits the information and submits the form. 6. System validates the information as being correct and updates the list of payment accounts.
Alternate Paths:	3a) User selects to add a bank account. 1. See separate use case. 3b) User selects add credit card account. 1. See separate use case 3c) User selects edit bank account. 1. See separate use case 3d) User selects delete credit card account. 1. See separate use case 3e) User selects delete bank account. 1. See separate use case 3f) System is unable to validate the information. 1. System displays error message to user informing them of the specific issue
Standard Features:	1. Add, Edit, Delete Bank or Credit Card Accounts 2. Form validation
Configuration Points:	2. Additional payment methods can be configured via the payment cartridge framework.
Notes:	1. If a user deletes a payment account the recurring payments that have been set up to use that account are deleted.

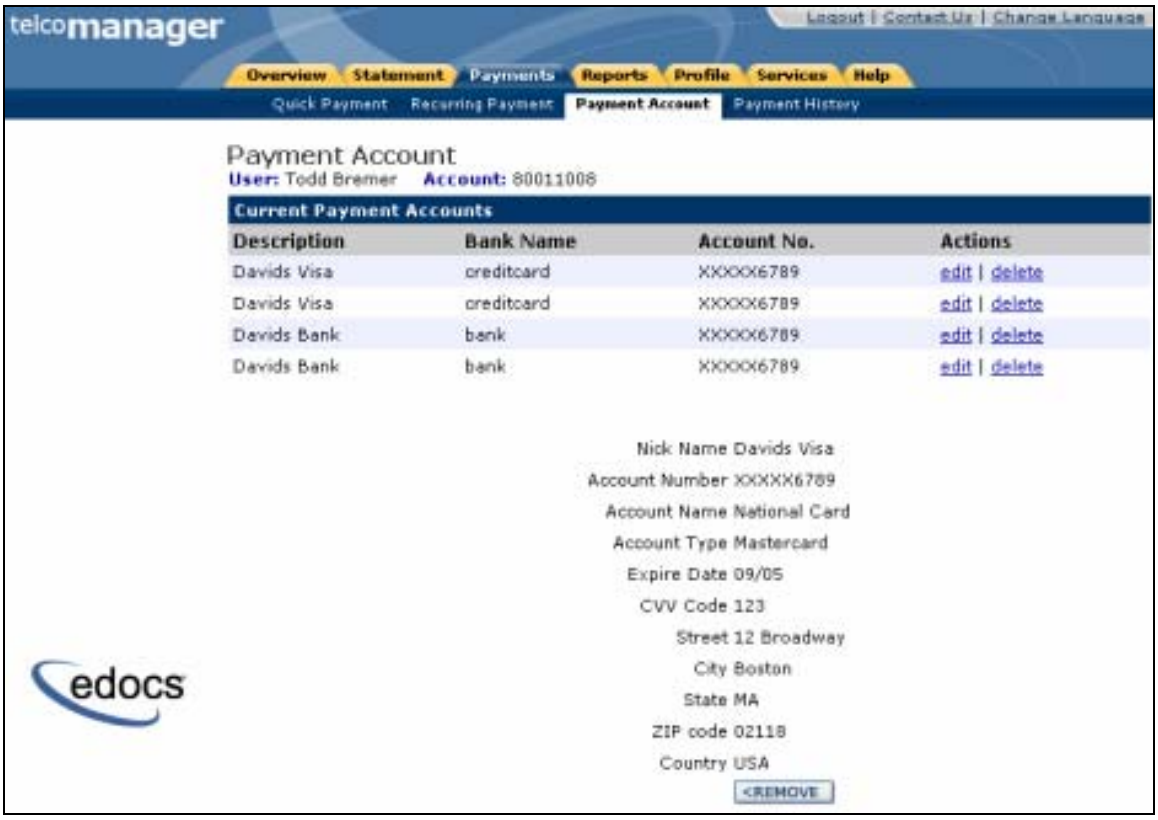
Manage Payment Accounts – Edit Bank Account



Name:	**Manage Payment Accounts – Edit Bank Account**
Brief Description:	Consumer User edits existing bank account information
Primary Actor:	Consumer User
Main Path:	1. This use case begins when the User selects the Payment Accounts operation from the navigation menu. 2. System displays a list of existing payment accounts and the ability to add/edit/delete accounts. 3. User selects to edit an existing bank account information 4. System displays the form to edit a bank account that contains the following fields. a. Account Nick Name b. Bank Account Name c. Account number d. Routing Transit number 5. User edits the information and submits the form. 6. System validates the routing information as being correct and updates the list of payment accounts.
Alternate Paths:	3a) User selects to add a bank account.

	1. See separate use case. 3b) User selects add credit card account. 1. See separate use case. 3c) User selects edit credit card account. 1. See separate use case. 3d) User selects delete credit card account. 1. See separate use case. 3e) User selects delete bank account. 1. See separate use case. 3f) System is unable to validate the information. 1. System displays error message to user informing them of the specific issue
Standard Features:	1. Add, Edit, Delete Bank or Credit Card Accounts 2. Form validation
Configuration Points:	1. Additional payment methods can be configured via the payment cartridge framework.
Notes:	1. If a user deletes a payment account the recurring payments that have been set up to use that account are deleted.

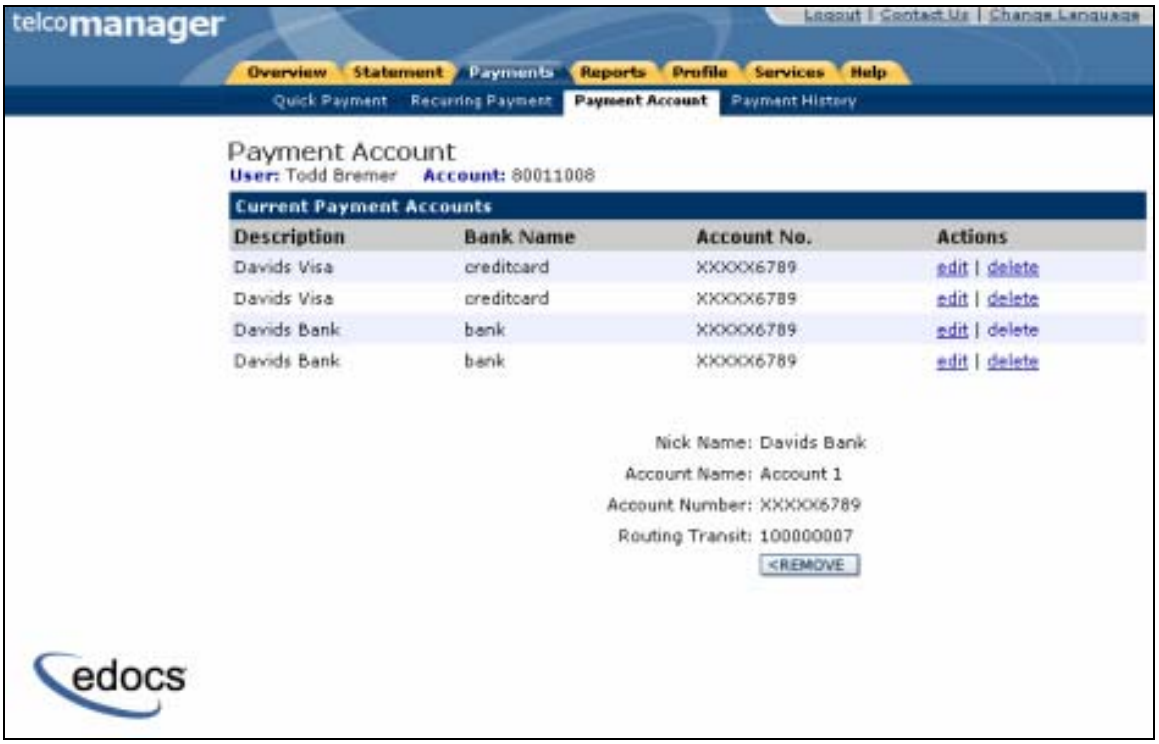
Manage Payment Accounts – Delete Credit Card



Name:	**Manage Payment Accounts – Delete Credit Card**
Brief Description:	Consumer User deletes credit card account information
Primary Actor:	Consumer User
Main Path:	1. This use case begins when the User selects the Payment Accounts operation from the navigation menu. 2. System displays a list of existing payment accounts and the ability to add/edit/delete accounts. 3. User selects to delete an existing credit card account information 4. System displays a screeen to confirm deletion of bank account that contains the following fields. a. Account Nick Name b. Account Number c. Account Name d. Account Type e. Expiration Date f. Card Verification Number (CVV)

	g. Name on Card h. Street Address (Line 1) i. City j. State/Region or Province k. Zip/Postal Code l. Country 5. User confirms the deletion and submits the form. 6. System validates the routing information as being correct and updates the list of payment accounts.
Alternate Paths:	3a) User selects to add a bank account. 1. See separate use case. 3b) User selects add credit card account. 1. See separate use case. 3c) User selects edit credit card account. 1. See separate use case. 3d) User selects edit bank account. 1. See separate use case. 3e) User selects delete bank account. 1. See separate use case. 3f) Client cancels the deletion, and does not confirm the deletion.
Standard Features:	1. Add, Edit, Delete Bank or Credit Card Accounts 2. Form validation
Configuration Points:	1. Additional payment methods can be configured via the payment cartridge framework.
Notes:	1. If a user deletes a payment account the recurring payments that have been set up to use that account are deleted.

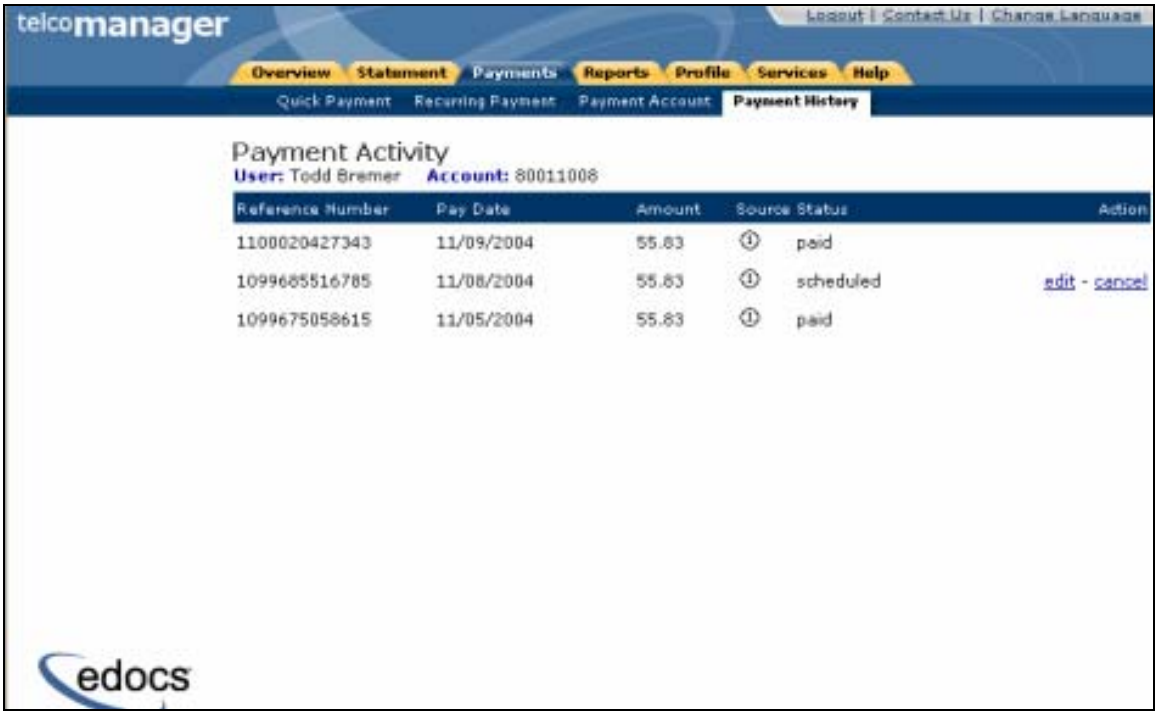
Manage Payment Accounts – Delete Bank Account



Name:	**Manage Payment Accounts – Delete Bank Account**
Brief Description:	Consumer User deletes bank account information
Primary Actor:	Consumer User
Main Path:	1. This use case begins when the User selects the Payment Accounts operation from the navigation menu. 2. System displays a list of existing payment accounts and the ability to add/edit/delete accounts. 3. User selects to delete an existing bank account information 4. System displays the form to delete a bank account that contains the following fields. a. Account Nick Name b. Bank Account name c. Account number d. Routing transit number 5. User edits the information and submits the form. 6. System validates the routing information as being correct and updates the list of payment accounts.
Alternate Paths:	3a) User selects to add a bank account.

	1. See separate use case. 3b) User selects add credit card account. 1. See separate use case. 3c) User selects edit credit card account. 1. See separate use case. 3d) User selects edit bank account. 1. See separate use case. 3e) User selects delete credit card account. 1. See separate use case. 3f) Client cancels the deletion, and does not confirm the deletion.
Standard Features:	1. Add, edit, delete bank or credit card accounts 2. Form validation
Configuration Points:	1. Additional payment methods can be configured via the payment cartridge framework.
Notes:	1. If a user deletes a payment account the recurring payments that have been set up to use that account are deleted.

