COMVERSE

ComverseONE™

3.5 RT TR2.0

Voucher and Recharge Guide

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Notice

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Revision History

The following table lists the document changes since the initial publication:

Date	Chapter	Description
10/15/2010		Published the 3.5.50 Version
04/29/2011		Published the 3.5 RT TR1.0 Version. For information, see "New Features for This Release," on page 3.
10/04/2011		Published the 3.5 RT TR2.0 Version. For information, see "New Features for This Release," on page 3.

Contents

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Notational Conventions

Useful information appears in this format.

Provides direction to important information

Important information appears in this format.

Indicates possible risk of damage to data, software, or hardware.

Indicates serious risk of damage to data, software, or hardware.

Table 1 Notational Conventions

Notation	Explanation of Convention
References to printed documents	*Helvetica italic* **Example:** See *Database Reference Volume 2*.
<KEYS>	UPPERCASE HELVETICA, in angle brackets **Example:** Press <CTRL><Q><SHIFT><P> to create an em dash.
`User-entered text`	**`Courier bold`** **Example:** Enter **`Total Charges`** in the field.
`Placeholders for user-determined text`	*`Courier italic`*, in angle brackets **Example:** Enter your *<password>*.
`Code samples, TABLE_NAMES, field_names, file and directory names, file contents, user names, passwords, UNIX ENVIRONMENT_VARIABLES`	`Courier`
Placeholders for system-generated text	*Helvetica italic* **Example:** Messages appear in this form: *timestamp messageID >> text.*
Buttons, Icon Names, and Menu items	**Helvetica bold** **Example:** Choose **Reports** from the main menu.

Special Markers

The Comverse ONE Billing and Active Customer Management solution has the three derivatives shown in Table 2, "Labels in Markers." For user convenience, any content that is specifically included in a derivative is highlighted with special markers so that it can readily be distinguished.

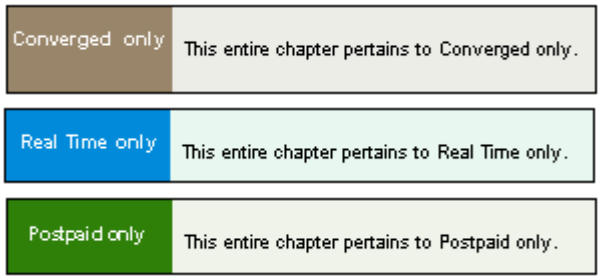
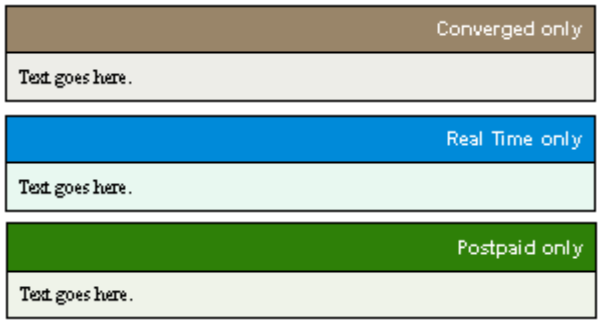
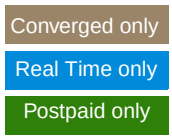
Table 2 Labels in Markers

Derivative	Label Shown in Markers
Comverse ONE Converged Billing derivative	**Converged only**
Comverse ONE Real-Time Charging derivative	**Real Time only**
Comverse ONE Postpaid Billing derivative	**Postpaid only**

Each derivative has a set of three color-coded markers, as shown in Table 3, "Types of Markers." The markers are used individually or in combination to highlight derivative-specific content by:

- Entire chapters
- Selected portions of chapters
- Tables, either entire or partial

Table 3 Types of Markers

Marker	Example	Description
Alert		■ Placed at the beginning of an entire chapter that pertains only to a specific derivative. ■ Placed just before a table that partially or entirely pertains only to a specific derivative.
Block		A shaded box that encloses sections of documentation that pertain only to a specific derivative.
Flag		■ Designates a shaded table row whose contents pertain only to a specific derivative. ■ In a bulleted list, designates an item that pertains only to a specific derivative.

Comverse ONE Documentation List

this is a comprehensive list. As such, it may include documentation for products which you have not licensed.

The documents described below reference the Comverse ONE solution products. All documentation available with the Comverse ONE solution is described in the following pages, organized by the following categories:

- Infrastructure Domain
- Rating, Charging, and Promotions Domain
- Billing and Financials Domain (Converged only)
- Customer and Order Management Domain (Converged only)
- Mediation and Roaming Solutions Domain
- Self-Service Solutions Domain

Read the relevant Solution Description first to get an overview of *your* Comverse ONE solution. It gives an overview of the functionality in each product domain and also includes cross-references to the user documentation that provides more detailed information about the functionality.
There are three such documents and they are listed under the Infrastructure Domain heading below.

- Converged *Billing & Active Customer Management Solution Description*
- Postpaid *Billing & Active Customer Management Solution Description*
- Real-Time *Billing & Active Customer Management Solution Description*

Infrastructure Domain

Download every document in the Infrastructure domain if you purchase the Comverse ONE solution. Documentation for this domain includes the following (in alphabetical order):

- *Alarms Reference*
  Contains tables of alarm IDs, descriptions, likely causes, and recommended resolutions for systems and components.
- *Back Office Administration GUI Guide*
  Provides information about the BackOffice subsystems for Inventory Administration, Address Management and Bulk Operations.
- Converged *Billing & Active Customer Management Solution Description*
  General overview of the Comverse ONE Converged Offer and the functionality available in each domain.

- *Database Failure Recovery - Monetary Loss Scenarios*
  This document outlines the potential monetary loss scenarios in case of a Comverse ONE database failure that may have caused data loss. The document provides awareness of such loss potential. While guidance may be provided for possible recovery of such losses, this document is not intended to be a monetary loss recovery guide, because such recovery may not be possible due to permanent data loss in a database failure, file system failure or total disaster scenario.
- *Database Failure Recovery - Database Synchronization Guide*
  This document outlines and implements the application-level synchronization procedures in case of a Comverse ONE database failure that has caused data integrity and/or synchronization issues among the different database instances.
- *Database Reference*
  Describes all database tables and fields in detail.
- *Disaster Recovery Operations Guide* (Optional Module)
  The Disaster Recovery Operations Guide serves as both a technical overview of the optional Disaster Recovery solution and as a guide which details the operational procedures for failover, switchover and switchback provided by the solution.
- *Glossary*
  Provides a list of terms used specifically for the Comverse ONE solution
- *Investigation Units and Financial GUIs Guide*
  Describes the GUI-based tools used for investigating and troubleshooting various financials related processes: payments, bill invoices, refunds, and incomplete data work entries
- *Operation Reference*
  Describes the processes in the Comverse ONE solution.
- *Platform Operations Guide*
  Describes the back-end operations and maintenance functionality of the core Comverse ONE solution components. Includes AIX/HACMP platform and cluster operations, Linux/Veritas platform and cluster operations, backup/recovery, shared storage and fiber switch operations, and tape backup operations.
- Postpaid *Billing & Active Customer Management Description*
  General overview of the Comverse ONE Postpaid Offer and the functionality available in each domain.
- *Product Catalog Overview*
  Provides a high-level description of the Comverse ONE solution Product Catalog, which is the primary mechanism for creating, configuring, managing, and propagating Product Catalog versions.
- *Product Catalog User Guide*
  Instructions on using the Product Catalog application to define and manage all aspects of Service provisioning.
- Real-Time *Billing & Active Customer Management Description*
  General overview of the Comverse ONE Real-Time Offer and the functionality available in each domain.
- *Schedulable Entity Reference Manual*
  Documents all the jobs, monitors, and workflows, for each component.
- *Security Platform Operations Guide*
  Technical overview of the security platform and information on how to provision and administer the platform.
- *Security Server API Guide*
  Provides an overview of the interfaces exposed by the Java-based Security SDK API, which client applications can leverage to access various security services, such as authentication, authorization, auditing, key management, and credentials management. Also provides

information on the Security Web Services API, which provides interfaces to a subset of Security Server commands (Identity Management commands).

- *Signaling Gateway Unit Guide*
  Describes the hardware, installation, configuration, and maintenance of the Signaling Gateway Unit (SGU) used to connect Comverse real-time systems to the SS7 signaling network using either traditional SS7 protocols or Sigtran (SS7 over IP).
- *System Measurements Guide*
  The Comverse ONE Solution automatically collects statistical data from the Service Logic Unit (SLU) and the Service Gateway Unit (SGU). This includes service statistics on the SLF layer and platform data on the IPF layer.
  This guide describes the format and location of this measurement information and provides a description of the meaning of the data.The measurement data can be used to create reports. It can also be imported into other applications (such as Excel) to be viewed.
- *System Parameters Guide*
  Describes the various system parameters used in Comverse ONE.
- *System Validation Check Reference*
  Details all the system validation checks performed by the Comverse ONE Unified Platform on its components.
- *Unified API Guide*
  General overview of the Unified API, a brief description of its architecture, and information about:
  - Framework classes and the functionality they provide
  - Two standard interfaces provided with the Unified API (client SDK and web services)
  - A subset of Unified API business methods most commonly used
- *Unified Platform Guide*
  Technical overview of the Unified Platform and information on the procedures to manage core systems operations in the Comverse ONE solution.

Rating, Charging, and Promotions Domain

Documentation for this domain includes the following (in alphabetical order):

- *Bulk Provisioning Guide*
  - The *CC Batch* utility enables bulk creation of recharge vouchers and subscribers.
  - The *Bulk Provisioning* Utility enables bulk creation of anonymous accounts to support the pre-activation of pre-paid SIM cards.
- *Charging Interfaces Guide*
  Describes the four interfaces that enable external services to support real-time authorization, rating, and charging for transactional usage: (1) the Event Charging Interface, a simple TCP/IP-based interface, (2) Open Services Access (OSA), (3) a Diameter-based interface version enhanced to take advantage of features of the Comverse ONE solution, and (4) a Diameter-based interface packet-switched version.
- *Customer Care Client Provisioning Guide* — Real-Time
  Detailed task-oriented instructions for using Customer Care Client.
- *Diameter Gateway Unit Guide*
  Describes the hardware, installation, configuration and maintenance of the Diameter Gateway Unit (DGU) used to connect Comverse real-time systems to external services, using the diameter protocol over IP.
- *IVR Call Flows Reference*
  These call flows detail the logic flow of specific scenarios. Multiple access numbers can map

to the same call flow. Different resellers have the option to publish different numbers but share the same logic.

- *Network Interfaces and Notifications Guide*
  Describes the operation, features, and provisioning of notifications, CAMEL-enabled services, and USSD-enabled services.
- *Network Self-Care Guide*
  Describes the configuration, structure, and features.
- *Operational Reports and Data Warehouse Utility Guide*
  Describes the real-time Operational Reports Interface (ORI) and the Data Warehouse Extract Utility.
- *Rating Technical Reference*
  Describes the Unified Rating Engine, which is the subsystem responsible for gathering incoming CDRs and processing them for billing.
- *Recurring–Non-Recurring Charges Server Guide*
  Describes all processes commonly available through the Recurring —Non-Recurring Charges Server.
- *Voucher and Recharge Guide*
  Describes the process by which subscribers add funds to accounts using recharge vouchers through IVR, interaction with Customer Service, and other methods. Provides details of the Recharge Control Table, which allows resellers to provision the effects of recharges so that bonuses, discounts, and other changes to offers can result from a successful recharge. Also describes the Card Generator software used to create batches of recharge vouchers.

Billing and Financials Domain (*Converged* only)

Documentation for this domain includes the following (in alphabetical order):

- *Advanced Invoice Numbering Guide*
  Describes how to configure and use Advanced Invoice Numbering.
- *Billing Reports and File Layouts User Guide*
  Describes control reports and other file formats.
- *Billing Technical Reference*
  High-level descriptions of billing architecture, administration, bill generation and formatting, and system parameters
- *Collections Guide*
  Contains information on configuring Collections database tables, running the Collections module, and using the Collections interface.
- *Invoice Designer Strings and Filters Reference*
  Describes the static strings, dynamic strings, and filters in the Invoice Designer.
- *Invoice Designer Technical Reference*
  Describes how to configure and run Invoice Designer.
- *Invoice Designer User Guide*
  Describes the Invoice Designer and how to perform the tasks needed to create an invoice template.
- *Journals Guide*
  Describes the theory, configuration, and running of Journals processes.
- *Miscellaneous Configurable Entities*
  Instructions for configuring late fees, adjustments, and several other database entities used in postpaid and converged billing.

- *Process Workflow Orchestration Guide*
  Describes the command-line entries and the default queries for running billing-related processes via the Unified Platform.
- *Taxation Guide*
  Describes the configuration, operation, structure, and features of Taxation.

Customer and Order Management Domain (*Converged* only)

Documentation for this domain includes the following (in alphabetical order):

- *Application Integrator Operator Guide*

  Describes the commands that operate the Application Integrator at creation and runtime.
- *Application Integrator System Administrator Guide*

  Outlines installation, sizing, operation, and administration of the Application Integrator and logging. Describes configuration of the user environment and commands for creation and operation of the Application Integrator.
- *Application Integrator User Guide*

  Describes creating integration specifications, creating instances of the Application Integrator, and commands for operation of the Application Integrator. Provides a complete user guide for the iMaker compiler.
- *Application Integrator File Adapter User Guide*

  Describes the configuration process and rules for the file adapter.
- *Customer Center User Guide*
  Detailed task-oriented instructions for using Customer Center.
- *Inventory Guide*
  Describes the configuration, operation, structure, and features of Inventory.
- *Inventory Replenishment Guide*
  Describes the operation, structure, and features of Inventory Replenishment.
- *Orders Services Guide*
  Describes the structure and features of Orders Services.
- *Request Handling and Tracking and Service Fulfillment User Guide*
  Describes the configuration, operation, structure and features of Request Handling and Tracking and Service Fulfillment.
- *Workflow Developers Guide*
  Helps new users understand the rules-based business process management system so users can create solutions and integrate Workpoint within those solutions.
- *Workflow User Guide*
  Describes the configuration, operation, structure, and features of Workpoint.