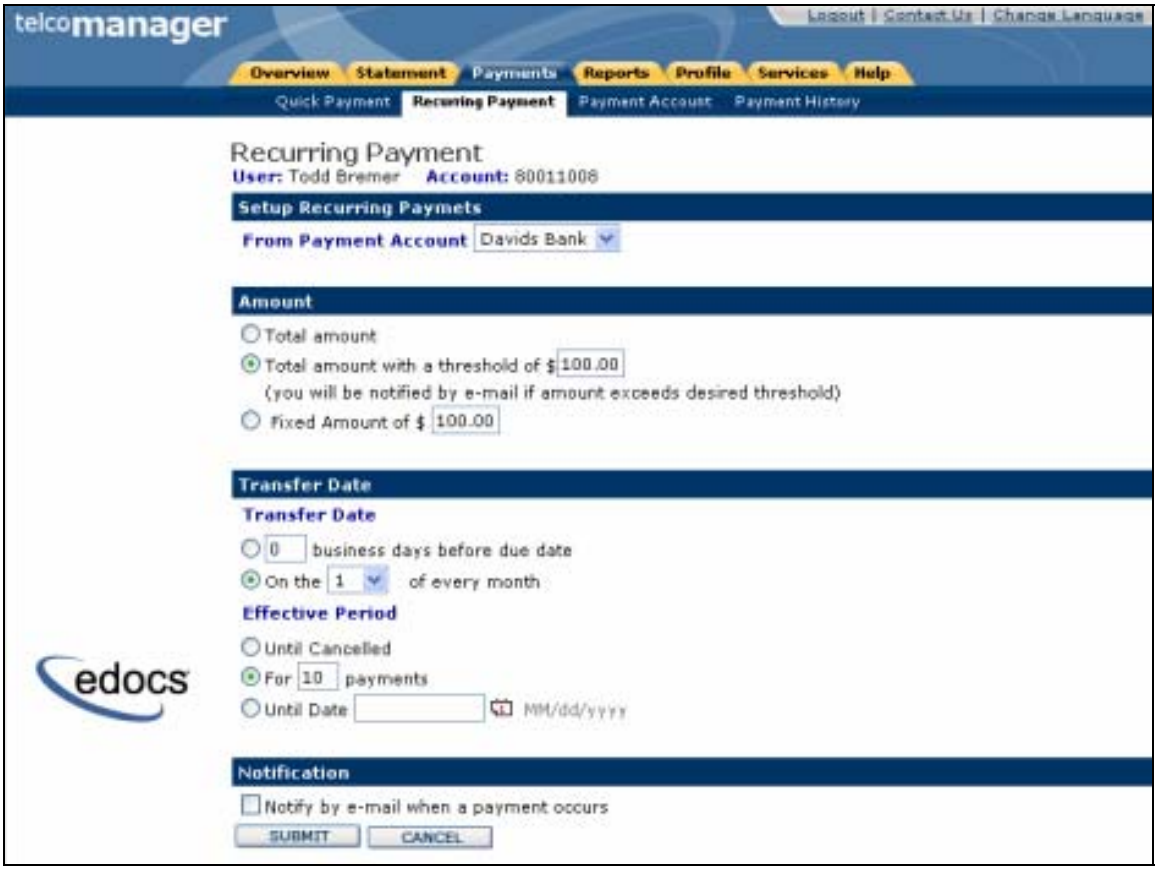
View Payment History



Name:	**View Payment History**
Brief Description:	Consumer User views a list of all payments activity for a configurable time period.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when the user wishes to view payment activity and selects the Payment History operation. 2. System displays Payment History Screen that shows the scheduled (pending) payments and historic payment information including the current status. 3. User chooses to cancel a scheduled payment. 4. System requests user to confirm the operation. 5. User confirms. 6. System cancels the pending payment and displays the updated list of payments.
Alternate Paths:	3a) User selects an Action (edit or delete) on a scheduled/pending recurring payment 1a) Edit - System displays the edit recurring payment page i. System takes user to Edit Recurring Payment page ii. User updates recurring payment information and submits (information is pre-populated in form). iii. System validates edited recurring payment details and requests confirmation iv. System displays edited recurring payment details on Recurring Payments page 1b) Delete - System displays a delete pop-up and requests confirmation a) User confirms or cancels delete action b) System displays delete confirmation pop-up or cancels delete action and the Recurring Payments page is redisplayed. 3b) User invokes the cancel operation on a payment. 1. System requests user to confirm and informs them that this operation will cancel the pending one-time or recurring payment schedule they have selected. 3c) User invokes the edit operation on a pending payment 1. System displays the payment details with the editable fields. 2. User edits the information and submits the form.
Standard Features:	1. Edit 2. Delete

Configuration Points:	1. Number of month's history presented. 2. Initial sort order for each column (ascending or descending).
Notes	1. A recurring payment is a schedule of payments to be made. Once recurring payments are processed they become pending payments

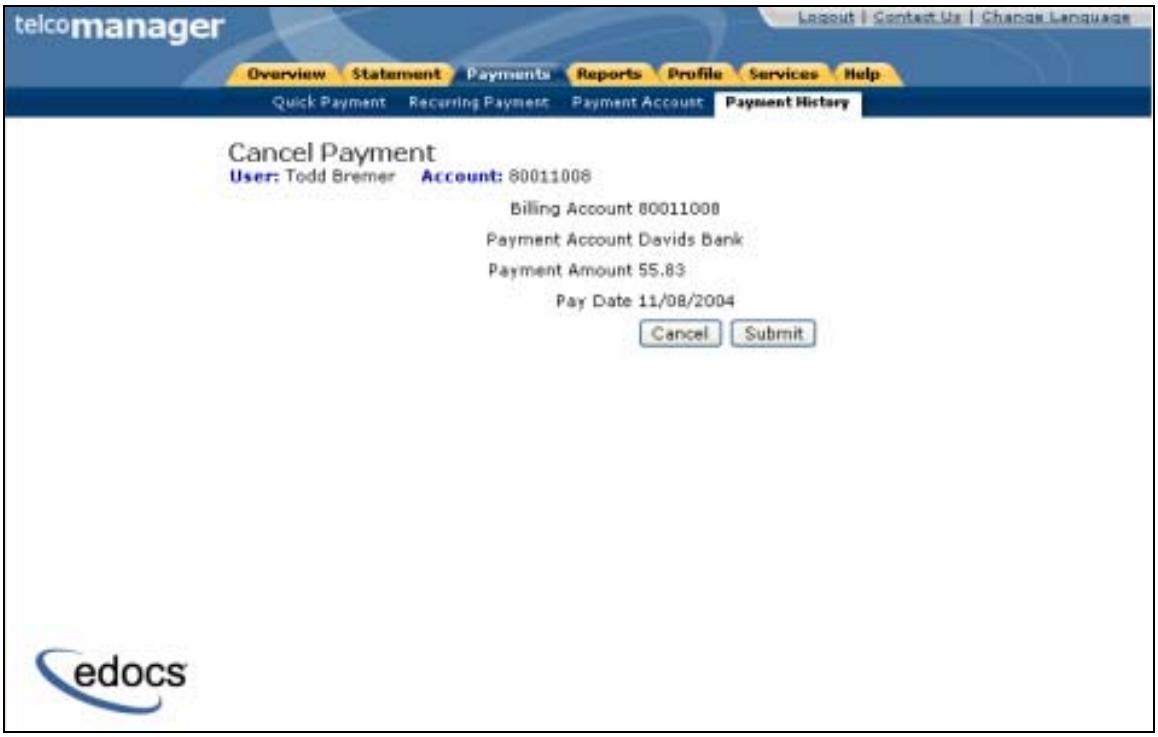
Manage Payments – Scheduled Payments



Name:	**View / Edit / Cancel Automatically Recurring Payment**
Brief Description:	User views, edits, or cancels a scheduled recurring payment
Primary Actor:	User of type: Customer User, User Admin
Preconditions	1. The user has already at least one account in the wallet.
Main Path:	1. User selects Payment History 2. System displays Payment History page 3. User selects the option to / Edit / Delete a scheduled payment

	4. System displays the Recurring Payment page, with the information already filled 5. User modifies all necessary information to update the recurring payment and selects to continue: 6. System validates the request and displays a *Payment Verification* screen. 7. The user confirms the information 8. System displays a confirmation page 9. System stores Automatic payment information in the database and redisplays recurring payment page
Alternate Paths:	4a) The user does not have an automatic payment scheduled. 1. The system triggers the Payment Account use case. 5a) The user selects to Cancel the Automatic payment 1. The system displays a *Payment Cancellation* page. 2. The user confirms the intention to cancel the automatic payment 3. The system deletes the automatic payment and its future occurrences and displays a *Payment Canceled confirmation* page. 6a) User cancels the current request 1. The system displays the Recurring Payment page 7b) User entered invalid information 1. System prompts the User to review the information and displays the *"Schedule a Recurring Payment"* page with the information the user had previously entered 2. User corrects information 3. Resume use case at step #6 of main path.
Configuration:	1. Automatic payments can be set up for all invoice types, including statements. 2. CSR users (regardless of role) cannot setup automatic payments by default. 3. "Upon Receipt" option will schedule payments to be made one day after the batch process to schedule payments has been executed. 4. There is no "Due Date" for an invoice or a statement. Therefore the Due Date will be calculated as a. Invoice Date + Payment Terms.

Manage Payments – Cancel Scheduled Payment



Name:	**Cancel/Delete a Scheduled Payment**
Brief Description:	Customer cancels a payment scheduled in the future
Primary Actor:	Customer of type: Customer User, Customer Administrator
Prerequisites	1. The user has at least one payment scheduled in the future.
Main Path:	1. Customer selects main navigational item for Payment 2. User selects the “Payments Activity” operation 3. System displays the scheduled payments 4. User selects to delete a payment. 5. System displays a confirmation page for the deletion of the following scheduled payment *(payment data)*” 6. The user confirms 7. The system displays a confirmation message
Alternate Paths	4a) User selects to change a payment Please see edit use case. 4b) User cancels the current request 1. The system displays the main Payment Activity page

	6b) User entered invalid information 1. System prompts the User to review the information and redisplays the page with the information the user had previously entered 2. User corrects information 3. Resume use case at step #6 of main path. 6c) User decides to change information 1. User selects “Edit” 2. The system displays the requested payment page with the information the user had previously entered. 3. Please see the Edit use case
Notes:	There can be only one automatic payment per payer. Deleting a scheduled payment removes the recurring payment, there is no ability to skip an automated payment by using this feature.

Manage Payments – Change Scheduled Payment

Name:	**Change a scheduled payment.**
Brief Description:	Customer changes a payment scheduled in the future
Primary Actor:	Customer of type: Customer User, Customer Administrator