Customer Relationship Management

- *Campaign Management Data Mapping Reference*
  Describes how the data in DataMart is mapped to information in the Comverse ONE Customer database, the Comverse ONE ODS, and the Comverse ONE Sales and Service database.
- *Campaign Management DataMart Implementation Guide*
  Contains in-depth technical information on how to configure and populate the data mart used by all Campaign Management applications.
- *Campaign Management Outbound Marketing Manager Reference*
  Describes how to use the Campaign Management Outbound Marketing Manager features and guides you through the program's basic functionality.
- *Campaign Management Quick Implementation Guide*
  Helps novice users get started with implementing Campaign Management. It contains an overview of the product architecture, information on data mart design and creation, an explanation of how extraction works, and procedures for creating web pages, reports, lists, and campaigns.
- *Campaign Management Topic Implementation Guide*
  Provides information for implementers and professional services personnel who are creating applications that will run on an Campaign Management EpiCenter. Summarizes the Campaign Management functionality, architecture, and administration and contains in-depth technical information for configuring the Campaign Management topics required for Campaign Management and analysis.
- *Campaign Management User Guide*
  Provides you with basic information about the Campaign Management applications.
- *Case Management User and Administration Guide*
  Contains detailed information about GUI screens and form fields that appear in the Case Management application. Also provides information on performing general procedures in the GUI and administrative tasks.
- *Customer Center User Guide*
  Detailed task-oriented instructions for using Customer Center.
- *Sales and Service Admin Console User Guide*
  Provides supervisors, managers, and executives with the information to use the Case Management and Sales Force Automation Admin Console application.
- *Sales and Service Application Reference*
  Contains technical reference information relevant to implementers involved in implementing and customizing CRM applications at customer sites. This book provides the reference context for the procedural information available in the Implementation Guide.
- *Sales and Service Architecture Reference*
  Provides technical information relevant to individuals involved in implementing the Open Architecture and the applications built on the architecture
- *Sales and Service Data Dictionary Reference*
  Includes a listing and description of the tables and columns used to store CRM operational business data. It also includes a description of the naming conventions for the tables. The target audience includes database administrators, application developers, and implementers.
- *Sales and Service Dialog Designer User Guide*
  Describes the Sales & Service Dialog Designer, a web-based graphical application for defining and editing dialogs. Includes procedures for using it.
- *Sales and Service IBR Designer User Guide*
  Describes how to use the IBR Designer to create Intelligent Business Rules, which can be used to implement rule-based behavior within your CRM applications.

- *Sales and Service Implementation Guide*
  Provides procedural information relevant to individuals involved in implementing and customizing the core and the Sales and Service applications built on the core.
- *Sales and Service Integration Guide*
  Provides overview and configuration information for the set of tools used to exchange data with a variety of back-end data sources, including generic SQL sources, Java and EJB-based sources, Web services, and other database types.
- *Sales and Service Workflow Designer*
  Explains how to use Workflow Designer, a web-based graphical tool for defining and editing workflows
- *Sales Force Automation User and Administration Guide*
  Contains detailed information about GUI screens and form fields that appear in the Sales Force Automation application. Also provides information on performing general procedures in the GUI and administrative tasks.

Mediation and Roaming Solutions Domain

Documentation for this domain is subdivided into Mediation/Roaming and Revenue Settlements.

Mediation and Roaming

Mediation and Roaming documentation includes the following (in alphabetical order):

- *API Guide*
  Provides the concepts and functions for the Collection Application Programming Interface (CAPI), Mediation API, and Socket-Based Transmission API.
- *Data Manager GUI Reference*
  Contains detailed information about GUI screens and form fields that appear in the Data Manager interface
- *GRID Mapping Language Developer Guide*
  Describes the mediation feature components, semantics, and general syntax of the GRID Mapping Language (GML).
- *Installation Guide for HP*
  Describes how to install and configure the application, components, and some third-party applications associated with the HP platform.
- *Installation Guide for HP Itanium*
  Describes how to install and configure the application, components, and some third-party applications associated with the HP Itanium platform.
- *Installation Guide for HP PA-RISC*
  Describes how to install and configure the application, components, and some third-party applications associated with the HP PA-RISC platform.
- *Installation Guide for IBM*
  Describes how to install and configure the application, components, and some third-party applications associated with the IBM platform.
- *Installation Guide for SUN*
  Describes how to install and configure the application, components, and some third-party applications associated with the SUN platform.
- *Mediation and Roaming User Guide*
  Provides information on how to use the GUI interface, including information on using the Data System Manager application pages.
- *Roaming Database Reference*
  Provides reference information on the Roaming database.

- *Roaming Setup Guide*
  Describes how to configure the Roaming Setup application pages. It also provides information on working with TAP, RAP, and CIBER statistics.
- *Scripts Guide*
  Provides information on script files, which contain additional instructions on functions for data collection and transmission.
- *System Manager GUI Reference*
  Contains detailed information about GUI screens and form fields that appear in the System Manager interface
- *Variable-Length GRID Guide*
  Provides information on how to configure the control files for variable-length GRID.

Revenue Settlements

Revenue Settlements documentation includes the following (in alphabetical order):

- *Comverse Revenue Settlements Billing System Adapter Guide*
  Describes the configuration, operation, and installation for the Billing System adapter.
- *Comverse Revenue Settlements Data Model Guide*
  Overview of data model entities (such as partners, accounts, revenue sharing, and rate schedules) and how to configure them in the database.
- *Comverse Revenue Settlements Database Reference*
  Detailed descriptions of fields and tables in the database.
- *Comverse Revenue Settlements Technical Reference*
  Instructions for installing and operating Revenue Settlements. Also contains processing descriptions.
- *Comverse Revenue Settlements User Guide*
  Instructions for using the Revenue Settlements GUI.

Self-Service Solutions Domain

The Comverse ONE Self-Service Solutions domain consists of the core products plus the optional separately licensed premium products. The core products consist of the following:

- Self-Service Solutions Platform
- Self-Service Solutions Applications

Self-Service Solutions Platform Documentation

The Self-Service Solutions Platform has a comprehensive set of documentation covering the installation, configuration, and use of our products. The documentation set is divided into the following categories:

- **Manuals**: These manuals cover installing and using the platform.
- **Reference**: These reference documents contain information about APIs, databases, configuration files, and so on. These documents are delivered in HTML.

Self-Service Solutions Platform Manuals

Self-Service Solutions Platform manuals include the following (in alphabetical order):

- *Self-Service Platform Administration Guide*
  Provides operations and maintenance instructions for Web applications using the Self-Service Solutions Platform.

- *Self-Service Platform Catalog Loader Reference*
  Provides information about the Catalog Loader, including a functional description as well as installation, configuration, and use instructions.
- *Self-Service Platform Communications Billing and Usage Reference*
  Provides detailed descriptions of the data models and structure of the Self-Service Solutions Platform Communications Billing and Usage (CBU) database.
- *Self-Service Platform Connectors Development Guide*
  Provides instructions for developing and customizing Connectors of the Self-Service Solutions Platform.
- *Self-Service Platform Core Module Development Guide*
  Provides instructions for configuring and developing features of the core module of the Self-Service Solutions Platform.
- *Self-Service Platform Customer Interaction Datastore Reference*
  Provides detailed descriptions of the data models and the structure of the Self-Service Solutions Platform Customer Interaction Datastore (CID).
- *Self-Service Platform Database Modules Development Guide*
  Provides instructions for configuring, customizing, and developing features of the database module of the Self-Service Solutions Platform.
- *Self-Service Platform Installation Guide*
  Provides installation and configuration instructions for the Self-Service Solutions Platform.
- *Self-Service Platform Services Guide*
  Provides instructions for configuring, customizing, and developing features that use the services provided by the Self-Service Solutions Platform.
- *Self-Service Platform Processors Development Guide*
  Provides instructions for developing and customizing Processors of the Self-Service Solutions Platform.
- *Self-Service Platform Reports Development Guide*
  Provides instructions for developing and customizing Reports of the Self-Service Solutions Platform.
- *Self-Service Platform Web Applications Development Guide*
  Provides instructions for configuring, developing, and deploying Web applications that use the Self-Service Solutions Platform.
- *Self-Service Solutions Overview Guide*
  Provides a high-level architectural and functional description of the Comverse ONE Self-Service Solutions. It also includes a detailed description of the concepts and development process to create and deploy Self-Service Solutions.

Self-Service Solutions Platform Reference

Self-Service Solutions Platform reference documentation includes the following (in alphabetical order):

- *Base Logic Manager Reference*
  Describes usage syntax and configuration files for the Base Logic Manager (BLM) APIs. These APIs are the core services of the Self-Service Solutions Platform.
- *CID2CBU Object Mapping Reference*
  Describes the default mapping of Customer Interaction Datastore (CID) and Communications Billing and Usage (CBU) objects.
- *Communications Billing and Usage Reference*
  Provides detailed descriptions of fields and tables in the Communications Billing and Usage (CBU) database.

- *Customer Interaction Datastore Reference*
  Provides detailed descriptions of fields and tables in the Customer Interaction Datastore (CID).
- *Integration Services Framework API Reference*
  Describes usage syntax of the set of APIs to program connectors and other components of the Intelligent Synchronization Framework (ISF).
- *Integration Services Framework Message Cache Reference*
  Provides detailed descriptions of fields and tables in the Intelligent Synchronization Framework (ISF) Message Cache.
- *Integration Services Framework Script API Reference*
  Describes usage syntax of the Intelligent Synchronization Framework (ISF) script APIs to program the ISF connectors.
- *JavaServer Page Framework for Internet Application API Reference*
  Describes usage syntax for the JavaServer Page Framework for Internet Application (JFN) APIs. These APIs are used to build JSPs using the JFN. This framework provides basic application functions and services as the foundation of user interfaces.
- *Logger Message Reference*
  Provides detailed descriptions of the Self-Service Solutions Platform log messages.
- *QRA API Reference*
  Describes usage syntax for the Query, Reporting, and Analysis (QRA) Engine APIs. These APIs are used to build reports.
- *UTIL API Reference*
  Describes usage syntax for the UTIL package used by different components of the Self-Service Solutions Platform. This package contains a set of utilities including the logger.

Self-Service Solutions Applications Documentation

Each Self-Service Solutions Application comes with a comprehensive set of documentation covering the installation, configuration, and use of the product. The application documentation expands and complements the Self-Service Solutions Platform documentation.

The documentation set is divided into the following categories:

- **Manuals**: These manuals cover installing and using the application.
- **Reference**: These reference documents contain information about APIs, databases, configuration files, and so on. These documents are delivered in HTML.

Self-Service Solutions Application Manuals

A full set of these manuals is available for each Self-Service Solutions Application (Business, Channel, Consumer, andCSR Portal). The documentation set includes the following (in alphabetical order):

- *Business Objects Model Reference*
  Provides a detailed description of the models and entities that make up the Self-Service Solutions Application.
- *Configuration and Development Guide*
  Provides instructions for configuring and developing Self-Service Solutions Application features.
- *Introduction*
  Provides a high-level architectural and functional description of the Self-Service Solutions Application. It covers common features, order management, account management, and bill presentment.

- *Feature Reference*
  Describes the logic and provides use cases for the functional domains of the application.
- *Out-of-the-Box Reference Guide*
  Describes the Self-Service Solutions Application Out-of-the-Box release.
- *Self-Service Installation Guide for Comverse ONE*
  Provides detailed installation, configuration, and deployment instructions for the Self-Service Solutions Application alongside other elements of the Comverse ONE solution.
- *Self-Service Installation and Deployment Guide*
  Provides detailed installation, configuration, and deployment instructions for the Self-Service Solutions Application.
- *User Guide*
  Provides instructions for navigating and using the Self-Service web application. For Business Self-Service and CSR Portal only.

Self-Service Solutions Application References

A full set of these references is available for each Self-Service Solutions Application.The reference documentation set includes the following (in alphabetical order):

- *API Reference*
  Describes usage syntax for the Self-Service Solutions Application APIs. These APIs are used to program the user interface and manage data.
- *Invoice Schema Reference*
  Describes the invoice schema reference of the Self-Service Solutions Application.
- *Presentation Layer Page Flow Reference*
  Describes the page flows of the Self-Service Solutions Application.
- *Specification Entity Relationship Diagrams*
  Provides diagrams describing the actors, use cases, user activity, and storyboard in IBM Rational Rose format.

Self-Service Solutions - Separately Licensed Products

Documentation available with optional, separately-licensed premium products in the Comverse Self-Service Solutions is listed below.

Online Catalog Manager

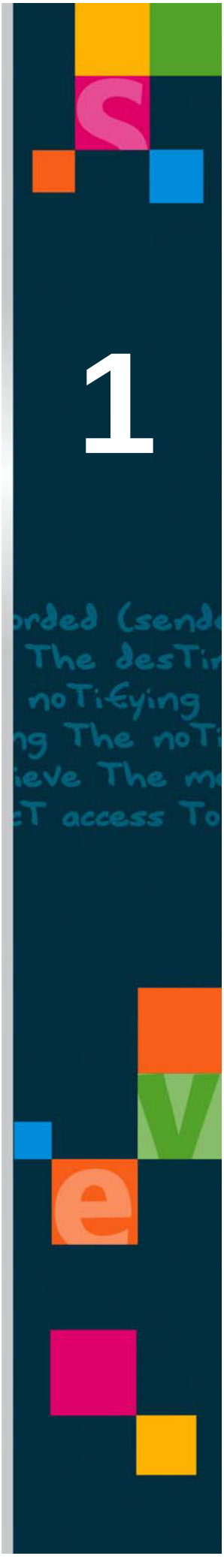
Online Catalog Manager (OCM) documentation includes the following (in alphabetical order):

- *Introduction to the Online Catalog Manager*
  Provides a high-level architectural and functional description of the Online Catalog Manager.
- *Online Catalog Manager Getting Started Guide*
  Describes the best way to build product catalogs in the Online Catalog Manager. This manual is a template for creating end-user documentation.
- *Online Catalog Manager Installation and Configuration Guide*
  Provides installation and configuration instructions for the Online Catalog Manager.
- *Online Catalog Manager User Documentation Template*
  Describes the use of the Online Catalog Manager. This manual is a template for creating end-user documentation. This manual covers many common concepts and procedures of the OCM.
- *Online Catalog Manager User Guide*
  Provides a detailed description of the concepts and use of the Online Catalog Manager. The topics include:

- Managing Media Files
- Managing Offers
- Managing Prices
- Managing Products
- Managing Properties
- Managing Reference Data
- Publishing

Chapter 1

Introduction



This chapter summarizes the contents of this document.

Welcome

Welcome to the *Voucher and Recharge Guide*, which describes the process by which subscribers add funds to accounts using recharge vouchers through IVR, interaction with Customer Service, and other methods. This document provides details of the Recharge Control Table, which allows resellers to provision the effects of recharges so that bonuses, discounts, and other changes to offers can result from a successful recharge. This document also describes the Card Generator software used to create batches of vouchers.

Who Should Use This Manual

This document is intended as a reference for individuals in the following types of groups:

- Comverse Deployment teams
- Comverse Support Personnel
- Network Operators
- System Integrators

New Features for This Release

This section provides list of changes to the Voucher and Recharge Guide. Changes include features that impact the Unified API Guide as well as corrections and improvements to the document. Changes are listed in reverse chronological order (the most recent release appears first).