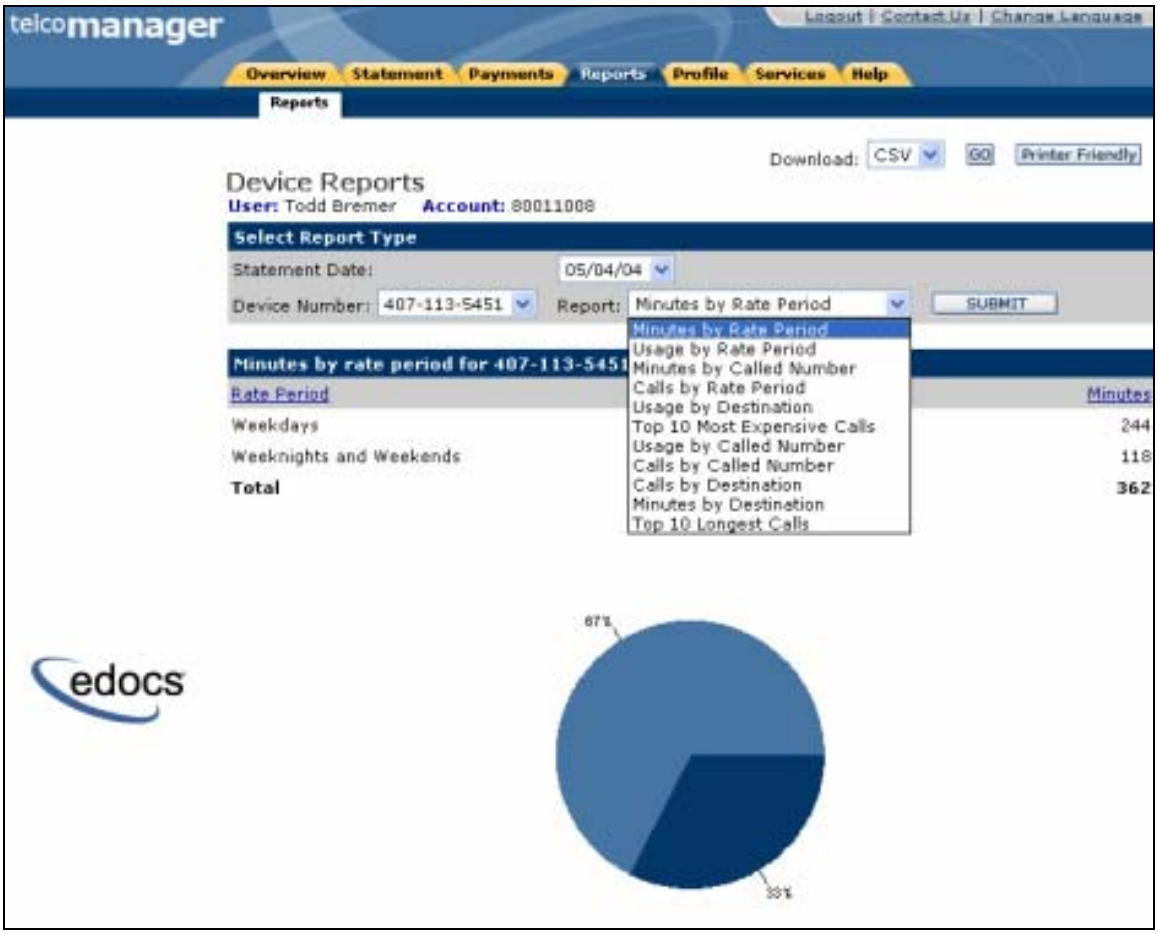
Prerequisites	1. The user has at least one payment scheduled in the future.
Main Path:	1. User selects the Payment History operation 2. System displays the scheduled payments 3. User selects to change a payment. 4. System displays the requested payment page of the form "you are about to change the following payment *(payment data*) " 5. The user changes data and confirms 6. The system displays a confirmation page of the form "You have changed the payment *(payment data)*"
Alternate Paths	4a) User selects to delete a payment 1. See separate use case. 4b) User cancels the current request 1. The system displays the Payment History page 6b) User entered invalid information 1. System prompts the User to review the information and redisplays the requested payment page with the information the user had previously entered 2. User corrects information 3. See separate use case.
Notes:	There can be only one automatic payment per payer. Changing a scheduled payment may be done but there may a lock-out window to prevent contention when payments are processing, there is no ability to skip an automated payment by using this feature.

3.7 Analytics Use Cases

Communications Billing Manager lets you create the following report:

- **View Report** – Consumer user views various device level reports (screenshot shown)
- **Download Account Data –** Consumer user can download report data

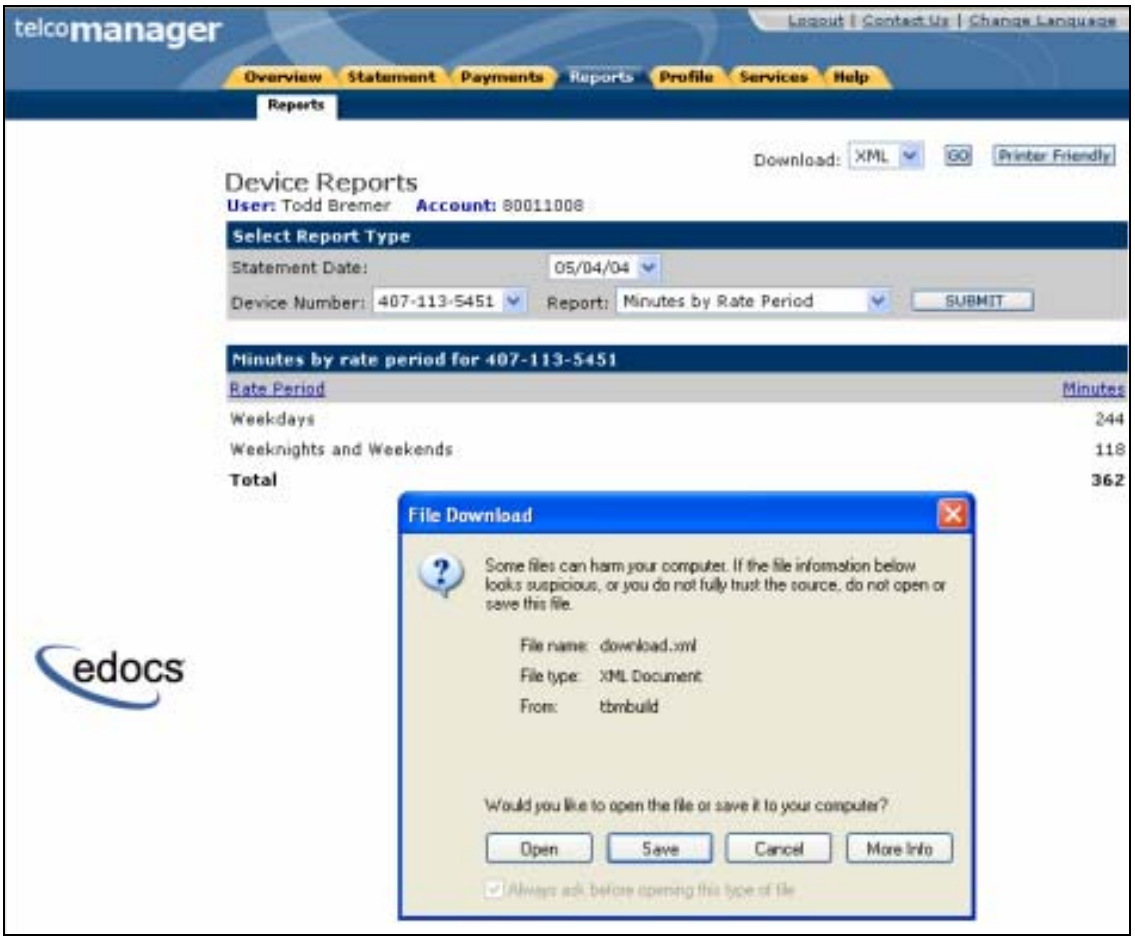
View Report



Name:	**View Report**
Brief Description:	Consumer user views a report within their account.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when the user selects a report to view. 2. System displays the report. 3. User changes the statement date. 4. System redisplays the previously selected report for the newly selected statement date. 5. User selects a different report. 6. System redisplays the selected report for the previously selected statement date.
Alternate Paths:	2a) User has access to multiple devices and selects a different device.

	1. System redisplays the previously selected report for the newly selected device. 2b) There is no report data available for the selected report/statement date: 1. System displays a message stating that there is no data available.
Standard Features:	1. Download (CSV, XML, PDF) 2. Paging/Sorting 3. Print Friendly
Configuration Points:	1. Default support for one account to one device 2. Graph type 3. Initial sort order for each column (ascending or descending).
Notes:	1. Device level reports include: a. Minutes by Rate Period b. Usage by Rate Period c. Minutes by Called Number d. Calls by Rate Period e. Usage by Destination f. Top 10 Most Expensive Calls g. Usage by Called Number h. Calls by Called Number i. Calls by Destination j. Minutes by Destination k. Top 10 Longest Calls

Download Report



Name:	**Download Account Data**
Brief Description:	A Consumer User downloads account data
Primary Actor:	Consumer User
Main Path:	1. This use case begins when a user downloads account data and selects the download function. 2. System request user to select data type. 3. User selects appropriate data type 4. User confirms selection 5. System displays the file save or open dialogue box.
Alternate Paths:	4a) User cancels selection 1. System returns user to previous location
Standard	1. XML data format

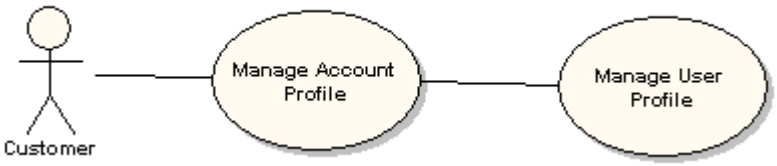
Features:	2. CSV data format 3. PDF view
Configuration Points:	1. Generation of other formats using XSL 2. Columns of data to be downloaded 3. PDF views are configured and presented dynamically
Notes:	Downloads are available within: a. All reports b. Call detail c. Unbilled detail d. Account Summary

3.8 Profile Management Use Cases

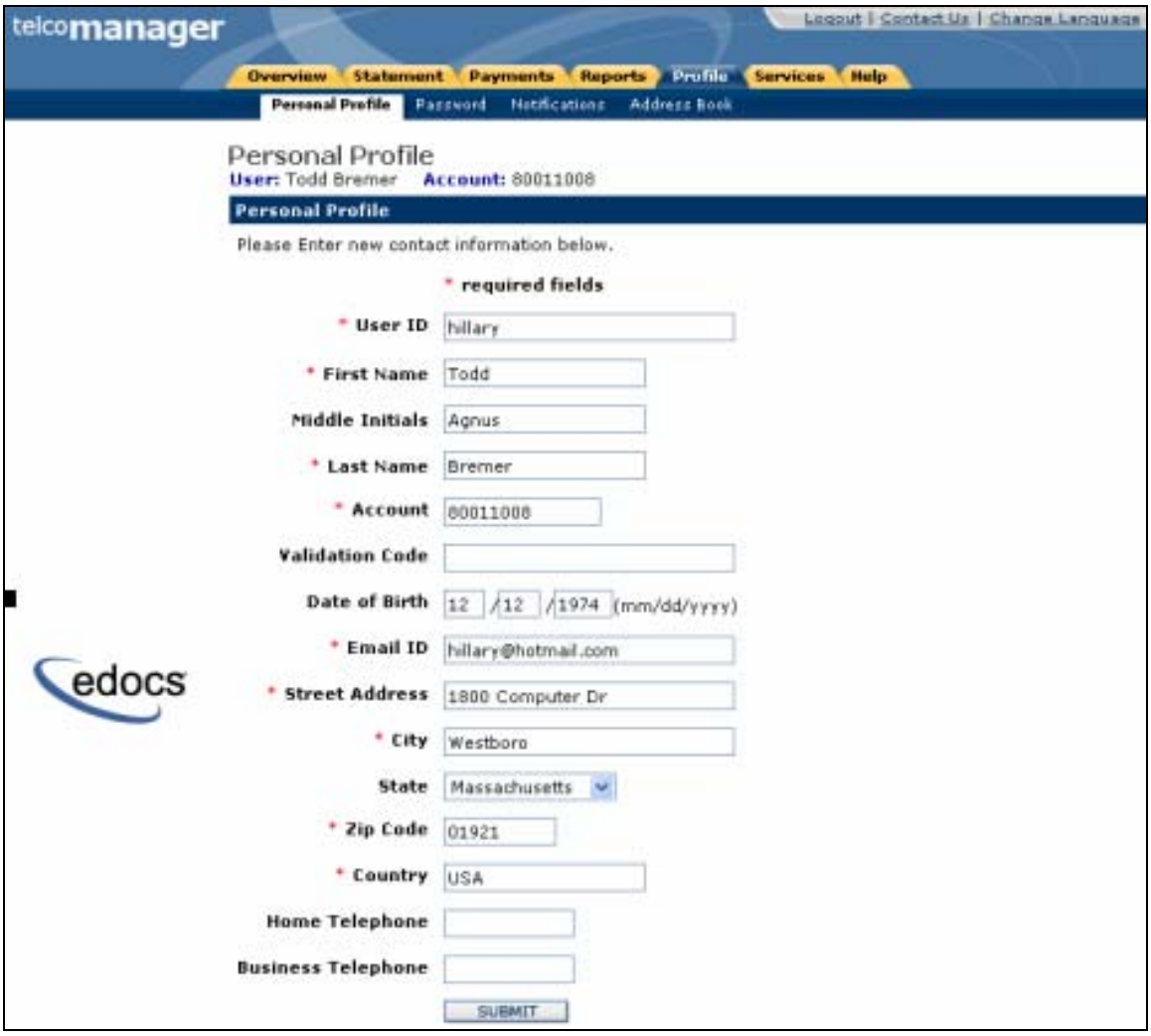
The profile management functionality allows users to set up and manage personal profile, configure and manage monthly e-mail reminders, update their address book, and change their password

This section describes the following use cases:

- **Manage Personal Profile** – Consumer user can update/edit their user profile.
- **Manage Personal Address Book** – Consumer user can manage their personal address book.
- **Manage Password** – Consumer user can manage their password.
- **Manage Notifications** – Consumer user can manage the notifications associated with their account.