Comverse ONE 3.5 RT TR2.0

The following is a list of new features in the Comverse 3.5 RT TR2.0 release that impact this document:

- Service Provider Support, which introduces market offer group. For information, see "IVR Recharge from Own Phone," on page 17, "IVR Recharge from Another Phone," on page 18, "Fast Recharge (Non-Interactive IVR)," on page 18, "Examples of Matching Criteria," on page 27, "Matching Criteria Tab," on page 40, "Entering Values on Page One of the Configuration Window," on page 64, "Creating a Batch of Vouchers," on page 81, "Batch Information Window," on page 87.

Comverse ONE 3.5 RT TR1.0

The following is a list of new features in the Comverse 3.5 RT TR1.0 release that impact this document:

- Support Calling Cards. Calling cards allow subscribers, via interactive voice response (IVR), the ability to make a prepaid call after dialing an access number and providing basic personal information such as card number and account number.

  For information, see "Recharge Control Table," on page 13 and "Creating a Batch of Vouchers," on page 81.
- Support Unified Cards. A unified card can be used either as (1) a recharge voucher (to replenish an existing subscriber account), or (2) as a calling card, allowing subscribers to make prepaid calls. Subscribers can use unified cards only if the `ENABLE_UNIFIED_CARD` system parameter is enabled.

For information, see "Creating a Batch of Vouchers," on page 81.

- Subscriber Notification on Primary Offer Swap. If configured in the Product Catalog, Comverse ONE sends a notification to a subscriber when the subscriber's primary offer changes. For information, see "Subscriber Notification on Primary Offer Swap," on page 12.

Comverse ONE 3.5.50

No Comverse ONE 3.5.50 features impact this document, but the following enhancements and corrections were made:

- Corrected information about expiration date calculations in "Core Balance Auto Extension," on page 10 and "Adding a New Grant," on page 10.
- Enhanced deleting batches procedures to include information about deleting exported expired batches. For information, see "Deleting Batches," on page 90.

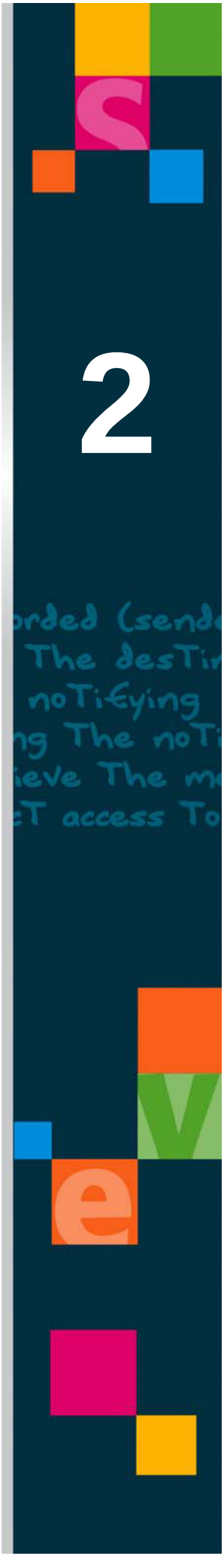
Organization of This Document

This document is organized as follows:

- Chapter 1, "Introduction," provides an introduction to this book.
- Chapter 2, "Recharging Overview," provides an overview of the entities and components involved in voucher recharging.
- Chapter 3, "Recharge Control Table," provides information about the Recharge Control Table, which modifies the behavior of a recharge.
- Chapter 4, "Recharge Control Table Provisioning,"provides the information you need to provision the Recharge Control Table.
- Chapter 5, "Card Generator Overview," introduces you to the card generator.
- Chapter 6, "Card Generator Configuration," provides instructions for installing the card generator.
- Chapter 7, "Using the Card Generator," provides instructions for using the card generator.

Chapter 2

Recharging Overview



Overview

Comverse ONE provides real-time rating, charging, and rewarding for subscribers and shadow subscribers. Subscribers must recharge regularly to put funds into their prepaid balances, as well as extend their balance expiration dates.

Recharging can be accomplished in several ways, most commonly through recharge vouchers. Comverse ONE supports the creation of recharge vouchers, generation of unique PINs, and maintenance and consumption of vouchers.

Voucher-based recharging of a prepaid balance is a simple process of contacting Comverse ONE (via IVR, USSD, Customer Care, Comverse ONE SV Self-Service, or other access methods) and entering the voucher number printed on the voucher. Comverse ONE verifies the identity of the subscriber and the validity of the voucher, then recharges the prepaid balances and marks the voucher as used to prevent fraudulent reuse.

Comverse ONE includes numerous concepts regarding the options that subscribers have and affect how funds from recharges are applied and distributed among prepaid balances, including:

- **Account Hierarchies**: Separate the concepts of subscriber and account: multiple subscriber accounts can exist under a single account. Subscribers can draw funds from their own balances as well as account-level balances.
- **Shadow Balances**: Enable multiple subscribers to share funds from a common account-level balance, with a limit on how much of the common balance each subscriber is permitted to use. Shadow balances act as pointers to real account-level balances.
- **Balance Grants**: Each balance grant awarded through a recharge has an expiration date tied to the balance expiration date. Grants awarded through promotions can have independent expiration dates.

In addition to recharge vouchers, Comverse ONE also supports unified cards. A unified card can be used either as (1) a recharge voucher (to replenish an existing subscriber account), or (2) as a calling card, allowing subscribers to make prepaid calls. Subscribers can use unified cards only if the `ENABLE_UNIFIED_CARD` system parameter is enabled. Throughout this chapter where there are references to recharge vouchers, vouchers, or recharge cards, the information applies also to unified cards when used as a recharge voucher.

Account Hierarchies, Offers, and Bundles

Accounts can be organized into hierarchies with other accounts, multiple subscribers, multiple offers, and one bundle residing under the main account. Accounts can have running balances and accumulators.

Accounts can have one subscriber, many subscribers, or no subscribers. The subscriber represents the point of service delivery. Subscribers can have one bundle and multiple offers. Subscribers can also have real-time balances and accumulators.

An offer is the most granular object that can be delivered to an account or subscriber. Every subscriber must have one (and only one) primary offer. In addition to primary offers, Comverse ONE supports supplementary and account-level offers.

Plans, terms, balances, and accumulators can all be grouped into offers. Each offer's balances are instantiated to the subscriber or account as prepaid balances.

Offers can be grouped into bundles. Bundles can be at the account level or at the subscriber level. Every subscriber bundle must contain a primary offer.

Balance Management

Balances can reside at the account or subscriber level and can represent real funds (monetary) or units (nonmonetary).

Subscriber-level balances are used for charges incurred by that subscriber, while account-level balances can be used for charges incurred by that account, by subscribers (who can be funded by shadow balances) associated to the account, or by other subscribers or accounts through liability redirection. Accounts do not have usage or usage plans, but they can have balances, promotion plans, and recurring or non-recurring charges.

Shadow Balances

Shadow balances are one way in which Comverse ONE supports charge redirection. By redirecting charges from a specific balance at the subscriber level to a different specific balance at the account level, shadow balances allow multiple subscribers to share a common source of funds.

A shadow balance can point to a real balance on any account in the subscriber's account hierarchy. However, for any subscriber, all shadow balances must point to real balances in the same target account. Rules set on the subscriber dictate the order that Comverse ONE follows for drawing from balances. These rules provide the following options:

- When shadow balances point to target balances within their direct parent account, the following configuration options are available:
  - Use real *and* shadow balances (default). Any usage/non-usage charge may use both real and shadow balances.
  - Use real *or* shadow balances, but try the real balance first. Each usage/non-usage charge may only use real balances, or shadow balances, but not both, with real balances being tried first. If the real balances are not sufficient for the charge, then use the shadow balances.
  - Use real *or* shadow balance, but try the shadow balance first. Each usage/non-usage charge may only use real balances, or shadow balances, but not both, with shadow balances being tried first. If the shadow balances are not sufficient for the charge, then use the real balances.
- When shadow balances point to target balances outside of their direct parent account, the following configuration options are available:
  - Use real or shadow *or* shadow balance, but try the real balance first (default). Each usage/non-usage charge may only use real balances, or shadow balances, but not both, with real balances being tried first. If the real balances are not sufficient for the charge, then use the shadow balances.
  - Use real *or* shadow balances, but try the shadow balance first. Each usage/non-usage charge may only use real balances, or shadow balances, but not both, with shadow balances being tried first. If the shadow balances are not sufficient for the charge, then use the real balances.

Balance sharing rules define which subscriber shadow balances must be redirected to actual balances at the account level.

Every shadow balance has a cyclically reset spending limit on the amount of the real balance that the subscriber can use. Authorized users can set limits on how much the shadow balances can draw from the account-level balance, using Comverse ONE SV Self-Service or with CSR assistance. Shadow balances cannot be directly recharged.

A family account provides an example of shadow balance relationships. Each family member has at least one associated shadow balance that draws from the family account-level real balance and each member's usage is, in this way, funded by the account.

The available amount of a shadow balance is the lesser of the available amount in either the subscriber balance, or in the target account balance.

Shadow Subscribers

A shadow subscriber is linked to real subscriber and does not have its own external IDs or inventory; instead, it shares the external IDs and inventory of a real subscriber. A shadow subscriber has its own primary offer, supplementary offers, and balances. Operators are limited to eight shadow subscribers per real subscriber, and each shadow subscriber can be associated with at most one real subscriber. Shadow subscribers allow usage to be charged to another account and rated by the offers on the other account. Comverse ONE provides the ability to recharge shadow subscriber balances. Also, each shadow subscriber can maintain calling circle membership independent of its real subscriber.

Balance Grants and Balance Expirations

Balance grants enable a single prepaid balance to consist of multiple pieces, and funds from a recharge are placed in these pieces via grants.

A prepaid balance can consist of zero or more grants. Each grant has multiple attributes, including a value, a start date and an end date. Grants can thus enable different pieces of the balance to expire on different dates.

Grants funded by initial activation, recurring charges, awards, and other sources can have several characteristics:

- **Balance-Based Expiration Dates**: Funds expire when the balance expires. When the balance expiration date is extended, the availability of any unused part of the grant is extended.
- **Independent Expiration Dates**: Funds expire on day X, even though the remainder of the balance expires on a later date.
- **Deferred Start Dates**: Funds are not available until a future date. Deferred grants always have a independent expiration date.

However, grants from recharges always have a balance-based expiration date and are always immediately available (no deferred start date).

The primary offer expiration method controls the core balance expiration date (which controls the subscriber expiration). Three expiration methods are supported:

- **Dynamic**: The core balance expiration date can be extended by usage, replenishment, recurring charges, and so on. This is the most common configuration for prepaid usage. Any core balance grant with Use Balance Expiration Date expires based on the core balance expiration date.
- **Fixed**: The core balance expires on a fixed date. This date can only be adjusted via direct manual intervention (by a CSR). No action within the system automatically affects this date. That is, a recharge does not extend the core balance expiration date. This configuration is rarely used
- **None**: For primary offers with expiration type of None, the core balance never expires.

Every prepaid balance, core or non-core, has a balance expiration date that is typically no earlier than the latest expiration date of all active grants within the balance.

The only exception is the core balance expiration date, when an Expiration Method of None is used. In this case, there is no balance expiration date.

In general, the expiration date of a dynamic balance (all non-core balances, and any core balance using dynamic expiration) is affected as new grants are awarded, and deferred grants become

active. When using dynamic expiration, recharging or chargeable usage also affects the core balance expiration date.

Core Balance Auto Extension

The core balance expiration date (which is also the subscriber expiration date) can be extended based upon recharge or chargeable usage. This is controlled by the primary offer attribute Auto Extension Control.

Auto Extension Control (Never Extend, Every Recharge or Billable Call, and Every Recharge) enables automatic extension of the core balance expiration date based on usage.

The following rule applies for updating a dynamic expiration core balance expiration date on recharge or chargeable usage:

- If the primary offer is configured as dynamic expiration, and Auto Extension Control is configured as Every Recharge or Billable Call, and the subscriber is active and performs a billable usage:
  - **If core balance is configured to Extend From Today:** New expiration date is the greater of [(Today + effective core offset) or (Today + 1) or (current Core expiration date)] or the Current expiration date, where:

    "effective core offset" = voucher face offset + recharge control table core offset.

    The extension of the core balance expiration date depends upon the state of the subscriber.

  - **If core balance is configured to Extend From Current Expiration Date**: New expiration date is the greater of [(Today + effective core offset) or (current Core expiration date + effective core offset) or (Today + 1)], where:

    "effective core offset" = voucher face offset + RCT Core offset.

    The extension of the core balance expiration date depends upon the state of the subscriber.

Grant Expiration Types

Every grant has an attribute to indicate if it uses the balance expiration date to determine its expiration, or if it has an independent expiration date.

- **Use Balance Expiration Date**: The expiration dates for these grants are tied to the balance expiration date, which enables extension of the expiration of these grants.
- **Use Independent Expiration Date**: The expiration dates for these grants are fixed, and the grants expire when the date has passed.

Adding a New Grant

Grants from recharges contain an amount and an expiration date for each balance affected.

For example, a recharge might specify “10 SMS to Balance_1, which expire on the balance expiration date, and extend the balance expiration date by three days.”

In this example, the grant amount is 10 SMSs to Balance_1, the grant expiration date is tied to the balance expiration date, and the expiration date offset is three days.

This translates into a grant to Balance_1 with a start date of today, a value of 10, and an end date of Use Balance Expiration. Because recharges are always defined as Use Balance Expiration Date, the expiration date offset can extend the balance expiration date, in this case, by three days.

The rules for updating a balance expiration date when a new grant is added are:

- When adding a grant to a non-core dynamic balance, recharges always use the balance expiration date, which can be extended in either of these ways:
  - **Extend From Today**: New expiration date is set to the greater of: [(Today + Effective Non-Core Offset) or (Current Non-Core Exp Date) or (Today +1)]

    where: "Effective Non Core Offset" = recharge control table non-core expiration offset.
  - **Extend From Current Expiration Date**: New expiration date is set to the greater of: [(Max(Today, Current Non-Core Exp Date) + Effective Non-Core Offset) OR (Today + 1)]

    where: "Effective Non Core Offset" = recharge control table non-core expiration offset
- When adding a grant to a core balance with an expiration method of None or Fixed there is no change to core balance expiration date.

Recharging

Subscribers replenish balances by recharging, which also usually extends balance and subscriber expiration dates. Both shadow subscribers and real subscribers can replenish balances by recharging. Recharge vouchers alone can only recharge the core balance in units of currency.

All recharges are processed through the Recharge Control Table, described in"Recharge Control Table," on page 13 and in Chapter 3, "Recharge Control Table."

Operators can configure the Recharge Control Table so that any, or all, prepaid balances can be recharged, whether the units of those balances are in currency, or in other kinds of units. Recharge Control Table row entries are searched for characteristics that match the characteristics of the recharge voucher that is used for the recharge. If no match is found, only the core balance is recharged, in units of currency.

To enable the recharging of shadow subscribers, the Product Catalog allows operators to assign an ID/name pair to a shadow subscriber. An operator can configure up to 20 ID/name pairs to be used to assign to shadow subscribers.

Operators have the ability to prevent subscribers from being able to manually override to a particular shadow subscriber. This is particularly useful for corporate account, where for example a company sets up a shadow subscriber for one of its employees. The company does not want to allow the employee to manually override charges to the company shadow subscriber. The account that owns the shadow subscriber owns the ability to turn the overriding ability to the shadow subscriber on and off.

Recharges to real subscribers are not applied to shadow balances.

Balances become unusable when the balance expiration date is reached. Subscribers normally extend the expiration date of prepaid balances by recharging.

The most basic recharge operation adds a currency amount to a balance, and extends the expiration date of the balance.

- The amount added to the balance is called the **Face Value**.
- The number of days by which the expiration date of the balance is extended is called the **Face Offset**.

For example, if a recharge adds $10 to the core balance, and extends the core balance expiration date by 30 days, we say the face value of the recharge is $10, and the face offset is 30 days.

When recharging using a voucher, the face value and face offset are properties of the voucher. These properties reside in a voucher database where all the vouchers are stored, which is an integral part of Comverse ONE. The recharge logic looks up the specific voucher, using the identifying number that is printed on the voucher and concealed under a scratch-off covering. For each voucher, additional information stored in the database includes the batch, serial number, currency, offset, reseller, and expiration date.

Comverse ONE also supports currency conversion in the recharge process. Thus, if the subscriber recharge request is in a different currency than the currency of his or her balances, Comverse ONE does the appropriate currency conversion before applying the recharge.

If a supplementary service had been previously disabled due to insufficient funds for the service's recurring charge (RC), then if a subsequent recharge adds sufficient funds to permit the RC, the supplementary service will be re-enabled.

Types of Recharges

Comverse ONE supports two recharge types:

- Voucher (using a recharge voucher)
- Non-voucher

Voucher recharges take the parameters of the recharge, including face value and face offset, from the voucher stored in the Comverse ONE database.

Non-voucher recharges are initiated and executed by external systems, using the Comverse ONE Unified API. The face value and face offset are passed as attributes of a Unified API call. The external system sends the recharge request, including the recharge amount, using this API.

Comverse ONE supports non-voucher recharges through Comverse ONE SV Self-Service and Customer Center only. Refer to the Customer Center User Guide and the Comverse ONE Self-Service Suite Feature Reference for detailed information on this functionality. Network operators can build applications to support non-voucher recharge using the Comverse ONE Unified API.

Subscriber Notification on Primary Offer Swap

In the Product Catalog, operators can configure offers such that the subscriber receives notification when a primary offer swap occurs as a result of a voucher or non-voucher recharge. Notification only occurs when the subscriber transitions *to* the offer that is configured for notification, as illustrated by the following examples:

- Offer A is configured for notification but offer B is not. The subscriber has offer A as the primary offer and the recharge causes the primary offer to transition from A to B. Comverse ONE does not send notification to the subscriber.
- Offer A is not configured for notification but offer B is. The subscriber has offer A as the primary offer and the recharge causes the primary offer to transition from A to B. Comverse ONE sends notification to the subscriber.

Notifications can be configured to be sent to home location register (HLR) or via short message service (SMS) and unstructured supplementary service data (USSD).

A primary offer swap can also occur for other reasons, such from a Unified API request, or as performed by a customer service representative. Further details are beyond the scope of this document.

Alarm Processing for Non-Voucher Recharges

When system errors occur during non-voucher recharge processing, the Unified API sends alarm information to the Unified Platform Manager (UPM) via a Unified Platform Agent (UPA). (For more information about UPAs and UPM, see the *Unified Platform Guide*.) System errors are errors that are not likely to be corrected by a resubmission of the voucher recharge. For example, an alarm is generated when no matching rows exist in the recharge control table.

The Unified API clears non-voucher recharge alarms, but how clearing happens depends on whether your installation is single-server architecture (SSA) or multi-server (MSA) architecture, as described in the two following sections.

Alarm Clearing in an SSA Installation

In an SSA installation, the Unified API clears the alarm after the next non-voucher recharge is successfully processed.

Alarm Clearing in an MSA Installation

Assume your installation has machines A and B. The alarm will be cleared after the next recharge successfully processed, but the alarm clearing flow depends on which machine receives the next request:

- **Machine A Receives the Next Request**: The Unified API sends an alarm clear message to the UPM.
- **Machine B Receives the Next Request**: No alarm clear request is sent until machine A successfully processes the next recharge request it receives.

Recharge alarm generation is controlled by the following properties in the `CCBSConfiguration.properties` file:

- `recharge.Alarm.Enabled`
- `recharge.Alarm.upaHost`
- `recharge.Alarm.upaPort`

For more information, see the *Platform Operations Guide*.

Recharge Control Table

In addition to the parameters either taken from the voucher or passed in through an API call, all recharges are processed through the Recharge Control Table (RCT), a powerful mechanism that enables the operator to modify or extend the effects of a recharge.

Recharge vouchers alone can only recharge the core balance; the Recharge Control Table can be configured to allow replenishment of any, or all, prepaid balances, of any unit type, by setting predefined amounts in the unit types for each balance. The RCT also enables the operator to provide differentiated recharge offers to different sets of subscribers and to provide special offers applicable only during certain periods. For example, it can enable the actual balance addition to be 110 percent of the face value during a special holiday week.

In addition to topping-up balances and extending expiration dates, RCT also enables recharges to:

- Change the subscriber's state (activate, reactivate, and so on).

- Swap the subscriber's primary offer.

If the PO_SWAP_NOTIF system parameter is enabled, and if the swap-to offer is configured for notification, then the subscriber receives an SMS notification of the primary offer change. For information, see "Subscriber Notification on Primary Offer Swap," on page 12.

- Add supplementary offers to the subscriber.
- Enable the subscriber to modify his Friends and Family configuration (when recharging with a voucher through the Comverse IVR unit).

Every recharge request is processed through the Recharge Control Table (RCT), whether it comes from the IVR, USSD, or Comverse ONE SV Self-Service, or is a non-voucher request coming from an external system and passed in through an API call.

In a voucher recharge, the system first locates the voucher in the voucher database, determines the applicable voucher data (for example, face value, face offset), and then processes the request through the RCT.

If a match is found between the characteristics of a specific recharge and an entry in the RCT, the RCT parameters adjust the effect of the recharge. If no match is found, the recharge is attempted without any RCT adjustments.

The matching criteria in RCT include date range, amount range, unit type (for example, currency, SMS), recharge method (for example, voucher, non-voucher, IVR recharge, CSR recharge), voucher batch, reseller, primary offer, and so on.

The outcome of RCT processing includes balance adjustments to one or more balances and to the corresponding expiration offsets. This can include:

- Changing the effective value of the recharge, so that, for example, a $5.00 recharge replenishes the balance by $6.00.
- Changing the effective balance expiration extension. For example, instead of extending the balance by 10 days, the balance is extended by 15 days.
- Distributing the recharge across multiple balances of multiple unit types. For example, a recharge with a face value of $30.00 replenishes the core balance with $25.00 and 100 SMSs to the SMS balance.
- Specifying which primary offers can be swapped for the subscribers current offer or which supplemental offers the subscriber can add.

Different subscribers recharging with the same amount can get different results, if different RCT criteria are met.

In systems where a single network operator supports multiple resellers, each reseller has its own Recharge Control Table.

A detailed discussion of the Recharge Control Table can be found in Chapter 3, "Recharge Control Table."

The Recharge Control Table is provisioned in Product Catalog. Refer to Chapter 4, "Recharge Control Table Provisioning" for step-by-step provisioning procedures.

Recharging Accounts

Because Comverse ONE supports both account-level and subscriber-level balances, recharging must support recharging account balances. Because not every account member can recharge their owning account (for example, in a corporate account only a few members have recharge

permission), a subscriber-level attribute indicates if a given subscriber can or cannot recharge the account. Shadow subscribers cannot recharge their accounts.

Account recharges can be performed via IVR and USSD, only by authorized members of the account. That is, the only account a subscriber can recharge is his owning account, and only a subscriber can recharge an account. Account recharges via Comverse ONE SV Self-Service and customer service representative assistance have different rules.

Recharging account balances is virtually identical to recharging subscriber balances except for the effect on account lifecycle. Accounts have a simpler lifecycle. A recharge cannot be used to modify an account's state.

An account has a billing state, and a rating state. A recharge does not affect either state. However, the rating state can affect the ability to perform a recharge on the account. That is, only accounts in an active rating state can be recharged.

When the target of a voucher or non-voucher recharge is an account balance, the recharge must be processed through the Recharge Control Table. If there is no matching RCT entry the recharge is rejected because (in the absence of a matching RCT entry) the face value and face offset of a recharge are always applied to the core balance. Accounts have no core balance. Only subscribers have core balances.

Recharge Vouchers

Recharge vouchers (also called recharge cards, scratch cards, or coupons) are the most popular way to recharge prepaid balances. A recharge voucher is a disposable card that subscribers buy to recharge their prepaid balances. Typically available in several denominations, recharge vouchers are made of cardboard, paper, or plastic, and are sold through various channels, such as gas stations, kiosks, vending machines, and airports. Normally, a graphic on the voucher promotes the service brand and appeals to target markets.

Every recharge voucher has a corresponding record in the Comverse ONE database containing the voucher's face value, face offset, and identifying number so that the voucher can be authenticated and its value applied to the subscriber's prepaid balance.

When a subscriber buys a recharge voucher, the money does not become available for use in Comverse ONE until the voucher is used. An identifying number printed on the voucher is revealed when the subscriber scratches off a protective covering.

In the case of a recharge performed through Interactive Voice Response (IVR), the subscriber calls a predefined access number and is prompted to enter the number from the voucher. Once the system verifies the number, the voucher's face value is added to the subscriber's balance. At that point, the voucher can be discarded, because the number on it cannot be used again.

Voucher records include the current state of the voucher, which is not the same as the account state. For example, a voucher can be Idle (not ready for use), Active (ready for use), or Used (already used to recharge a subscriber or an account) or any of several other states.

Using the Comverse ONE Unified API, network operators can build non-voucher recharge applications that allow subscribers to recharge (with Customer Care assistance) after prepaying in cash or with a credit or debit card.

Recharge Voucher Provisioning

Like subscriber records, recharge vouchers must be created, deleted, viewed, and modified. Typically, several million of these records exist in the system.

Comverse ONE provides Card Generator software for creating batches of encryption-protected recharge vouchers. The Card Generator software uses a non-repeating algorithm to generate random identifying numbers. The voucher generation process produces a file that can be delivered to the voucher manufacturer, and a file that can be read into the Comverse ONE voucher database, to enable tracking of voucher status through the voucher life cycle. Refer to Chapter 5, "Card Generator Overview," Chapter 6, "Card Generator Configuration," and Chapter 7, "Using the Card Generator," in this manual for details on the Card Generator and its provisioning.

Creating new recharge vouchers on the Comverse ONE Card Generator is only part of the voucher management process. The vouchers must also be physically printed and distributed so subscribers can buy them and use them to recharge their accounts. Additional voucher-related tasks must typically be performed by customer service representatives, including managing the voucher inventory, looking up specific vouchers, and modifying individual vouchers or groups of vouchers. For example, recharge vouchers must be activated (put in the Active state) before subscribers can use them.

Customer service representatives do not usually deal directly with recharge vouchers because they concentrate on the subscriber record. They do have an indirect interaction with the voucher database because they recharge on behalf of the subscriber. Also, every successful recharge appears as a record in the subscriber recharge history that points to the recharge voucher used.

Comverse ONE also provides limited fraud protection within its recharge function. When provisioning a primary offer, the operator sets a limit for the number of attempts a caller can make to enter a valid recharge voucher number, and sets a time limit in which these attempts occur. If the caller reaches the limit in attempts or time, the call is disconnected by the system.

Central Voucher Server

Comverse ONE provides the Central Voucher Server (CVS), which allows customers to purchase and use vouchers while roaming anywhere in the operator's area. The CVS resides on a stand-alone server, and as such can be upgraded independently of Comverse ONE upgrades, usually due to a change in the voucher schema.

All systems that use the CVS have access to all vouchers in it. ("System" refers to the various entities that can access the CVS, such as a real-time Service Data Point (SDP), or the Comverse ONE solution.)

The CVS allows subscribers in all systems using the same CVS to have access to all vouchers independent of the language of the service provider name on the voucher and the service provider name in the system that created the voucher.

The CVS allows various voucher attributes to be modified independently of each other. This permits various voucher load and modification scenarios, such as creating a voucher batch in idle state, then later modifying specific information on each voucher. The following fields can be modified: order number, expiration date, ship date, state and distributor.

Recharge Access Methods

Comverse ONE supports the traditional method of recharging by voucher. The subscriber purchases a voucher and applies the credit to his or her account via the recharge process. The subscriber can make the recharge request via the following recharge methods:

- **IVR**: Subscriber calls the IVR recharge menu (either directly to a dedicated number for recharging or by selecting the recharge option from the IVR menu) and enters the voucher number via dual-tone multifrequency (DTMF) input. When the recharge succeeds, the IVR announces the new balances and expiration dates.

- **USSD**: Subscriber sends a specific USSD request voucher number in the USSD string. The USSD response back informs the subscriber about the recharge result, including updated balances and new expiration date. USSD services are only available in certain kinds of wireless networks.
- **Comverse ONE SV Self-Service**: Subscriber makes the recharge request via the web. The subscriber enters the voucher number and, after successful recharge, the system displays updated balances and expiration dates.
- **Customer Care**: Subscriber calls the customer care center and provides the voucher number. The CSR performs the recharge operation for the subscriber.

Comverse ONE SV Self-Service is only supported in Converged deployments; it is not supported in Prepaid Only deployments. Information about recharging via Comverse ONE SV Self-Service can be found in the Comverse ONE Self-Service Suite Feature Reference.

Using the Comverse ONE Unified API, network operators can build recharge applications that provide subscribers with additional recharge access methods.

The method subscribers use to perform recharges is part of the Recharge Control Table matching criteria, which enables resellers to differentiate recharges based on the recharge access method. For example, if the reseller wants to promote USSD recharges and discourage IVR recharges, the RCT can be provisioned to award a bonus to subscribers who use USSD. Resellers provision the Recharge Control Table using Product Catalog.

Self-Recharge With Interactive Voice Response (IVR) System

IVR does not support the ability to recharge shadow subscribers.