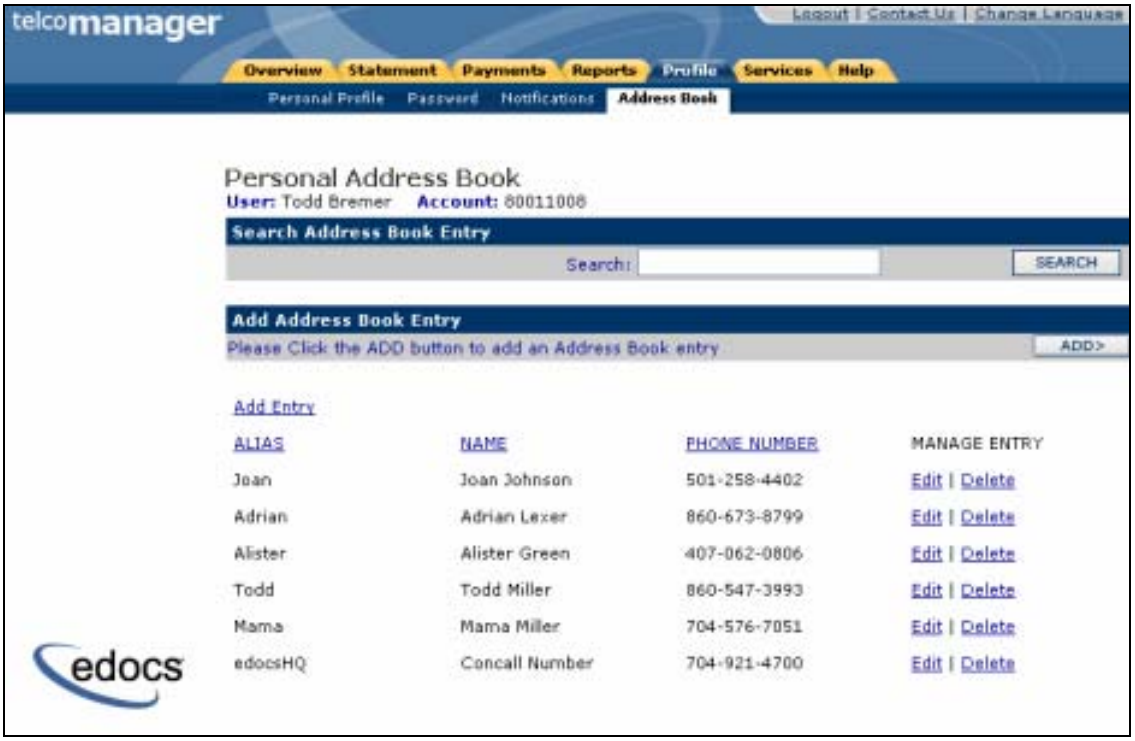
Manage Personal Profile



Name:	**Manage Personal Profile**
Brief Description:	Consumer user modifies personal profile information.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when the user selects the profile operation from the navigation menu. 2. System displays a page containing the current profile information in read only format. 3. User selects to edit the profile. 4. System displays page with profile information that may be edited. 5. User edits the profile information and submits form. 6. System validates profile information and displays the updated profile screen to the user.

Alternate Paths:	6a) Customer enters invalid profile information: 1. System redisplays the page with the appropriate error message so that customer can correct the information.
Standard Features:	1. The fields have default form validation.
Configuration Parameters:	1. Additional fields can be added to the profile management page based on client requirements. 2. The application supports this feature in its own data model, but it is expected that integration to an external system may be required via a plug-in to a third party system or LDAP repository.
Notes:	1. The Personal Profile collects basic information pertaining to the user. Email addresses are collected in the Notifications portion of the application.

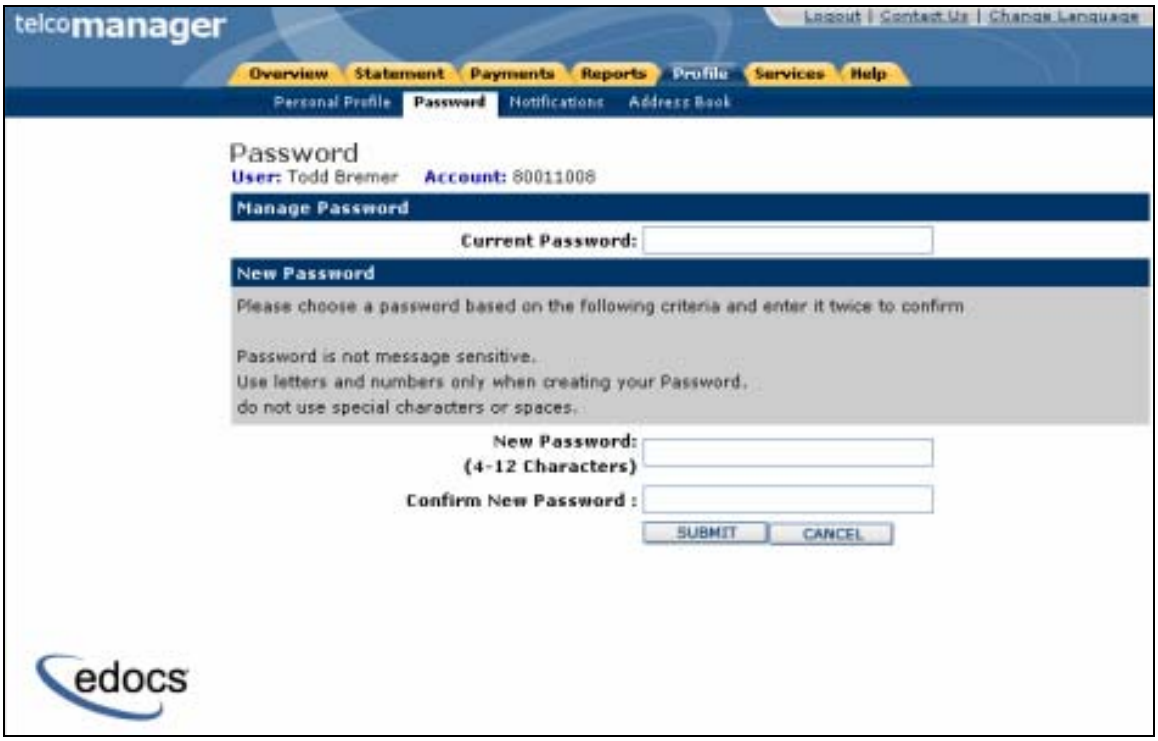
Manage Personal Address Book



Name:	**Manage Personal Address Book (PAB)**
Brief Description:	Consumer user manages all their personal address book entries.
Primary Actor:	Consumer user

Main Path:	1. This use case begins when the user wishes to manage one or more PAB entries and navigates to the Personal Address Book. 2. System displays the user's complete PAB with the following fields. a. Alias b. Name c. Number d. Edit function e. Delete function 3. User selects the add operation. 4. System displays an entry form. 5. User enters the information and submits the form. 6. System stores the new entry. 7. System displays the updated PAB list.
Alternate Paths:	3a) Customer selects the edit operation for a specific PAB entry: 1. System displays an entry form that is pre-populated with the existing PAB entry. 2. User edits the information and submits the form. 3. System stores the new entry. 4. System displays the updated PAB list. 3b) Customer selects the delete operation for a specific PAB entry: 1. System displays a page requesting user to confirm the delete operation. 2. User confirms. 3. System deletes entry from the User's PAB
Standard Features:	1. Personal Address Book entries contain the following fields a. Friendly Name/Alias b. Name 2. The name will be substituted for the device number when displaying details.
Configuration Points:	1. Additional fields can be added to the application based on client requirements.
Notes:	1. The name is substituted for the device number when displaying details.

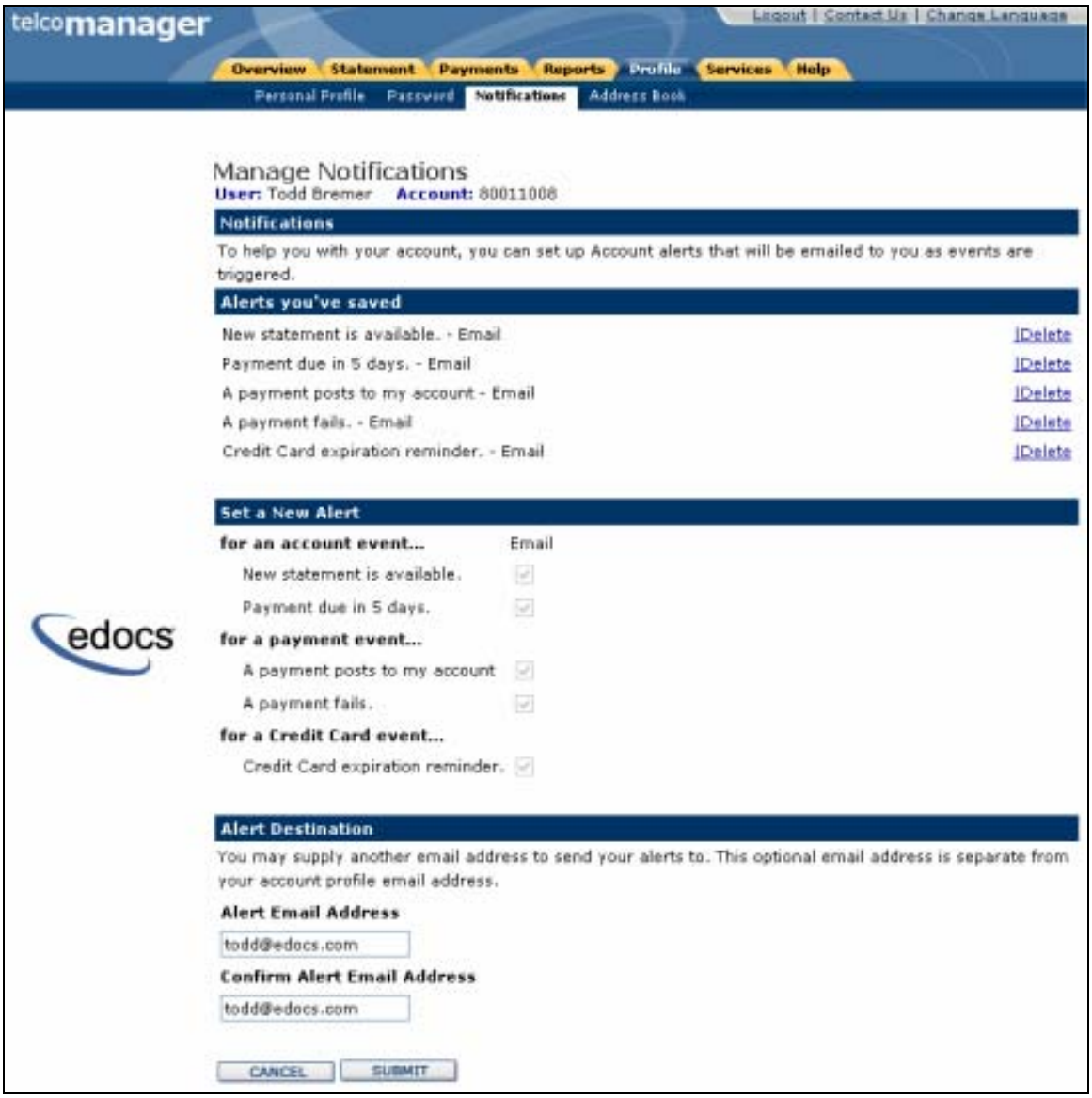
Manage Password



Name:	**Manage Password**
Brief Description:	Consumer user updates their password.
Primary Actor:	Consumer user
Main Path:	1. This use case begins when the user wishes to change their password and runs the change password operation from the navigation menu. 2. User enters in their existing password. 3. User enters in the desired password. 4. User re-enters in the desired password. 5. User submits the password change. 6. System confirms to the user that the password has been changed. 7. System stores updated password.
Alternate Paths:	6a) System identifies that the current password is not valid: 1. System error message stating that the password does not match the one on record. 6b) System identifies that the new passwords do not match security standards: 1. System responds with a message stating that the new passwords

	do not meet the required security standards. 6c) System identifies that the new passwords do not match each other: 1. System responds with a message stating that the new passwords do not match each other. 6d) User selects to cancel operation: 1. User is returned to Personal Profile screen.
Standard Features:	1. Form validation.
Configuration Points:	1. The default password parameters for the Siebel product are configurable: a. 4-12 characters, alpha-numeric

Manage Notifications



Name:	**Manage Notifications**
Brief Description:	Consumer User configures a notification to be sent at a regular interval
Primary Actor:	Consumer User
Main Path:	1. This use case begins when a user selects the notification option in the profile tab. 2. System displays form that has the various options for notifications. 3. User selects the notifcation and the applicable parameters