The most common recharge scenario uses an Interactive Voice Response (IVR) system. The subscriber calls a predefined access number (typically printed on the recharge voucher) and initiates a session with the IVR-based recharge server that allows the subscriber to add the cash value of the recharge voucher to their balances. IVR recharges can be made either from the subscriber's own phone, or from a different phone.

IVR Recharge from Own Phone

When a subscriber recharges subscriber balances (not account balances), the IVR recharge server session goes through the following steps:

1. Identifies the subscriber ID number, based on the calling telephone number, or by directly prompting for it.
2. Plays the current balance for each of the subscriber's balances.
3. Prompts the subscriber for the recharge voucher number, the identifying number printed on the voucher and covered with a protective coating that the subscriber scratches off. The number is usually 12 digits or more.
4. The subscriber enters the voucher number using the touch-tone keypad.

5. The system looks for the voucher in the database using the identifying number as the search key. If the voucher is found and usable (Active), the system performs the recharge operation. It adds the voucher face value, as stored in the database, to the subscriber balance, and marks the voucher as used. The subscriber identity is also recorded in the voucher record, for auditing purposes. A recharge history record is also inserted into the subscriber history list.
6. Real Time only If the `MARKET_OFFER_GROUP` system parameter is enabled, the system verifies that the voucher's market offer group, the subscriber's market offer group, and the access number's market offer group all match.
7. The system notifies the subscriber of the successful recharge, reporting the amount added to the account and the amounts of the new account balances.

If the subscriber account was not active, it is activated, or reactivated, as a result of the successful recharge.

If a subscriber is permitted to recharge the account balance, the IVR prompts him to indicate whether he wants to recharge his subscriber balances or the account balances.

The subscriber is prompted during the session for additional recharge voucher number(s). Steps 3 through 5 above are repeated for each voucher number entered.

The subscriber can use several recharge vouchers in the same session. However, there is a primary offer limit to the account balances and a maximum recharge limit per recharge server session. The recharge server rejects attempts to add more money to the account if it exceeds either limit.

IVR Recharge from Another Phone

The prepaid phone being recharged need not be the phone that calls the IVR server. For example, a parent can use her own phone to recharge her children's prepaid balances.

To enable recharging from any phone, the access number is configured to ignore the calling telephone number and always prompt for the subscriber ID number.

This type of access number usually requires a PIN, which the caller is prompted to enter after entering the account number. Thus only authorized callers can recharge that prepaid balance, an important safeguard that protects privacy issues. In addition, multiple attempts to use invalid voucher numbers places the account into the Fraud Lockout state.

Real Time only If the `MARKET_OFFER_GROUP` system parameter is enabled, the system verifies that the voucher's market offer group, the subscriber's market offer group, and the access number's market offer group all match. If all validations pass, the system performs the recharge operation.

There are limitations when using a different mobile handset to recharge an account. Consult your network engineer for further information.

Fast Recharge (Non-Interactive IVR)

This feature is optional and requires special configuration. Network operators must contact their local Comverse representative for information.

The Fast Recharge method minimizes the use of IVR resources by enabling the user to dial a digit string containing an access code and the voucher secret number, and hearing an audio response indicating the success or failure of the recharge operation.

When successful, the value of the recharge is added to the subscriber's balances and the IVR plays one or more announcements regarding the success of the recharge attempt, as well as the subscriber's updated balance value(s), updated balance expiration date(s), and account state. The subscriber listens to the announcements and then hangs up or is disconnected.

For example:

> The subscriber dials: 333123456789012#<send> (where 333 is the access code and 123456789012 is the voucher identifying number).

There is no delimiter between the access code and the voucher identifying number. The access code is defined in the Mobile Switching Center (MSC). The MSC translates the access code into a code (usually of two characters), which is prefixed to the voucher identifying number and received by Comverse ONE as the destination number.

Using the above example, Comverse ONE sees PP123456789012 as the dialed number, where PP is the two character prefix. Comverse ONE processes the call attempt, and based upon the prefix, determines that this is a fast recharge attempt.

Comverse ONE then determines the identity of the subscriber making the call, parses the voucher identifying number.

Real Time only If the `MARKET_OFFER_GROUP` system parameter is enabled, the system verifies that the voucher's market offer group, the subscriber's market offer group, and the access number's market offer group all match.

If all validations pass, the system then attempts to do a voucher-based recharge to the subscriber using the voucher represented by the identifying number.

The subscriber is then connected to a Comverse ONE IVR announcement port, which plays one or more announcements indicating the success or failure of the recharge attempt, and, if the recharge was successful, updated balance and status information.

After playing the announcement(s), the IVR disconnects the call.

If the recharge fails for any reason, the subscriber hears an announcement indicating the reason and prompting the subscriber to repeat the recharge attempt.

USSD Recharge and Information Server

The Unstructured Supplementary Services Data (USSD) server provides a recharge and information service to subscribers in Global System for Mobile Communication (GSM) networks without the use of IVR sessions that can overload the network. By dialing configurable service codes or information strings, subscribers can retrieve information about their accounts via text messages on their handsets or can recharge their accounts using a recharge voucher.

USSD transmits information or instructions over the GSM network in a manner similar to that of the Short Message Service (SMS). Unlike SMS, however, USSD is session-oriented and does not store and forward the information.

When a user accesses a USSD service, a session is established and the radio connection stays open until the user or application terminates it. USSD commands are routed back to the home mobile network's Home Location Register (HLR) and therefore work just as well when users are roaming.

When the service code entered by the subscriber is interpreted and validated, the system can retrieve account information such as balance and expiration date, or enable the subscriber to use a recharge voucher to recharge the subscriber's account.

USSD Recharging for Real Subscribers

When a subscriber recharges a real subscriber balance via USSD, the customer and system go through the following steps:

1. The customer enters voucher information on the device.
2. USSD sends voucher information without shadow subscriber ID to the recharge application.
3. The recharge application recharges the real subscriber as the default.

USSD real subscriber recharging is supported by a message with the following format:

`<service_code>*<recharge_card_id>#`

USSD Recharging for Shadow Subscribers

The system identifies the subscriber to recharge via a shadow subscriber name and ID. The system supports a message format that allows the subscriber to enter the liability redirection override ID of the chosen shadow subscriber along with the recharge service code and the recharge card number. The message format is:

`<service_code>*<recharge_card_id>*<shadow_subscriber_id>#`

When a customer recharges a shadow subscriber balance via USSD, the customer and system go through the following steps:

1. The customer retrieves a list of shadow subscribers via USSD.
2. The customer's device displays the names and IDs of the shadow subscribers.
3. The customer chooses the shadow subscriber to recharge.
4. The customer enters voucher information.
5. USSD sends voucher information and the shadow subscriber ID to the recharge application.
6. The system parses the recharge request message sent by the subscriber and sends the information as a part of a common account request to the Unified Rating Engine (URE).
7. The recharge application recharges the shadow subscriber.

A shadow subscriber in idle state is activated by the recharge request.
A shadow subscriber in suspended or fraud state is prevented from continuing the recharge.

USSD Recharge Provisioning

To provision the USSD Recharge and Information Server feature, log in to the Product Catalog and perform the following procedures from the *Product Catalog User Guide*:

- Service Layer: USSD Codes
- Rating and Billing Definition Layer: Locations — Location Relations
- Marketing/Packaging Layer: Primary Offer — USSD
- The applicable HLR(s) must be configured so that the service codes can be identified, and to allow forwarding of any Mobile Application Part (MAP) messages with the service codes to Comverse ONE.

Comverse ONE SV Self-Service

Comverse ONE SV Self-Service does not support the ability to recharge shadow subscribers.

Using Comverse ONE SV Self-Service, subscribers can make recharge requests via the web. The subscriber enters the voucher number and, after a successful recharge, the system displays updated balances and expiration dates. Comverse ONE SV Self-Service is only supported in Converged deployments; it is not supported in Prepaid Only deployments.

Recharge through Customer Care

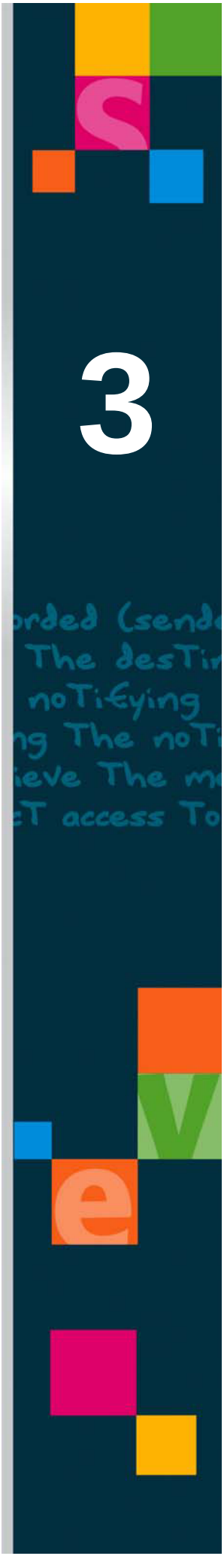
Customer service representatives (CSRs) can recharge prepaid balances for a subscriber or account with the identifying number from the recharge voucher in the subscriber's possession. CSRs can recharge shadow subscribers.

This function is meant to help subscribers who do not use the automated IVR-based recharge method. When these subscribers call Customer Care for help the customer service representative asks for the voucher identifying number and enters it.

The subscriber or account balance is updated, a recharge history record is created, and the voucher is marked as used.

Chapter 3

Recharge Control Table



Overview

The Recharge Control Table (RCT) modifies the behavior of a recharge. The Recharge Control Table can:

- Enable a recharge (which contains a single value and a single expiration offset) to affect multiple balances and their associated grants
- Modify the balance amounts and expiration adjustments specified in the recharge. For example, to change a $5.00, 10-day recharge into a $7.00, 30-day recharge.
- Swap the primary offer of the subscriber being recharged
- Add supplementary offers to the subscriber or account being recharged.

To help explain RCT concepts, this chapter includes examples from the RCT screens in the Product Catalog. Instructions for using the screens are presented in the following chapter, Chapter 4, "Recharge Control Table Provisioning."

Every recharge operation consults the Recharge Control Table. If no match is found in the RCT matching criteria, the recharge applies the face value and face offset of the voucher to the subscriber's core balance.

The RCT is made up of multiple rows. Each row consists of common information, configured at the top of the New Recharge Control Key pane in the Product Catalog, and four logical sections configured on each of four corresponding tabs.

The Priority field, configured on the General tab, is considered common information. The Priority field specifies the order in which the row is searched for a match and can be reset to change the order of search.

The three remaining sections of the row are configured on the following tabs:

- **Matching Criteria**: Contains information about the conditions of the recharge.
- **Balance Adjustments / Awards**: Contains information on how a recharge affects balances.
- **Offer Adjustments / Awards**: Contains information on how the recharge affects the recharged entity's offers.

When a recharge is performed, the RCT is searched row by row, starting with the first row, for a match between the recharging conditions, and the RCT matching criteria.

When a match is found, the Balance Adjustments / Awards and Offer Adjustment / Awards sections configured on that row determine the effect of the recharge on the recharged entity.

Because matching criteria contain data such as date of recharge, value of recharge, whether the entity being recharged is an account or a subscriber, and other criteria, a reseller can configure the same recharge to do different things on different days. For example, on Mother's Day, each recharge gets a five percent bonus and 10 extra expiration offset days. Recharges can also be configured to do different things for different values, for example, any recharge over $100 gets a 10 percent bonus plus five free SMSs.

Recharge Control Tables in Comverse ONE are managed on a reseller level, so each reseller has its own RCT.

Accumulating Recharge Events

Accumulators count events. Recharges can be captured in accumulators as recharge events, which contribute to eventual subscriber awards in the form of bonuses or discounts.

Comverse ONE supports qualified accumulations and, depending on the accumulator configuration, either the face value or the effective face value (face value plus any core balance adjustment) can supply the qualification (that is, determine whether or not the recharge is counted).

For example, suppose a recharge event accumulator is configured to count recharges with a face value of greater than $50.00

- A recharge using a $55.00 voucher is counted.
- A recharge using a $55.00 voucher with an effective value of $25.00 (that is, the RCT core value configured as 100%FV - $30) is counted.
- A recharge using a $25.00 voucher with an effective value of $55.00 (that is, the RCT core value configured as 100%FV + $30.00) is not counted (face value too low).
- A non-voucher recharge of $55.00 with an effective value of $25.00 (that is, the RCT core value configured as 100%FV - $30.00) is counted.
- A non-voucher recharge of $25.00 with an effective value of $55.00 (that is, the RCT core value configured as 100%FV + $30.00) is not counted (face value too low).

Now, suppose a recharge event accumulator is configured to count currency recharges with an effective value of greater than $50.00.

- A recharge using a $55.00 voucher is counted.
- A recharge using a $55.00 voucher with an effective value of $25.00 (that is, the RCT core value configured as 100%FV - $30) is not counted (effective value too low).
- A recharge using a $25.00 voucher with an effective value of $55.00 (that is, the RCT core value configured as 100%FV + $30) is counted.
- A non-voucher recharge of $55.00 with an effective value of $25.00 (that is, the RCT core value configured as 100%FV - $30.00) is not counted (effective value too low).
- A non-voucher recharge of $25.00 with an effective value of $55.00 (that is, the RCT core value configured as 100%FV + $30.00) is counted.

RCT Common Information

Each row in the RCT contains fields that the reseller can use to identify the use and purpose of the RCT entry.

For example, the Name field gives the name of the promotion or offers with which the entry is associated.

These fields do not affect the operation of RCT

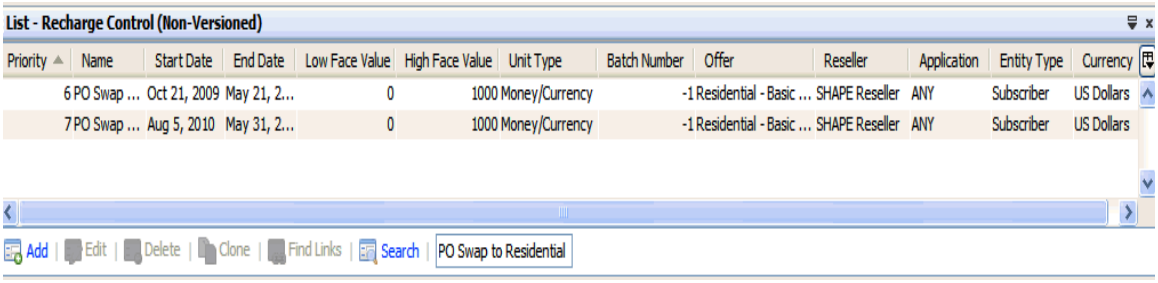
- **Priority** Number of the row in the RCT, can be reordered.
- **Name**: Mandatory field. A name assigned to this row
- **Description**: Optional text field that the reseller can use to describe some aspect of the RCT entry

RCT Matching Criteria

The Recharge Control Table search uses a first match algorithm in which the table is searched one row at a time, starting with the first row. The first row found whose matching criteria matches the conditions of the recharge is used.

NOTE The first match search is substantially different from a best match search. The RCT can contain rows that more closely match the search criteria, but the first match found is used. The RCT enables reordering of rows so a preferred match is more likely to be found first.

Figure 1 RCT Matching Criteria



- **Priority**: Rank of the row within the RCT. Can be modified to change the order in which rows are searched for matches.
- **Name**: Name used to identify the row. This is a mandatory field.
- **Recharge Date Start and End**: Defines the date window for the recharge event. End dates are exclusive, so End Date must be greater than Start Date (not greater than or equal to).
- **Face Value Low and High**: Defines the face value range of the recharge. Ranges are exclusive, so High Value must be greater than Low Value (not greater than or equal to).
- **Unit Type**: Defines the units of the recharge. Unit selected must be defined in the system. Currency is the default unit. Vouchers are limited to units of currency.
- **Batch Number**: Specifies the specific batch number. If this field is set to -1, the batch number is not considered.
- **Offer**: Primary offer of recharged subscriber. Field is null for account recharge
- **Reseller**: RCTs are defined by reseller. Must contain a specific reseller.
- **Application**: Application being used. This is an expansion of the Recharge Method values, and allows resellers to define their own values.
- **Entity Type**: Recharge target; either Account or Subscriber.
- **Currency:** Currency of entity being recharged. If a primary offer is specified, this must match the currency of the primary offer. Otherwise, it can be any currency defined in the system.

Examples of Matching Criteria

Each of the following examples of matching criteria has one or more corresponding row configured in Table 4, "Example RCT Matching Criteria."

Example 1: Reseller wants all currency recharges in the month of May to receive differentiated treatment. The only difference between row 1a and row 1b is that one is a subscriber recharge and the other an account recharge.

Example 2: Reseller wants all recharges with face values between $20.00 and $30.00 to receive differentiated treatment when applied to accounts.

Example 3: Reseller wants to support an SMS non-voucher recharge, which just gives amounts to SMS balance(s). The only difference between row 3a and row 3b is that one is a subscriber recharge and the other an account recharge.

Example 4: Reseller wants all recharges from batch 1234 to receive differentiated treatment when applied to subscribers. Batch 1234 contains currency vouchers.

Example 5: Reseller wants all recharges from USSD to receive differentiated treatment when applied to subscribers. The differences in rows 5a through 5c are the entries in the units column. Row 5n indicates that there must be a row in the RCT for each unit type supported in this Comverse ONE installation.

Example 6: Reseller wants all recharges on 01-Jan-2008, with a face value of $22.00, from IVR Application, applied to Subscribers with a primary offer of PRI01, to receive differentiated treatment.

Table 4 Example RCT Matching Criteria

Row #	Recharge Date		Face Value		Units	Batch	Primary Offer	Reseller	Application	Sub / Acct	Currency (of entity being recharged)
	Start	End	Low	High							
EX 1a	01-May-08	01-Jun-08	ANY	ANY	Currency	-1	ANY	Reseller 1	ANY	Sub	ANY
EX 1b	01-May-08	01-Jun-08	ANY	ANY	Currency	-1	ANY	Reseller 1	ANY	Acct	ANY
EX 2	ANY	ANY	20.00	30.00	Currency	-1	ANY	Reseller 1	ANY	Acct	USD
EX 3a	ANY	ANY	ANY	ANY	SMS	-1	ANY	Reseller 1	ANY	Sub	ANY
EX 3b	ANY	ANY	ANY	ANY	SMS	-1	ANY	Reseller 1	ANY	Acct	ANY
4	ANY	ANY	ANY	ANY	Currency	1234	ANY	Reseller 1	ANY	Sub	ANY
5a	ANY	ANY	ANY	ANY	Currency	-1	ANY	Reseller 1	USSD	Sub	ANY
5b	ANY	ANY	ANY	ANY	SMS	-1	ANY	Reseller 1	USSD	Sub	ANY
5c	ANY	ANY	ANY	ANY	MMS	-1	ANY	Reseller 1	USSD	Sub	ANY
5n	Repeat for each recharge units supported										
6	01-Jan-08	02-Jan-08	22.00	22.01	Currency	-1	PRI01	Reseller 1	IVR	Sub	USD

Real Time only

If the `MARKET_OFFER_GROUP` system parameter is enabled, then in addition to the criteria listed in Table 4, the recharge processor also compares the account's or subscriber's market offer group to any rows in the RCT that have market offer group configured as a matching criteria. Note the following matching logic:

- If an RCT row has ANY configured as its market offer group, the row matches any subscriber or account, regardles of the subscriber's or account's market offer group.
- If an account or subscriber has ANY configured as its market offer group, the account or subscriber matches only RCT rows that have ANY configured as the market offer group.
- If an access number has ANY configured as its market offer group, all accounts and subscribers can access the number, regardles of the subscriber's or account's market offer group.

Real Time only

- If an account or subscriber has ANY configured as its market offer group, the account or subscriber can access only market offer groups with ANY configured as the market offer group.

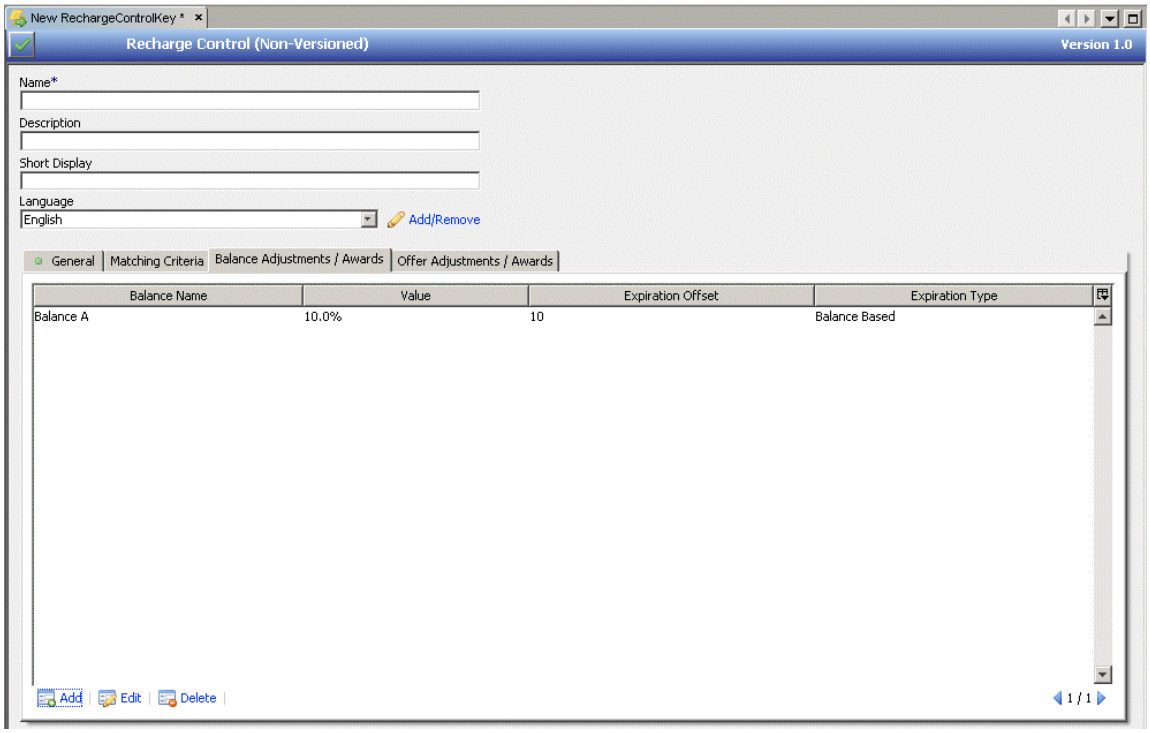
RCT Balance Adjustments / Awards

Each row in the Recharge Control Table can be configured to modify each real balance instantiated at the recharged entity. So there can be zero or more RCT balance adjustments or awards configured for each row of matching criteria.

Each balance adjustment is added to the balance in the form of a grant.

Figure 2, "Balance Adjustments / Awards Tab" shows the fields displayed on this tab.

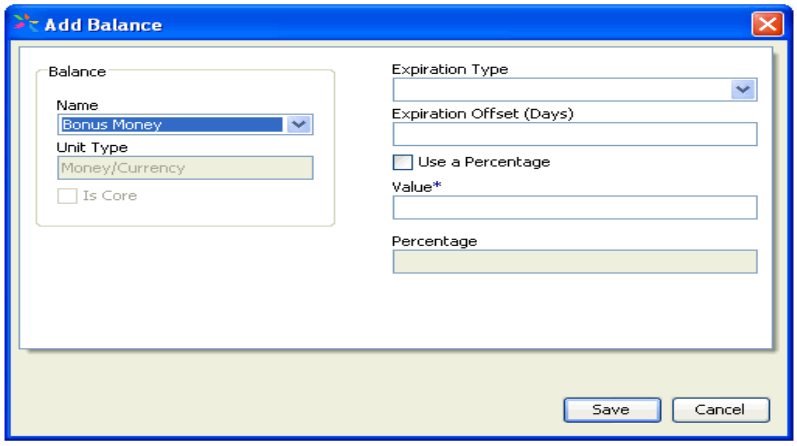
Figure 2 Balance Adjustments / Awards Tab



- **Balance Name**: The name of the balance affected. The Product Catalog allows the user to select the balance name, and then populates the units automatically.
- **Value:** The amount added to the specified balance. This field can contain a percentage or a constant, but not both. For the core balance, this value is an adjustment to the face value of the recharge.
- **Expiration Offset:** This field enables a recharge to update balance expiration dates based on the offset specified. Comverse ONE calculates the expiration date of the individual grant based on the specified offset, and the primary offer configuration. For the core balance, this value is an adjustment to the face offset of the recharge.
- **Expiration Type**: Type of expiration. Not configurable: only balance-based expiration is supported, meaning that the expiration for the granted amount is tied to the balance expiration date.

Figure 3, "Add Balance Window" shows the requester that allows the user to configure balance adjustments and awards.

Figure 3 Add Balance Window



The Add Balance window enables provisioning of either a specific value, or a percentage of the face value. By default, the Value field is active and the Percentage field is greyed out. When the user checks the Use a Percentage checkbox, the Percentage field becomes active and the Value field is greyed out.

- **Value Amounts**: A specific value can be configured. The value can be a positive or negative number.

  When provisioned to the core balance, the value behaves differently than when provisioned for a non-core balance.

  - When provisioned as a core balance value, it is an adjustment to the face value of the recharge, and can be a positive or negative number.

    For example, when 5 is provisioned as the core value, the amount applied to the core balance is face value + 5.
  - Similarly, when -3 is provisioned as the core balance value, the amount applied to the core balance is face value – 3. Because the result of a recharge can never be negative, if the resultant value of face value plus the existing core balance value is negative, the result is rounded to 0 (that is, there is no change to the balance).
  - When provisioned as a non-core balance value, it is the amount applied to that balance, and cannot be negative.

    For example, when 5 is provisioned for non-core value, the amount applied to the non-core balance is 5.

For core balances, the value configured in the RCT is treated as an **adjustment** to the face value, meaning that the RCT value is either added to or subtracted from the face value, and that adjusted value is added to the existing core balance.
For a non-core balance recharge, the RCT value itself is **added** to the existing non-core balance.

- **Percentage Amounts**: The value is calculated as the specified percentage of the actual face value of the recharge.

  The format of this is *n*%FV, where *n* is a value between 0.0001 and 9999.9999, and represents the percentage of face value awarded. For example, for a recharge with a $10.00 face value:

- 10%FV would calculate to $1.00
- 150%FV would calculate to $15.00
- 100%FV would calculate to $10.00
- 0%FV would calculate to 0

A percentage value can only be used when the recharge face value units are the same as the balance units. A percentage of a currency unit cannot be applied to a non-currency balance.

Examples of Balance Adjustments / Awards

In the interest of simplicity, expiration offsets are considered in a later section, "Examples of Balance Expiration Offset Days Usage," on page 32).

In each of the following examples, assume a recharge is performed with a voucher having a face value of $15.00. Refer to the corresponding row for each example in Table 5, "Example RCT Balance Adjustments / Awards."

Example 1: Reseller wants face value of recharge applied to core balance with a $5.00 bonus. $20.00 is added to the core balance.

Example 2: Reseller wants face value of recharge applied to core balance, plus a bonus of five SMSs applied to Bal10. Result is $15.00 added to core balance, and five SMSs added to Bal10.

Example 3: Reseller wants recharge face value to go to core and to Bal20. Result of recharge is $15.00 added to core and $15.00 added to Bal20.

Example 4: Reseller wants face value of recharge applied to Bal10, and nothing applied to core balance. Result of recharge is core balance is not affected, and Bal10 is incremented by $15.00.

Example 5: Reseller wants the face value plus a 10 percent bonus applied to the core balance, and a five percent bonus applied to Bal11. Result of the recharge is $15.00 + 0.10*15 = $16.50 is applied to core, and 0.05*15 = $0.75 is applied to Bal11.

Example 6: Reseller wants the face value minus $20.00 applied to the core balance, and $20.00 bonus applied to Bal11. Result of the recharge is 0 is applied to core (because $15.00 – $20.00 is negative, it is rounded to 0), and $20.00 is applied to Bal11.

Table 5 Example RCT Balance Adjustments / Awards

Example	Core Balance		Other Balances		
	RCT Entry	**Value Added to Balance**	**Balance Name**	**RCT Entry**	**Value Added to Balance**
1	+$5.00	+$20.00	N/A	N/A	N/A
2	0	+$15.00	Bal10	+5 SMSs	+5 SMSs
3	0	+$15.00	Bal20	+100% FV	+$15.00
4	-100% FV	No Change	Bal10	+100% FV	+$15.00
5	+10% FV	+$16.50	Bal11	+5% FV	+$0.75
6	-$20.00	No Change	Bal11	+$20.00	+$20.00

Core Balance Expiration Offset Days

For core balances, the offset configured in the RCT is treated as an adjustment to the face offset, then that adjusted value is applied to the balance expiration date, regardless of the setting of the non-core Expiration Offset Type.

The core expiration offset days must always be a whole number, but can be positive, negative, or zero.

So a core expiration offset days configured as five means face offset + 5. A core expiration offset days value of -5 means face offset -5.

Anything that evaluates to less than zero is rounded up to zero. For example, If core expiration offset days is configured as -30, and a recharge with a face offset of 20 is performed, the effective Offset is zero (20 - 30 = -10 which is rounded to zero).