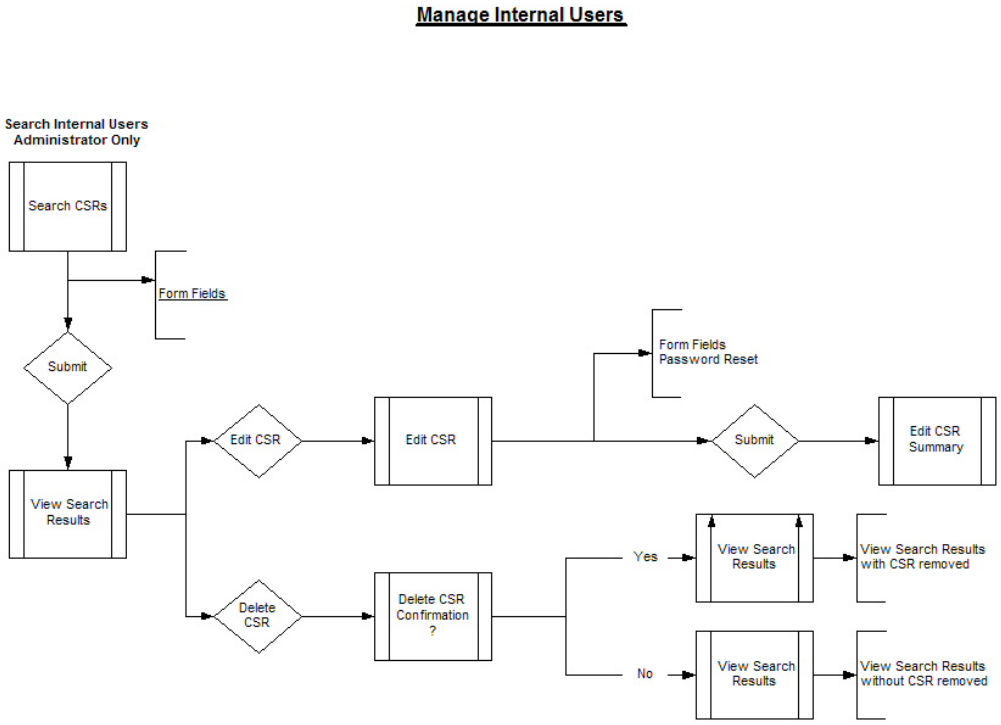
	4. User selects notification to be active 5. System stores the notification information
Alternate Paths:	3a) User sets notification to be inactive. 1. System stores the information so that the notification is inactive and no notification will be sent
Configuration Points:	1. Giving the user the ability to shut off email notification if they have shut off paper is configurable and a disclaimer can be produced. 2. SMS messages are configured based on SMS gateway integration for messaging requests.
Notes:	

3.9 Customer Service Representative (CSR)

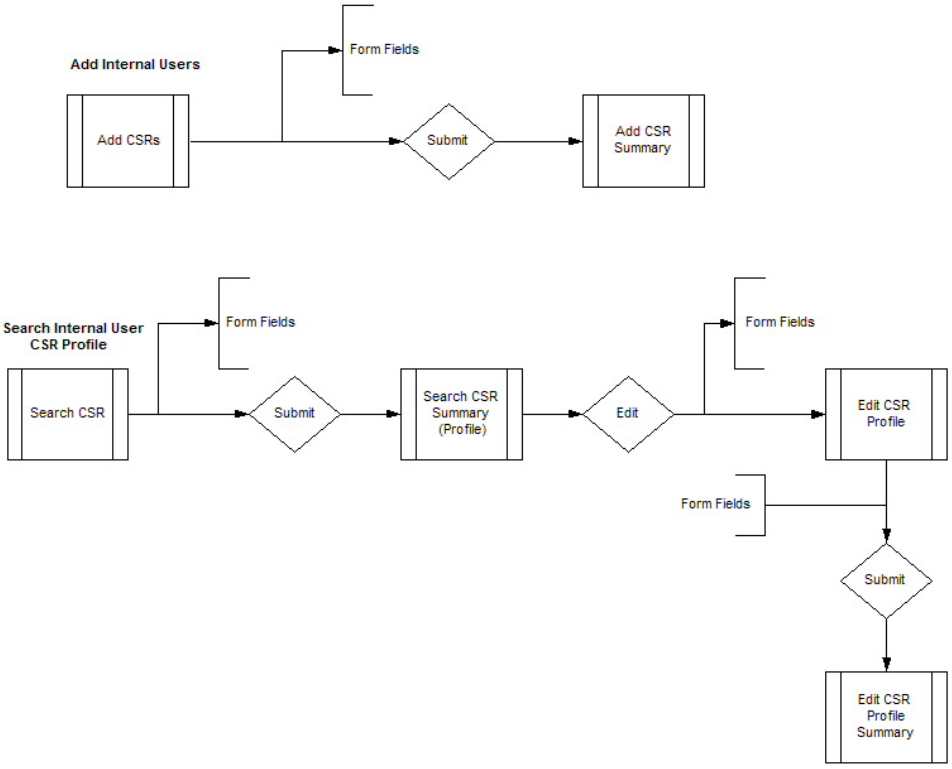
The customer service use cases allow the telecommunications provider to effectively manage consumer users. The customer service use case section covers the following use cases:

- **Manage Internal Users** – Telecommunications provider can manage their consumer users.
- **Search for Account** – Provider can search for consumer accounts and invoke the impersonate user feature.
- **Impersonate User** – Provider can impersonate consumer users.

Manage Internal Users



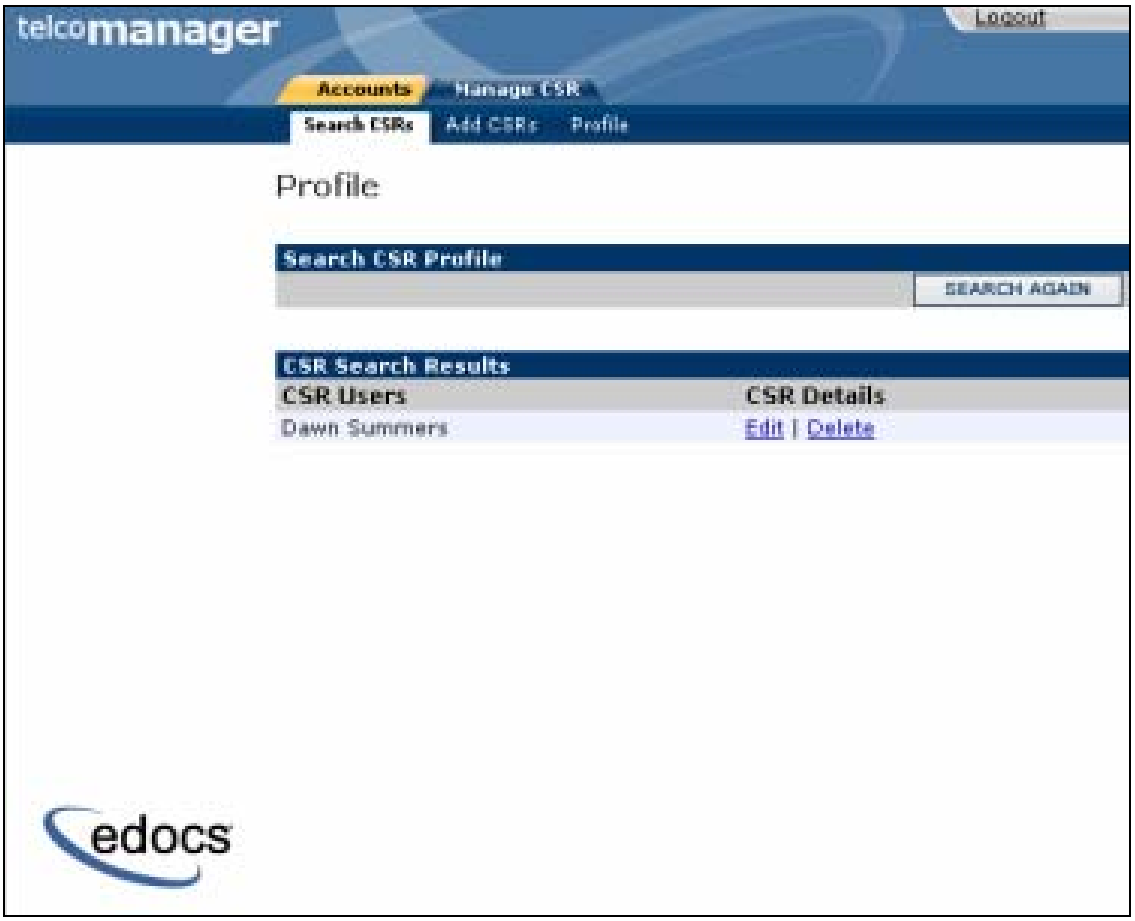
Manage Internal Users - Cont'd



Name:	**Manage Internal Users**
Brief Description:	A Customer service representative administrator, adds, deletes, or modifies other CSRs, so that they can access the application.
Actor:	CSR Administrator
Main Path:	This use case begins when an administrator CSR logs in to the application and invokes the Search for users operation. User provides information and submits. System validates the information and displays the updated list of Internal Users to the administrator.
Alternate Paths:	3a) Admin internal user selects user from the list and invokes the Edit User operation. 1. System displays User Profile page 2. System displays the updated list of internal users 3. User updates fields and submits the form. 4. System validates the information and updates the profile for the selected user.

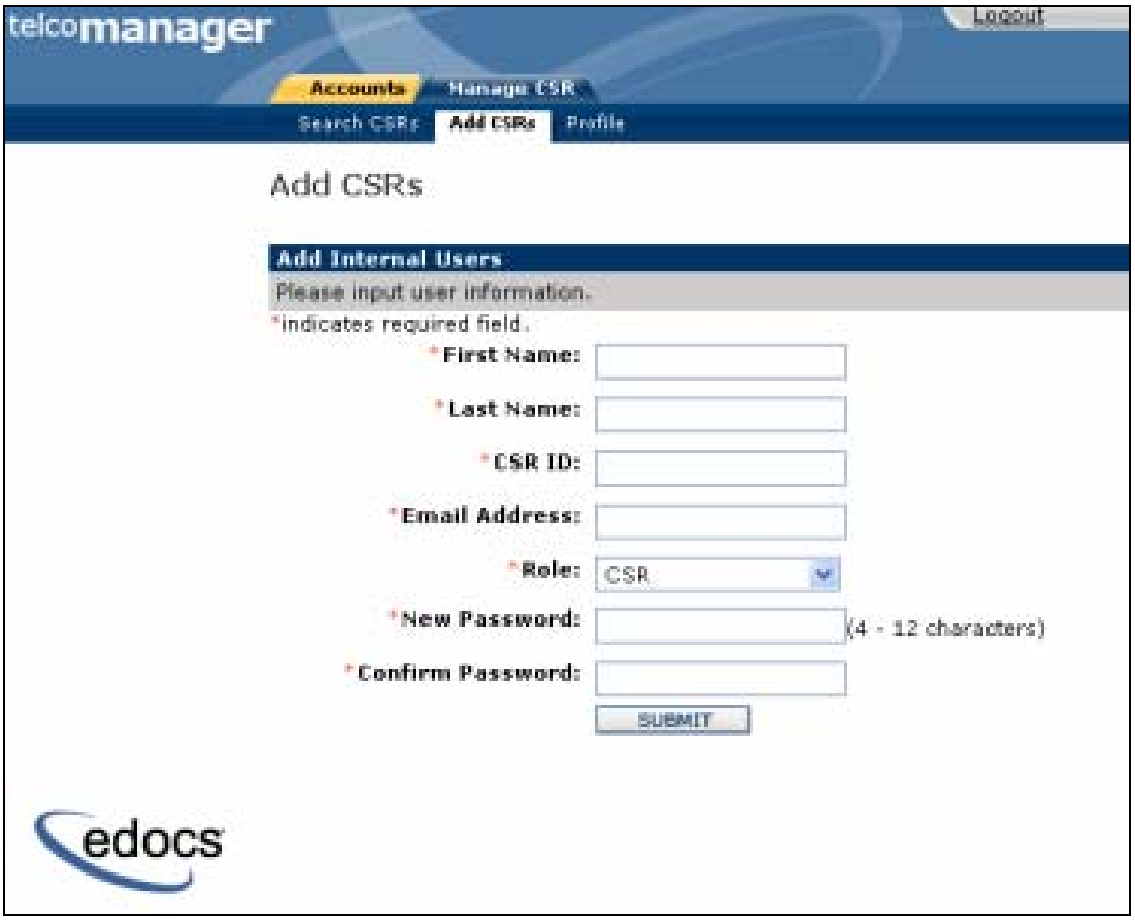
	5. System displays the updated list of internal users to the administrator. 3b) User selects the Delete operation: 1. System displays a deletion confirmation page 2. User confirms the operation. 3. System validates the request and logs details of inactivated user and disables the user's access. 4. System displays the updated list of Internal Users 6a) System is unable to validate information 1. System prompts the user to review the information and does not accept the transaction.
Configuration:	
Notes:	1. Only Administrator CSRs have the ability to manage other CSR users.