Non-Core Balance Expiration Offset Days

The RCT expiration offset days is the offset days value applied to non-core balance.

The non-core expiration offset days must always be a whole number, and can be positive or zero.

So a non-core expiration offset days configured as five means five days.

Examples of Balance Expiration Offset Days Usage

The following examples illustrate the expiration offset functionality.

For each example, assume a recharge is performed with a voucher containing a face value of $15.00, and a face offset of 30 days.

Example 1: Reseller wants a recharge applied to the core balance with a $5.00 bonus, as well as 10 additional expiration offset days. Result is that $15.00 + $5.00 = $20.00 is added to core balance. Core balance expiration date is adjusted by 10 days, so it becomes 40 days

Example 2: Reseller wants the face value of a recharge applied to core balance, plus a bonus of five SMSs with seven days until expiration applied to Bal10. Result is $15.00 added to the core balance, and five SMSs added to Bal10. Core balance expiration date is adjusted by 30 days, Bal10 expiration date is set to seven days

Example 3: Reseller wants recharge face value and face offset to go to core, and face value and 20 days to Bal20. Result of recharge is $15.00 added to core, the core balance expiration date is adjusted by 30 days, and Bal20 expiration date is set to 20 days.

Example 4: Reseller wants face value of recharge and face offset applied to Bal10, and nothing applied to core balance. Result of recharge is core balance is not affected, and Bal10 is set to $15.00. Core balance expiration date is adjusted by zero days, and Bal10 expiration date is set to 30 days.

Example 5: Reseller wants the face value plus a 10 percent bonus applied to the core balance, and a five percent bonus with 15 days applied to Bal12. Result of the recharge is $15.00+ 0.10*15 = $16.50 applied to core, and 0.05*15 = $0.75 applied to Bal12. Core balance expiration date is adjusted by 30 days, and Bal12 expiration date is set to 15 days

Example 6: Reseller wants the face value minus $20.00 and face offset minus 20 days applied to the core balance, and a $20.00 bonus plus 20 days applied to Bal12. Result of the recharge is zero is applied to the core balance: because $15.00 – $20.00 is negative, it is rounded to zero; and Bal12 is set to $20.00. Core balance expiration date is adjusted by 30 – 20 = 10 days, and Bal12 expiration date is set to 20 days.

Table 6 Example RCT Balance Expiration Adjustments

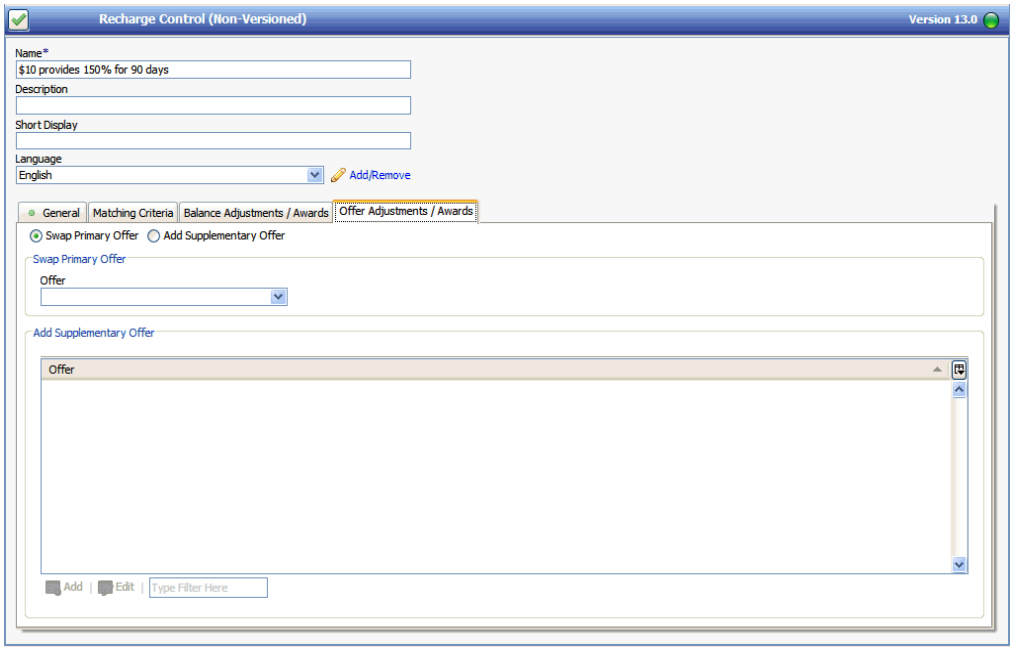
Ex.	Core Balance				Other Balances				
	RCT Entry	**Value Added to Balance**	**RCT Offset Entry**	Expiration Offset (Days)	**Balance Name**	**RCT Entry**	**Value Added to Balance**	**RCT Offset Entry**	Expiration Offset (Days)
1	+$5.00	+$20.00	+10 days	+40 days	N/A	N/A	N/A	N/A	N/A
2	0	+$15.00	0	+30 days	Bal10	+5 SMSs	+5 SMSs	+7 days	+7 days
3	0	+$15.00	0	+30 days	Bal20	+100% FV	+$15.00	+20 days	+20 days
4	-100% FV	No Change	0	No Change	Bal10	+100% FV	+$15.00	FV offset	+30 days
5	+10% FV	+$16.50	0	+30 days	Bal11	+5% FV	+$0.75	+15 days	+15 days
6	-$20.00	No Change	-20 days	10 days	Bal11	+$20.00	+$20.00	+20 days	20 days

RCT Offer Adjustments / Awards

Each row in the RCT can be configured to modify offers instantiated at the recharged entity. This includes changing the primary offer (for subscribers only, not for accounts), and adding new offers to subscribers or accounts.

Figure 4, "Offer Adjustments / Awards Tab" shows the fields displayed on this tab.

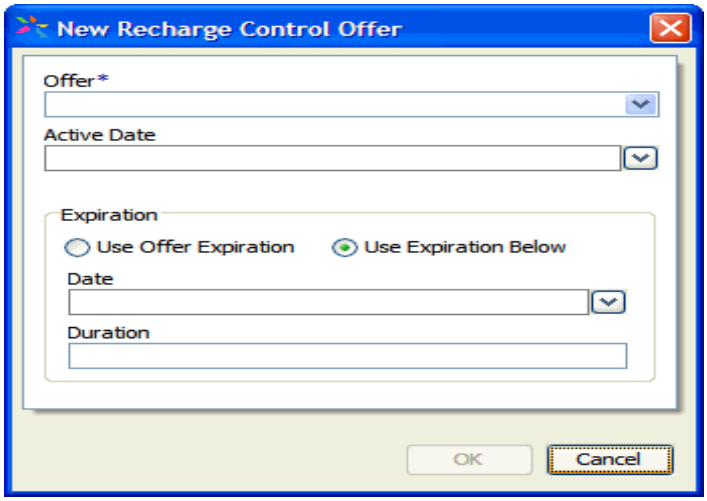
Figure 4 Offer Adjustments / Awards Tab



- **Swap Primary Offer**: Specifies that this offer replaces the primary offer on a successful recharge.
- **Add Supplementary Offer**: Specifies that this offer is added to the subscriber or account on a successful recharge.

Figure 5, "New Recharge Control Offer Window" shows the window that appears when the user clicks Add, which enables configuration of supplementary offers to add on a successful recharge.

Figure 5 New Recharge Control Offer Window

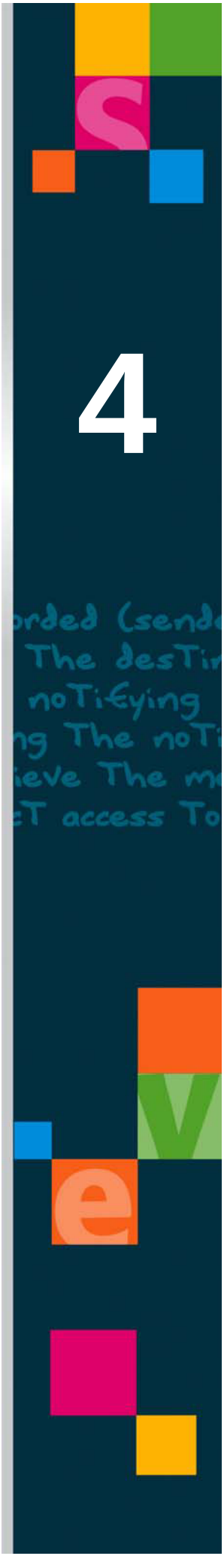


- **Offer**: ID of offer to be added or primary offer to be replaced in recharged entity.
- **Active Date**: If the offer is to be added, you can overwrite the default start date of the offer with a specific start date.
- **Use Offer Expiration**: If you select this, the expiration date is the same as the expiration date configured for the offer.
- **Use Expiration Below**: If you select this, you can override the expiration date configured for the offer. You can use either of the following fields:
  - **Date**: If the offer is to be added, you can overwrite the default end date with a specific end date.
  - **Duration**: If the offer is to be added, you can overwrite the default end date, and it is calculated as start date plus duration.

NOTE You can specify either a date or a duration, but not both.

Chapter 4

Recharge Control Table Provisioning



Recharge Control Table Provisioning

Throughout this chapter where there are references to recharge vouchers, vouchers, or recharge cards, the information applies also to unified cards when used as a recharge voucher.

The Recharge Control Table (RCT) facilitates distributing the recharge amount and expiration time into any of the balances supported by Comverse ONE. It is used in conjunction with every kind of recharging.

The RCT enables provisioning a maximum of forty balances per subscriber. It also enables provisioning the start date, duration, and expiration time for the balances and for associating offers with recharge transactions.

The RCT allows the reseller to modify the actions of a recharge operation. This is especially advantageous, because it allows adjustments to the effects of a voucher recharge after the voucher has been created and distributed. The RCT contains recharge matching criteria and recharge modifications.

The recharge matching criteria consist of:

- Effective Dates of Recharge (bounded by Start Date - End Date)
- Recharge Face Value (bounded by inclusive Low and High values)
- Offer and Reseller
- Units
- Currency
- Recharge Channel
- Batch Number
- Recharging Entity (Subscriber or Account)

The recharge modification information consists of:

- Modifications to up to of fifty subscriber balance amounts and the expiration dates for each.
- Modification of balance grants within each balance, and the amounts, units, and expiration dates associated with each of these grants.
- Change of Primary offer.
- Addition of supplemental offers.

Whenever a recharge is performed, the RCT is searched for a match between the conditions of the recharge and the matching criteria defined in the RCT. When a match is found within the matching criteria, the recharge modification information is used to change the effects of the recharge. This is used to:

- **Modify the face value of a voucher**: Recharge core balance with a value different from the value originally attached to the voucher.
- **Modify the target of the recharge**: Distribute the face value of the voucher among non-core balances and balance grants.
- **Modify the expiration offset of a voucher**: Change the subscriber's expiration date with a value that is different from the expiration offset value originally attached to the voucher.

Every recharge examines the RCT, looking for a match in terms of effective date of recharge, recharge value, recharge method, and reseller and primary offer of the recharging subscriber.

NOTE All the matching criteria must match an RCT entry. That is, the date, value, method, reseller and primary offer values must all match

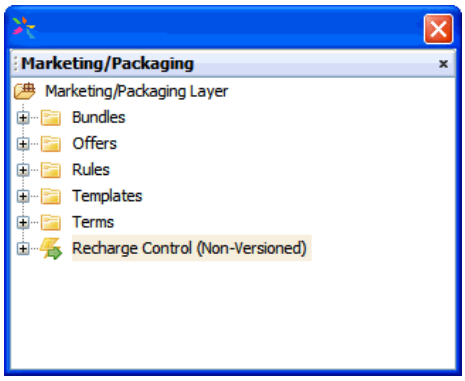
The Recharge Control Table is always searched from the first row to the last row (top to bottom) for a match. The search uses a first-match criterion, so once a match is found, the search stops. If no match is found within any rows, then the recharge is performed based solely on the balance and expiration offset values attached to the voucher.

Because it is possible for a recharge event to match multiple entries (rows) within the table, it is possible to change the order (priority) of the rows. When the mouse pointer is moved held over a row, the following tool tip message appears:

```
Changes in the priorities of the RCT records do not take effect until
the revised table is saved by clicking Save on the Billing Model
Toolbar.
```

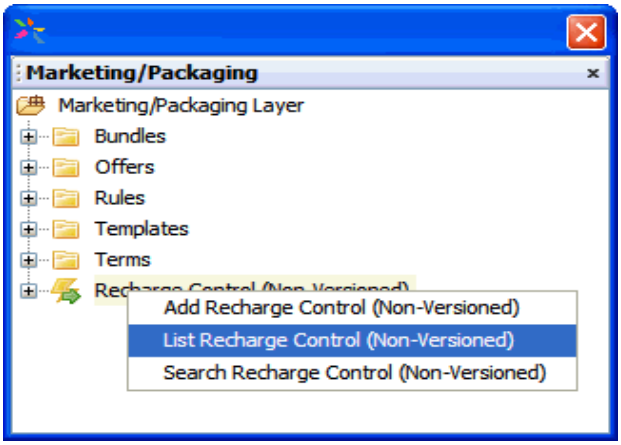
Click the **Marketing/Packaging** tab in the Product Catalog interface, or, if the tab is not already displayed, select **Marketing/Packaging** from the Window menu. The **Marketing/Packaging** TreeView, shown in Figure 6, “Product Catalog Marketing/Packaging Tab TreeView,” appears.

Figure 6 Product Catalog Marketing/Packaging Tab TreeView



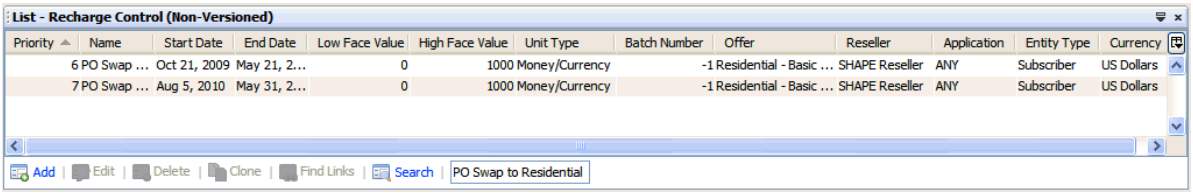
In the **Marketing/Packaging** TreeView, right-click Recharge Control (Non-Versioned). A menu appears. Select List Recharge Control (Non-Versioned).

Figure 7 Marketing/Packaging Tab TreeView Right-Click Menu



The Recharge Control List, shown in Figure 8, "Recharge Control List," appears.