Search Internal User Results



Name:	**View Search for Internal User (CSR) Results Summary**
Brief Description:	Customer Service Representative views search results for CSR accounts.
Primary Actor:	Customer Service Representative Administrator (CSR Admin)
Main Path:	1. This use case begins when a Customer Service Representative views the search results from the Search CSRs page. 2. User has option to: a. Edit CSR User b. Delete CSR User 3. User selections appropriate option. 4. System links to appropriate page based on option selected.
Alternate Paths:	2a) The user is taken to the Edit CSR page. 2b) Admin Internal User selects to do another search: 2c) Admin Internal User selects Delete User: 1. System displays a confirmation page with the following information: a. Role b. Name 2. Administrator CSR confirms the deletion of the user. 3. System validates the request and logs details of inactivated user and disables the user's access. 4. System displays the updated list of internal users.
Standard Features:	Return list of Names
Configuration Points:	May be configured to return more fields from default profile fields.
Notes:	None

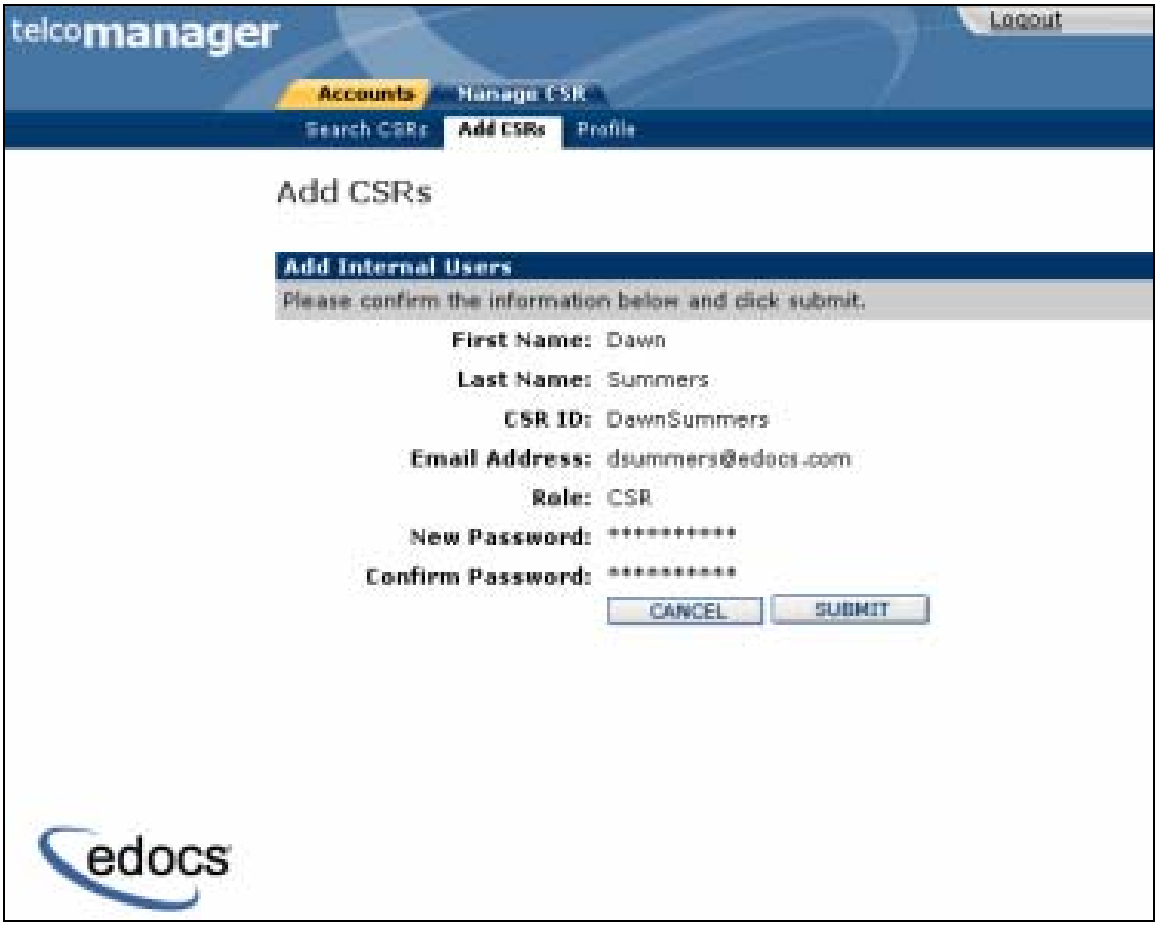
Add Internal Users



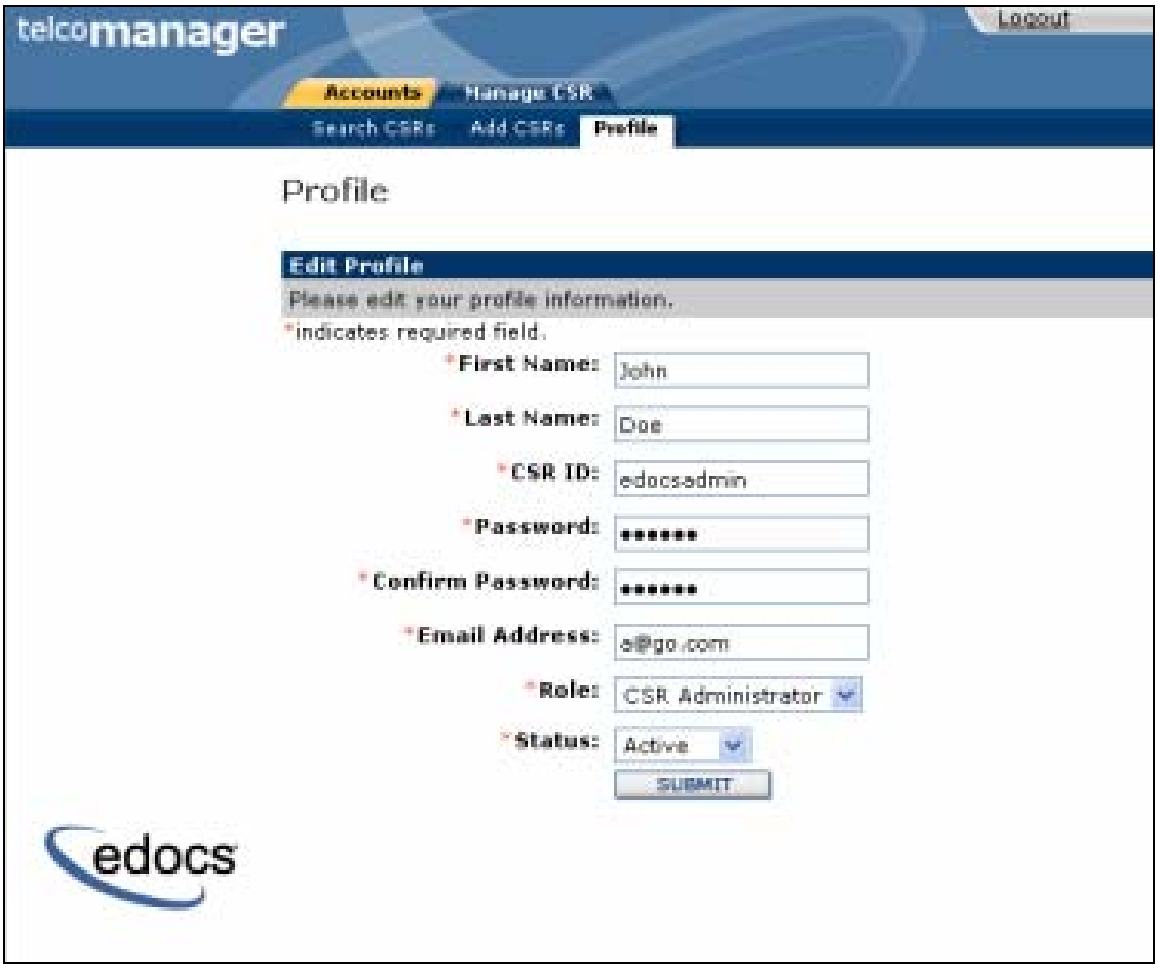
Name:	**Add Internal Users (CSR)**
Brief Description:	A Customer Service Representative Administrator adds other CSRs.
Main Path:	1. This use case begins when an administrator CSR chooses to Add Internal Users. 2. User selects the Add function for a chosen CSR user and enters the user's details. a. First Name b. Last Name c. CSR ID d. Email Address e. Role f. Password g. Confirm Password 3. Admin Internal User enters information and submits the form. 4. System validates the information and displays the summary confirmation for successfully adding a user.

Alternate Paths:	4a) System is unable to validate information 1. System prompts the user to review the information and does not accept the transaction.
Standard Features:	Form Validation
Configuration Points:	1. The fields that are displayed on this screen are configurable based on client requirements. 2. CSRs are added and normally immediately active, but this can be configured to be part of an enrollment process for CSRs themselves (Active/ Inactive/ Locked).
Notes:	Only Administrator CSRs have the ability to manage other CSR users.

Add Internal User Summary



Edit Internal User Profile

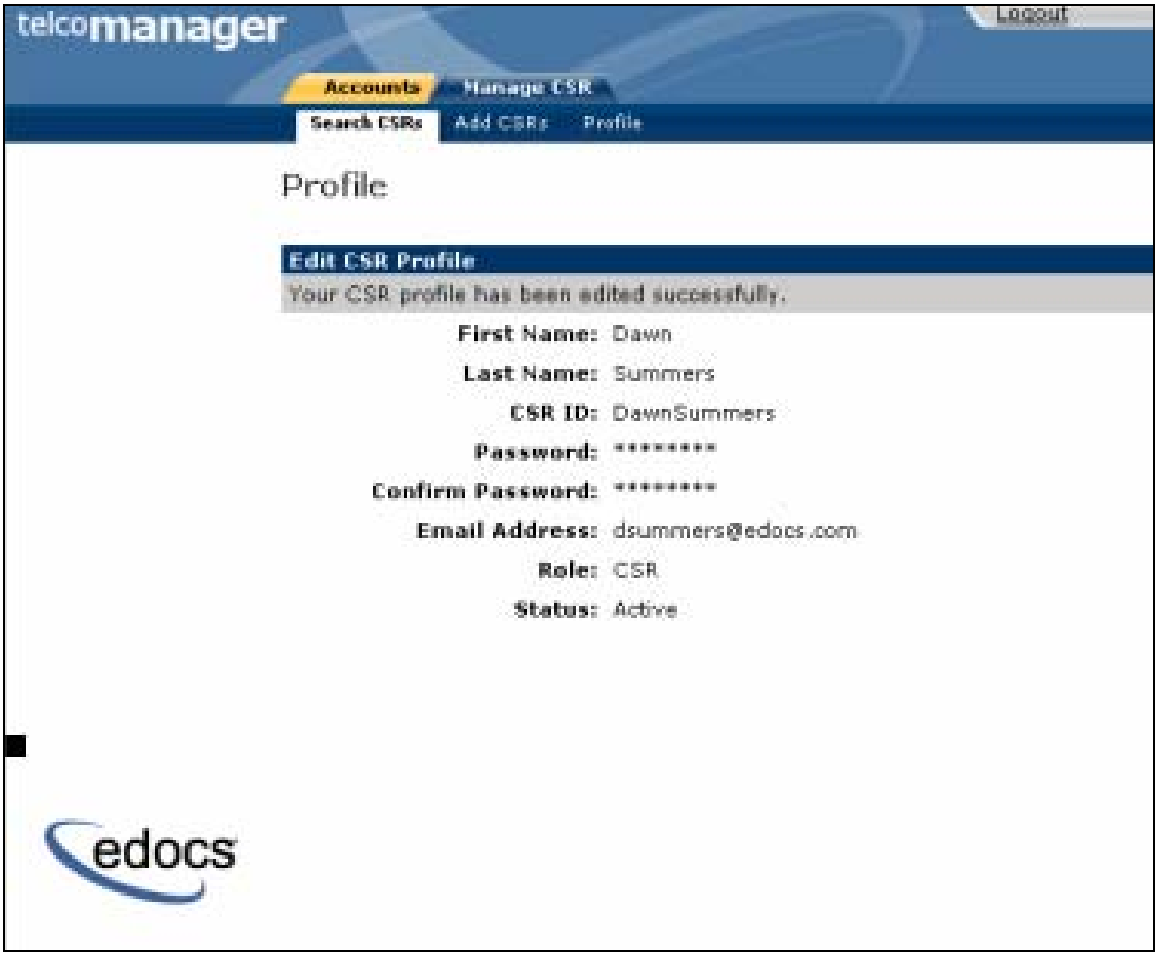


Name:	**Edit Internal Users Profile**
Brief Description:	A Customer Service Representative edits its own CSR profile.
Main Path:	This use case begins when a CSR chooses to edit its own Internal Users profile. User selects the edit function for their profile. Administrator CSR chooses to edit the selected details. a. First name b. Last name c. User ID d. Password e. email f. Role g. Status (Active/Inactive/Locked) Internal User enters information and submits the form.

	System validates the information and displays the updated profile of Internal User to the user.
Alternate Paths:	5a) System is unable to validate information 1. System prompts the user to review the information and does not accept the transaction.
Standard Features:	Form Validation
Configuration Points:	1. The fields that are displayed on this screen are configurable based on client requirements. 2. The user can only edit its own user profile.
Notes:	None

Edit Internal Users

Edit Internal Users Summary



Name:	**Edit Internal Users (CSR)**
Brief Description:	A Customer Service Representative Administrator edits other CSRs.
Main Path:	This use case begins when an administrator CSR chooses to Edit Internal Users. User selects the edit function for a chosen CSR user. Administrator CSR chooses to edit the selected user's details. a. First Name b. Last Name c. User ID d. Email Address e. Role f. Status g. Password h. Confirm Password

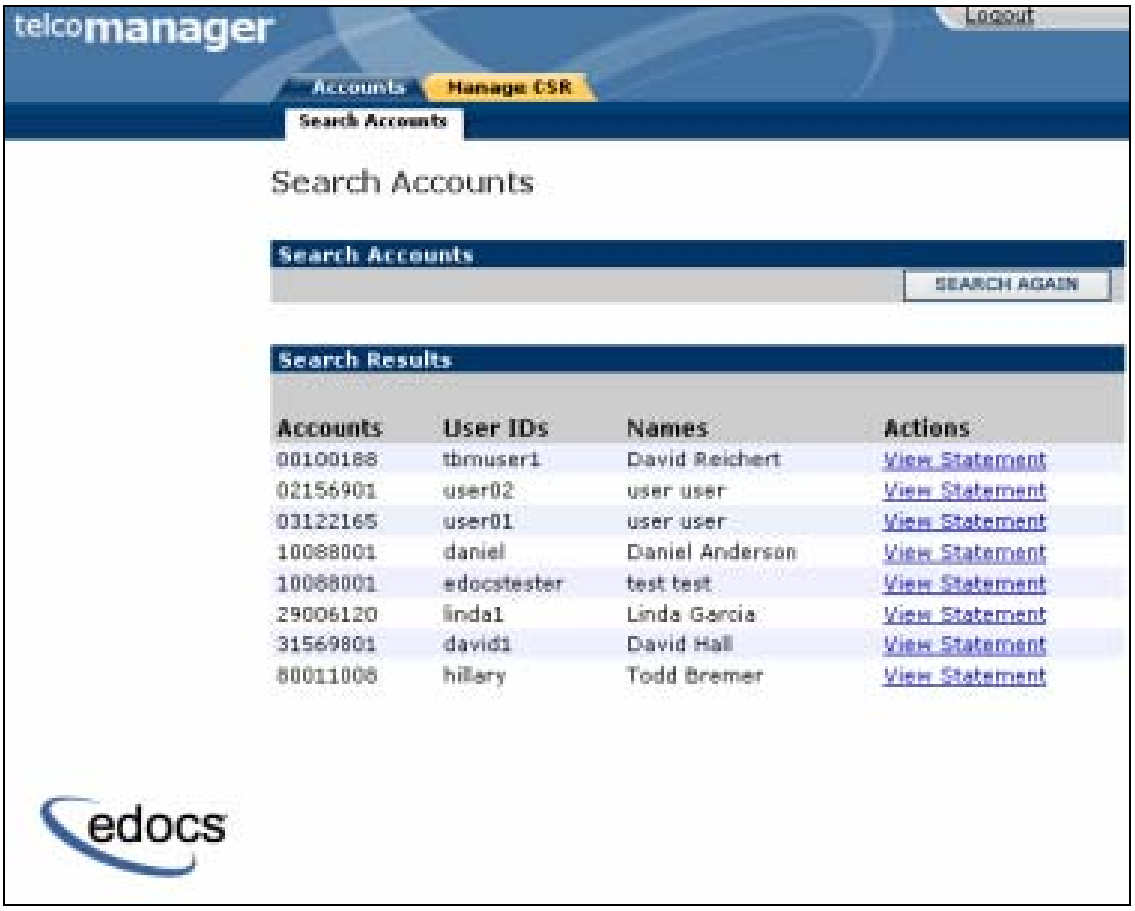
	Admin Internal User enters information and submits the form. System validates the information and displays the confirmation summary page.
Alternate Paths:	5a) System is unable to validate information 1. System prompts the user to review the information and does not accept the transaction.
Standard Features:	1. Reset Password **2.** Form Validation
Configuration Points:	1. The fields that are displayed on this screen are configurable based on client requirements.
Notes:	Only Administrator CSRs have the ability to manage other CSR users.

Search for an Account

Name:	**Search for an Account**
Brief Description:	Customer Service Representative searches for an account.

Primary Actor:	Customer Service Representative (CSR)
Main Path:	1. This use case begins when a Customer Service Representative wishes to find a user or account in order to view the account details. 2. System displays search screen. 3. User enters criteria and submits the form. 4. System displays a list of all matching accounts with links for the most recent statement for viewing. See appropriate use case. 5. User selects the Impersonate operation for a specific account. 6. System invokes the Impersonate User use case.
Alternate Paths:	4a) There are no matching accounts found for the given criteria. 1. System displays a message stating that there are no matching results.
Standard Features:	1. The following are core fields that are available for search: a. Username b. First Name c. Last Name d. Device Number e. Account Number f. Email Address 2. Partial entry plus wildcard * is possible for all fields options
Configuration Points:	1. The search form that is used by the CSR may be configured based on enrollment information. 2. Required fields must be configured.
Notes	

Search Account Results



Name:	**Search Account Results**
Brief Description:	Customer Service Representative views results from Search Account screen.
Primary Actor:	Customer Service Representative (CSR)
Main Path:	1. This use case begins when a Customer Service Representative submits a Search Account request. 2. System displays search results screen. 3. User selects to View Statement for a given account. 4. System displays the current statement to the user within the impersonation context.
Alternate Paths:	None
Standard Features:	None

Configuration Points:	None
Notes:	None

Impersonate User

Name:	**Impersonate User**
Brief Description:	A Customer service representative impersonates a user or views a specific account.
Primary Actor:	Customer service representative

Main Path:	1. This use case begins when a CSR selects an account and invokes the impersonate operation. 2. System displays the initial page for the selected user, while maintaining the existing CSR navigation menu. 3. The CSR navigates through the application as a consumer user. 4. CSR exits the impersonated user. 5. System ends impersonation session for the selected user and returns the CSR to the search screen.
Configuration Points:	1. The application can restrict access to customer specific functionality based on a business requirement.
Notes:	1. A CSR inherits the same rights and privileges as the user they are impersonating. 2. All activity logging for all CSR actions are logged for the CSR and not as the Customer.

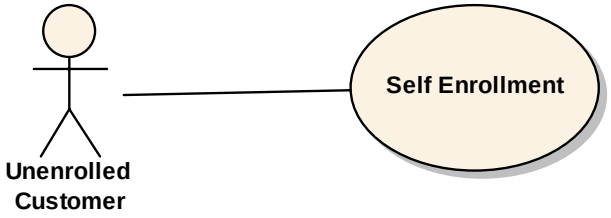
4 System Use Cases

4.1 Enrollment and Profile Use Cases

The following use cases describe functionality for enrollment:

User Self-Enrollment – Actor enrolls into application without help from a CSR.

SAF Secure Access Framework Use Cases – Default framework for user roles.



Self-Enrollment

Name:	**User Self Enrollment**
Brief Description:	User self-enrolls.
Primary Actor:	User type: Un-enrolled user.
Main Path:	1. System determines the user has not previously enrolled into the e-bill application and displays a *self-enrollment page*. 2. User enters enrollment information. 3. User submits the request. 4. System validates the request and displays *Enrollment Confirmation* screen with the message of the form "You are enrolling (…) …". 5. User clicks the "Confirm" button. 6. System displays a "Thank you" page of the form "You have successfully enrolled (…)...". 7. System stores the users enrolment information and updates the user profile with enrolment information. 8. System stores the users default role of Customer Viewer. 9. System displays the e-bill start page the Overview or Dashboard View of his or her account.
Alternate Paths:	5c) User did not enter required or invalid data.

	1. System displays the Enrollment page with an error message indicating the data in question. 8a) User wants to enroll for payment processing 1. User must enroll successfully and also self-enroll for payment separately.
Assumptions:	1. The user is enrolled into application.
Notes:	1. Enrollment is provided as an out of the box (OOTB) sample with the application. It is expected to be customized for deployment.

SAF Secure Access Framework Use Cases

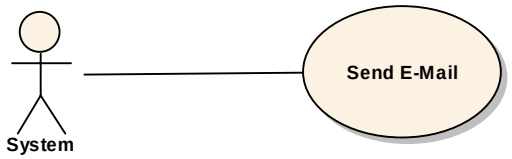
Name:	**Secure Access Framework**
Brief Description:	Default roles provided with the SAF framework.
Primary Actor:	User of type: enrolled user.
Main Path:	1. System stores the users enrollment information and updates the user profile including a set of default roles. a. Payer – Not used, but may be for some deployments b. User – Full access except CSR c. SuperAdmin – Full CSR access d. CSR – Full CSR access without the ability to create new CSRs 2. System stores the users default role of Customer Viewer. 3. System displays the e-bill start page the Overview or Dashboard View of his or her account.
Alternate Paths:	5c) User did not enter required or invalid data. 1. System displays the Enrollment page with an error message indicating the data in question. 8a) User wants to enroll for payment processing 1. User must enroll successfully and also self –enroll for payment separately. See Payment Section.
Assumptions:	1. The user is enrolled into application.
Notes:	1. Enrollment is provided as an out of the box (OOTB) sample with the application. It is expected to be customized for deployment.

4.2 Payment System Use Cases

Process Recurring Payment

Name:	**Process Recurring Payments**
Brief Description:	System schedules a recurring payment based on schedule of payments set up by the User
Actor(s):	System, User
Main Path:	1. This use case begins when, at the scheduled time, the System Scheduler identifies recurring payments that are to be processed on that day. 2. System retrieves a list of all accounts that have a recurring payment scheduled. 3. System verifies that information is valid. 4. System generates the payment file containing all recurring payments. 5. System triggers payment notification email event.
Alternative Paths:	1a) System is unable to process recurring payments: 1. System records the fault. 2. System alerts the system administrator via a job failure in the Command Center. 3. System places the scheduling job on hold. 4a) Payment amount exceeds specified payment threshold: 1. System does not process any recurring payments for those accounts that have exceeded a threshold limit. 2. System sends a threshold exceeded email message to customer including text that informs the customer that he/she must manually pay this month's bill. 3. System generates the payment file containing all valid recurring payments.
Standard Features:	1. Email notification for processed and failed payments
Configuration Points:	1. Business rules such as "no duplicate payments can be made in a given day" are configurable parameters.
Notes:	

4.3 E-Mail Notifications



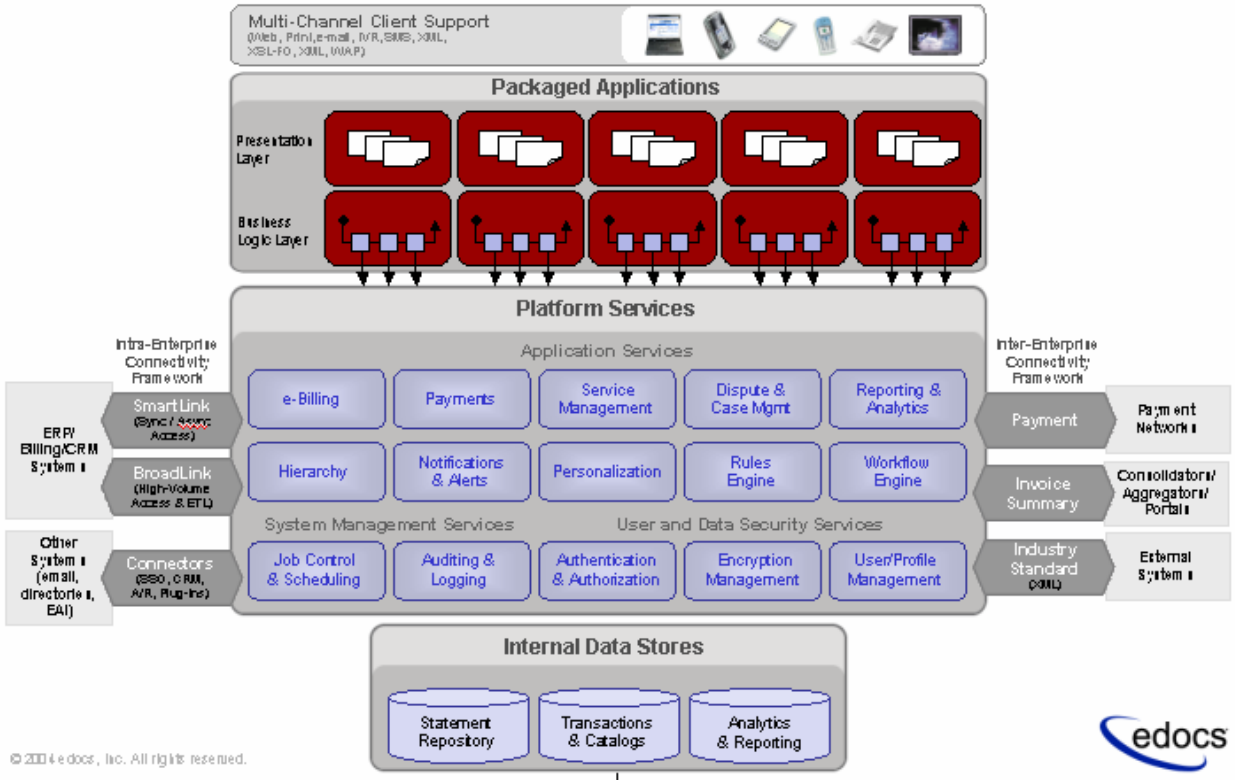
Name:	**Send system email notification**
Brief Description:	System sends email to notify User of a system event
Actor(s):	System
Trigger(s):	System detects an event that should result in an email to the User.
Alternative Paths:	1. This use case begins when a system notification event has occurred. 2. System generates email message based on one of the following triggering events: a. Bill Ready Notification b. Payment Due In Five Days c. Scheduled Payment Paid d. Payment Failed e. Credit Card Expiration Notice 3. System generates list of accounts that will receive email. 4. System generates a file that has the appropriate information. 5. System transfers the file to a location specified in the configuration of the file creation job. 6. The appropriate server processes and generates email file. 7. The server places the file in a location that is specified in the configuration of the email notification job. 8. System processes the file to generate email. 9. System sends email message to SMTP server.
Alternate Paths:	1a: System is unable to start job notification: 1. System updates the status of the job to “Failed”. 2a: Bill Ready Notification (Account & User Level) 1. Bill cycle is completed for billing accounts 2. System creates Bill Ready email 2e: Schedule Payment Paid (User Level) 1. A scheduled payment has been paid 2. System creates a Scheduled Payment Paid email 2f: Credit Card Expiration Notice (User Level) 1. The credit card expiration date has expired

	2. System creates a Credit Card Expiration Notice 4a: System is unable to generate the file 1. System updates the status of the job to “Failed”. 2. System logs the error and specific error code. 6a: The server is unable to generate the file 1. System updates the status of the job to “Failed”. 2. System logs the error and specific error code. 8a: System is unable to process the file to generate email 1. System updates the status of the job to “Failed”. 2. System logs the error and specific error code. 9a: Email server is unavailable 1. System updates the status of the job to “Failed”. 2. System logs the error and specific error code
Configuration Points:	1. All users with Pay permissions receive notifications (if applicable) a. Emails will be sent based on hierarchy level rollup 2. Manage notifications for emails will have Bill Ready and Payment Rejections selected by default.
Notes:	

5 External Interfaces

Overview of Integration Points

The following diagram illustrates the Communications Billing Manager's extensible, multi-channel architecture:



The external interfaces are shown eXtensible Multi-channel Architecture (XMA) diagram, above.

These components are customized through the configuration and generation of lower level components within a J2EE infrastructure, including JSP pages, HTML templates, JavaBeans, Struts action classes, Tiles, and Java-based batch processes.

The integration points, as shown in the System Context Diagram in Chapter 2, consist of:

- **Billing data files** – Generated by the billing system following the monthly billing cycle and transferred into an input directory on the IFS system.
- **Daily billing data files** – Generated by the A/R system on a daily basis to provide daily updates to customer accounts.
- **Payment data** – Generated by the system by a scheduled process and transferred to the payment processor.
- **Payment status data** – Generated by the payment processor and returned to the system.
- **A/R payments data** – Generated by the A/R system on processing customer payments.
- **A/R payments reconciliation file** – Generated by the system by a scheduled process and transferred to the A/R system.

Data Files

The Communications Billing Manager application can receive billing data in a variety of formats. The Siebel application can take print composition formats, raw billing table extracts and other well-structured legacy formats. This data is loaded into the Siebel application using a batch scheduling process that is configurable based on specified business rules.

ACH Files

Communications Billing Manager provides connections to payment networks. Real-time and batch interfaces to ACH, Credit Card, and proprietary networks using a cartridge based approach yields complete payment flexibility.

A/R Files

Communications Billing Manager integrates with your existing infrastructure, updating accounts receivable systems with remittance information, and supports reconciliation processes. Communications Billing Manager includes XML-based API’s for integration into backend systems.

New Standards and Best Practices

Java 2 Enterprise Edition (J2EE) has become a standard platform for developing enterprise-class web-based solutions. It is well-suited for internet-based applications because it provides many of the underlying services such as the Java Servlet API (for servicing HTTP requests), EJB (for transaction processing), and Java Message Service (for messaging) among others.

J2EE is a more mature and robust technology and is complex. Internet application developers would fail to realize the many benefits promised by J2EE (such as reusability, extensibility, flexibility, scalability etc.) without having a solid understanding of the corresponding technology, and more importantly, a viable application framework upon which the solution is developed.

Siebel Communications Billing Manager Architecture is the foundation upon which applications may exploit the J2EE design and development best practices.

One of the guiding principles for the Communications Billing Manager Architecture for web-based application is Jakarta Struts. Its architecture and its application to the Siebel suite of products are based on the MVC design pattern. It is a framework by which integrators may deploy web-based application at record speed, with greater re-usability and extensibility, better quality, and better performance.

References

Here are several sources of additional information on the technologies used in the Communications Billing Manager framework:

- The Jakarta Struts web site: http://jakarta.apache.org/struts/
- An article on using Struts1.1 features:

  http://www.onjava.com/pub/a/onjava/2002/10/30/jakarta.html?page=1
- The book *Programming Jakarta Struts* by Chuck Cavaness
- An article explaining the synchronizer token concept:

  http://www.javaworld.com/javaworld/javatips/jw-javatip136.html
- Four-part tutorial on Tiles:

  http://www.onjava.com/pub/a/onjava/excerpt/progjakstruts_14/index1.html

  http://www.onjava.com/pub/a/onjava/excerpt/progjakstruts_14/index2.html

  http://www.onjava.com/pub/a/onjava/excerpt/progjakstruts_14/index3.html

  http://www.onjava.com/pub/a/onjava/excerpt/progjakstruts_14/index4.html
- Log4j Web Site: http://jakarta.apache.org/log4j/docs/index.html
- Core J2EE Patterns: *Best Practices and Design Strategies* by Deepak Alur, John Crupi, Dan Malks

Background

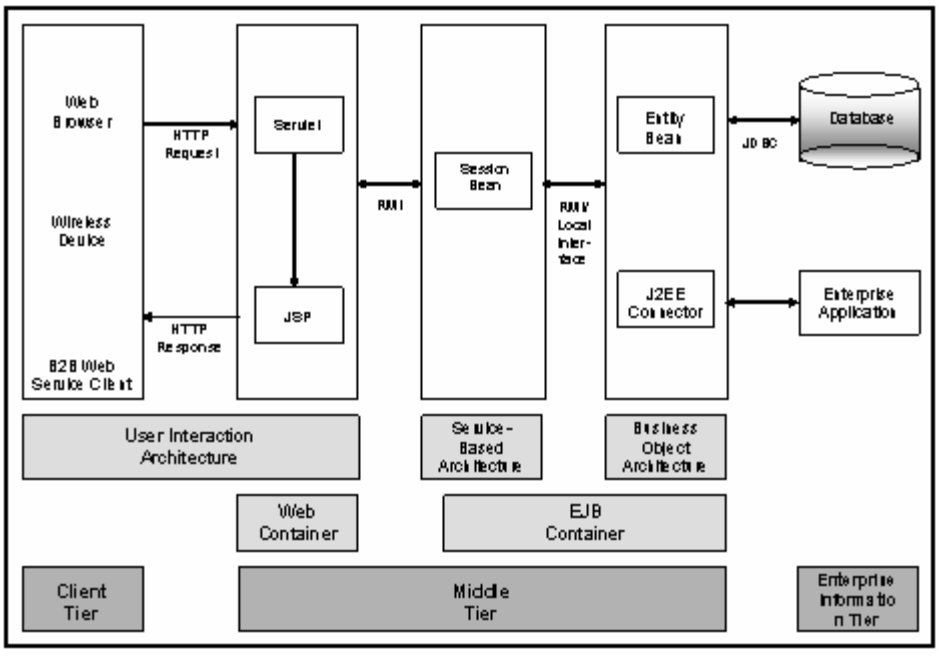
Many web-based applications today, especially those based on J2EE, can be described in terms of their tiers. The application's functionality is separated across these tiers, to provide separation of responsibility and to promote reusability, maintainability, improved scalability and many other benefits.

A brief overview of the J2EE architecture with its multi-tiered components gives the reader a basic understanding of the technology and also describes how the struts components map onto the J2EE application framework.

The J2EE Platform

The J2EE platform provides a component-based approach to implement a multi-tiered software architecture. The components that make up the architecture are executed in run-time environment called containers. Containers are used to provide infrastructure-type services such as memory management, transaction management, security etc. In a web-based environment, the majority of the software resides in two containers, the Web container and the EJB container, running inside of the application server.

The J2EE components are divided into 3 tiers as shown below:



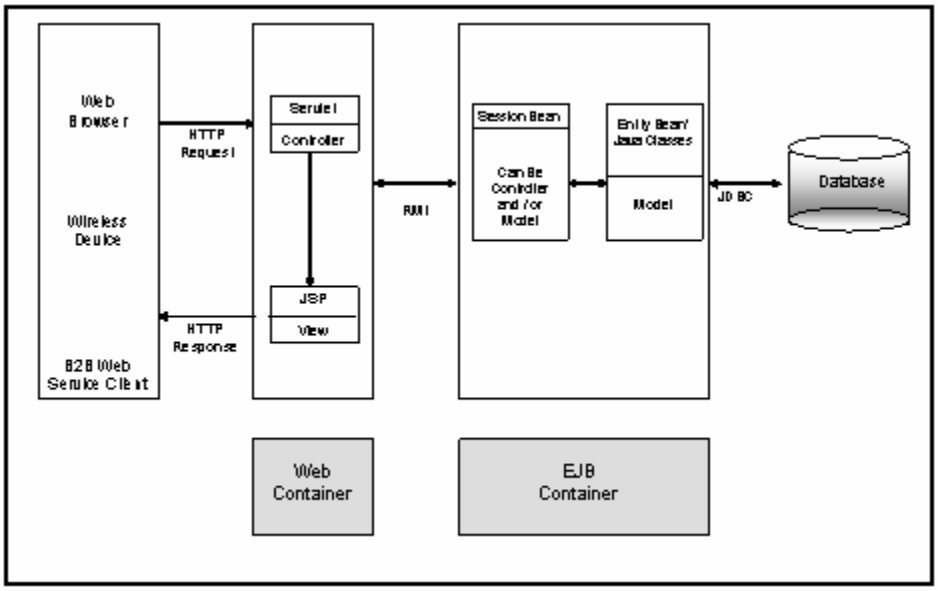
The function of the Web container is to process client requests and generate responses, while the function of the EJB container is to implement the business logic of the application.

The Model-View-Controller Approach

The Model 2 architecture is based on the Model-View-Controller design pattern. MVC is the cornerstone of web-based application development best practices. The patterns are defined as follows:

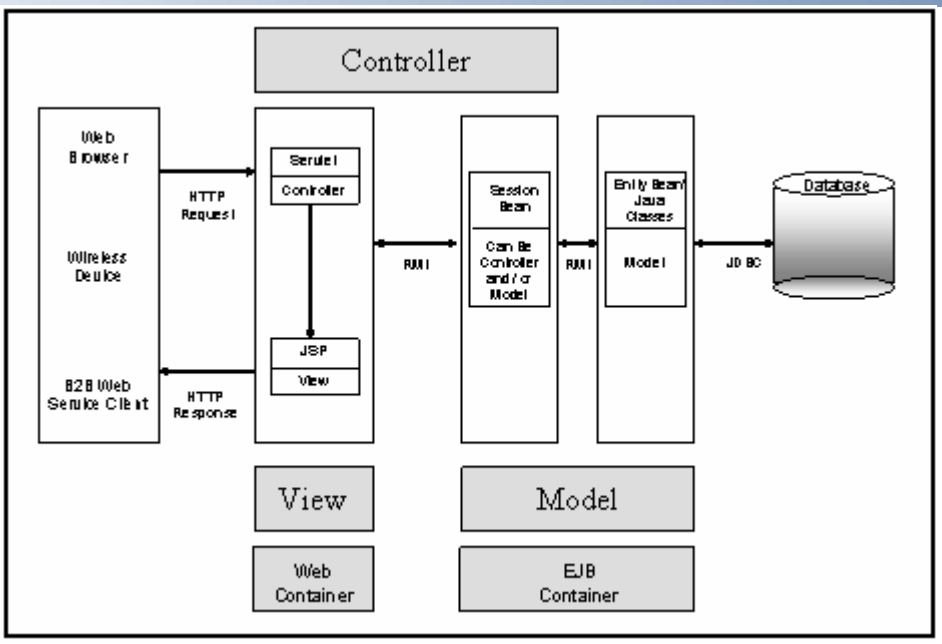
- **View**: The screen presented to the users
- **Controller**: The component that controls the flow and processing of user actions
- **Model**: The application business logic components

The figure below shows a complete picture of how objects in the MVC framework are mapped to the J2EE architecture:



It is important to note that MVC is only a software pattern and does not restrict where components live within the architecture. There are a number of variations of how the MVC pattern can be applied to web-based applications. As can be seen in the figure above, the Controller component can have different functions on the different tiers. A controller component in the Web tier can be used for processing HTTP requests such as form submissions and navigation links. Controller components on the EJB tier can control the flow of the application functionality.

Figure below shows one variation of the MVC pattern in a web-based application:



The Communications Billing Manager framework enables speedy deployment of web applications using the Siebel product line. Communications Billing Manager has been developed using the Jakarta Struts and Tiles frameworks.