Figure 8 Recharge Control List

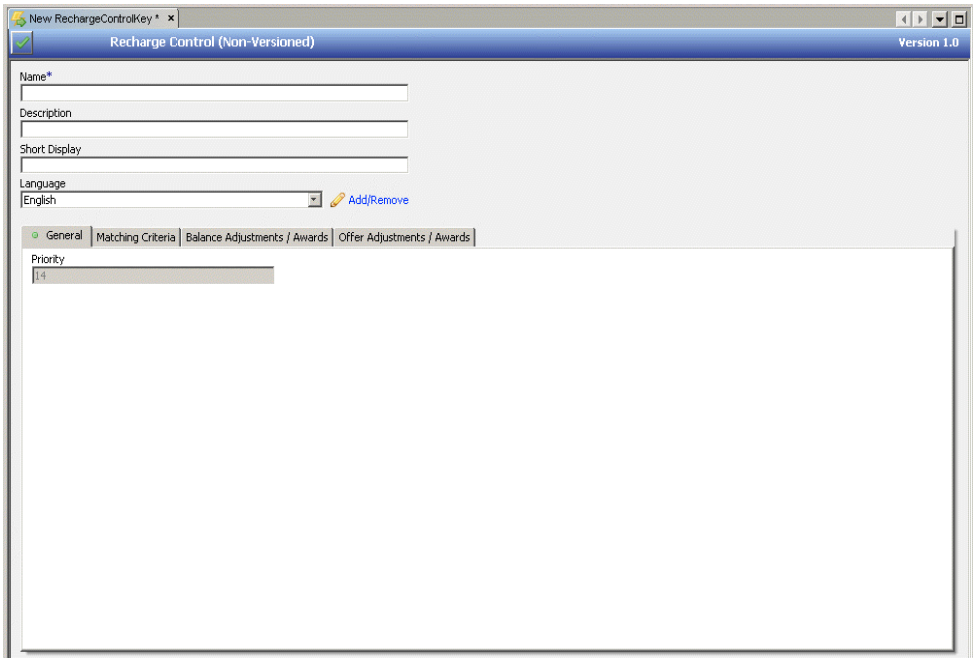


Click Edit at the bottom of the list window to edit an existing list entry, or click Add to add a new list entry. A Search field is also provided to enable searching for specific entries in long lists.

Adding a New Recharge Control Entry

When adding a new recharge entry or selecting an existing entry, editable fields become available at the top of the Recharge Control window and on four tabs in the Recharge Control window as shown in Figure 9, "Recharge Control General Tab."

Figure 9 Recharge Control General Tab



The top area of the window displays the following fields:

- Name
- Description
- Short Display

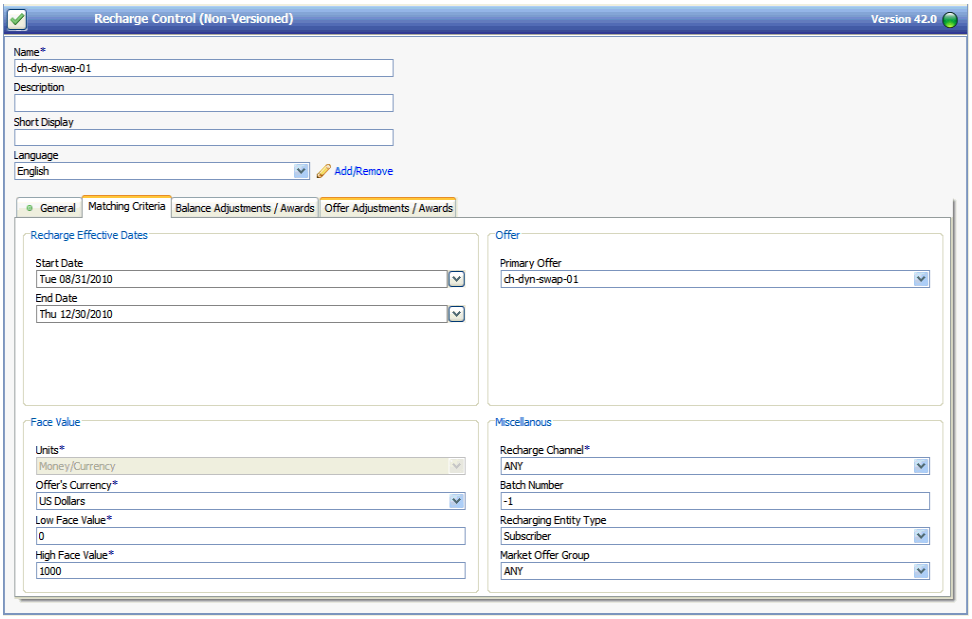
General Tab

The General tab displays only the Priority field. When a new entry is added, it is added to the bottom of the recharge control list and the Priority field cannot be modified. After the entry is added, the priority can be modified by selecting the entry and clicking Edit.

Matching Criteria Tab

Figure 10, "Recharge Control Matching Criteria Tab" shows the Matching Criteria tab.

Figure 10 Recharge Control Matching Criteria Tab



The Matching Criteria tab displays the following fields:

Recharge Effective Dates

- **Start Date**: Beginning date of the recharge event. The start date appears in the format (yyyy/mm/dd).
- **End Date**: Ending date of the recharge event. The end date appears in the format (yyyy/mm/dd).

NOTE When one date (Start or End) is used, then the other must be specified. Both fields blank indicates any recharge date. The default value is ANY (blank).

Face Value

- **Units**: Units of the recharge. Lists all units provisioned on the system. Units selected must be defined in the system. Currency is the default unit. Voucher recharge supports only currency.
- **Offer's Currency**: Currency of the recharged entity. If a Primary Offer is specified, this field must match the currency of the Primary Offer. Otherwise, it can be any currency defined int the system, or ANY.
- **Low Face Value**: Low monetary value of the original recharge. Ranges are exclusive, so Low Face Value must be less than High Face Value (not greater than or equal to). These fields are never blank.
- **High Face Value**: High monetary value of the original recharge. Ranges are exclusive, so High Value must be greater than Low Value (not greater than or equal to). These fields are never blank.

Offer

- **Primary Offer**: Primary offer of the subscriber. Choices available from the dropdown menu include ANY and the names of each primary offer provisioned for the selected reseller. Only primary offers associated with the current reseller are displayed in the primary offer field. If ANY is selected, all primary offers, for the selected reseller, are available.

If Swap Primary Offer is enabled on the Offer Adjustments / Awards tab, the Offer field cannot be set to ANY.

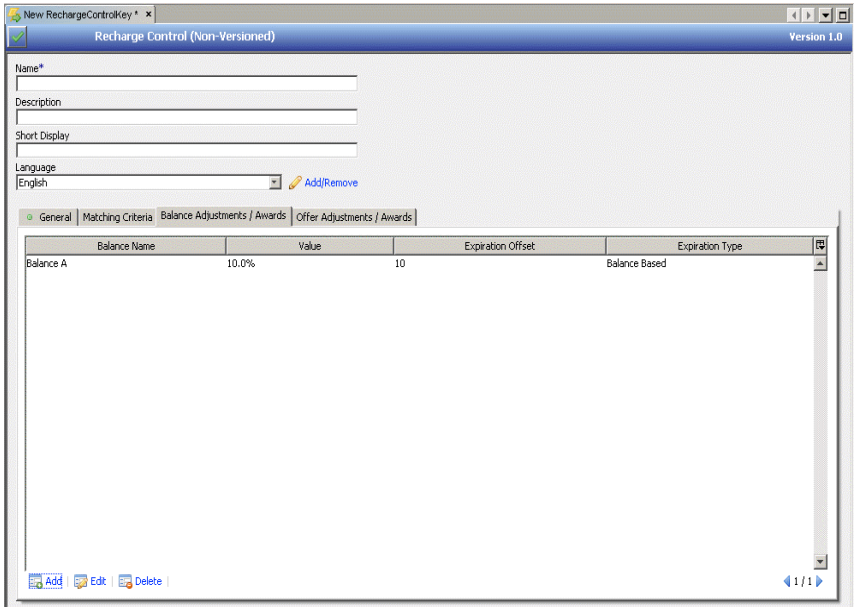
Miscellaneous:

- **Recharge Channel**: Recharge method. The following selections are available from the dropdown menu:
  - ANY
  - CSM Non Voucher Recharge
  - CSM Voucher Recharge
  - External_non_voucher
  - External_voucher
  - Fast_IVR_Voucher
  - IVR_Vouchers
  - Reserved for Future Internal Purpose
  - Roaming
  - Self_Care_voucher
  - Self_Care_non_voucher
  - UNKNOWN
  - USSD_Voucher
- **Batch Number**: Specifies the specific batch number. If this field is left blank, the batch number is not considered and any batch number produces a match.
- **Recharging Entity Type**: Subscriber or Account.
- **Market Offer Group**: Market offer group. Select a market offer group or ANY to match any market offer group.

Balance Adjustments / Awards Tab

The Balance Adjustments / Awards tab, shown in Figure 11, "Recharge Control Balance Adjustments/Awards Tab" displays the current recharge details for the primary offer balances.

Figure 11 Recharge Control Balance Adjustments/Awards Tab



- **Balance**: Name of the balance that is affected by recharging under this offer.
- **Value**: The amount to be added to or subtracted from this balance when a recharge is performed.
- **Expiration Offset**: Additional expiration offset days added to the expiration offset face value of the recharge and to be included in the core balance expiration date calculation. If a value is specified then the total expiration offset is the amount originally specified plus the core Balance Amount. By default, this field is blank and no additional days are added.
- **Expiration Type**: Type of expiration. Only balance-based expiration is supported, meaning that the expiration for the granted amount is tied to the balance expiration date.

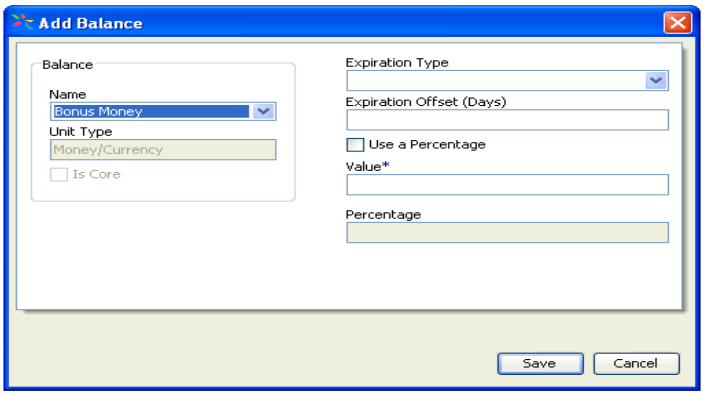
NOTE The Adjustment Amount field can contain a negative value, however, the net sum of recharge amount plus additional amount is never less than 0.

NOTE The Expiration Offset field cannot contain a negative value.

Adding a Balance to the Recharge Control Table

1. With the Balance Adjustments / Awards tab displayed, click **Add**. The Add Balance window, shown in Figure 12, "Add Balance Window," appears.

Figure 12 Add Balance Window



2. The **Balance** dropdown list displays all of the balances associated with the current offer. Select a balance to be added from the list to associate it with the new Recharge Control instance.
3. The **Unit Type** field displays the unit type associated with this balance, but cannot be modified from this screen.
4. The **Is Core** checkbox is checked if the balance is the core balance for the subscriber or account. This checkbox cannot be modified by the user.
5. The **Expiration Type** dropdown list displays expiration offset types. Always select **BalanceBased**. The other option, **Independent Expiration**, is reserved for future use.
6. In the **Expiration Offset** field, enter a number of days to be added to the expiration date of the balance on a successful recharge.
7. In the **Value** field, enter a value to be added or subtracted from the face value of the voucher.
8. If the **Use a Percentage** checkbox is checked, the Percentage field is enabled and the Value field is disabled.
9. In the **Percentage** enter a value to indicate the percentage of the face value of the voucher to be added to this balance.

NOTE The Expiration Offset field cannot contain a negative value.

10. Click **Save**.
11. Repeat these steps to associate additional balances with this Recharge Control instance.

NOTE The balances available for selection depend on the primary offer selected in the recharge criteria. This relationship is shown in Table 7, "Relation between Primary Offer Selected and Available Balances".

Table 7 Relation between Primary Offer Selected and Available Balances

Primary Offer Selected	Balances	Maximum number of balances per subscriber	Maximum number of modifiable balances
Specific Primary Offer	Balances defined as mandatory or optional for that primary offer are available for selection.	40	40 balances per recharge criteria
Any	All the balances defined in the system are available for selection.	40	50 balances per recharge criteria (1.25 times the maximum number of balances allowed per subscriber).

Negative Values in Adjustment Amount and Exp Offset Fields

Although the RCT supports a negative value for the expiration offset, the effective amount of expiration days applied to the account can never be less than zero.

Similarly, the effective amount applied to the balance can never be less than zero.

For example, suppose we have the following:

Recharge Voucher with face value of $20.00 and Expiration Offset of 30 days.

RCT Entry 1, with effective dates of January 1 to January 31, core balance adjustment amount of -$10.00, and core balance expiration offset of -20 days.

- If a subscriber recharges with the recharge voucher described above in January, the effective core balance amount of the recharge is $10.00 ($20.00 - $10.00), and the effective core expiration offset is 10 days (30 – 20).

  This means that when the recharge is applied, it is as if the recharge voucher had a face value of $10.00, and an expiration offset of 10 days.

RCT Entry 2, with effective dates of February 1 to February 28, core balance adjustment amount of -$30.00, and core balance expiration offset of -50 days.

- Similarly, if a subscriber recharges with the recharge voucher described above in February, the effective core balance amount of the recharge is $0.00 ($20.00 - $30.00 < $0.00), and the effective core expiration offset is zero days (30 – 50 < 0).

  This means that when the recharge is applied, it is as if the recharge voucher had a face value of $0.00 and an expiration offset of zero days.

In general, the expected result of a subscriber recharge is that the account is returned to the Active state. However, if the subscriber is in a post-Active state and the recharge is not sufficient to reactivate the subscriber, the recharge is inhibited.

Examples

- A subscriber's primary offer suspend balance threshold is $0.00, and the reactivation fee from suspend state S1 is $5.00. The subscriber's current core balance value is -$10.00 (he or she is in suspend state S1).

  In addition, there is a $15.00 adjustment amount associated with the primary offer so that, if the subscriber attempts to recharge with a $25.00 recharge voucher, the effective value of the recharge voucher becomes $10.00.

  The resultant core balance is -$10.00 (current balance), -$5.00 (reactivation fee), + $10.00 (effective recharge voucher value), = -$5.00. Because this is less than the primary offer suspend threshold, the recharge is not allowed.

- Subscriber's current state is S1 (suspended due to expiration). The core balance value is $10.00. He or she recharges with a recharge voucher that has a $20.00 face value plus 30 days. The RCT entry has an adjustment amount of -$20.00 and -30 days.

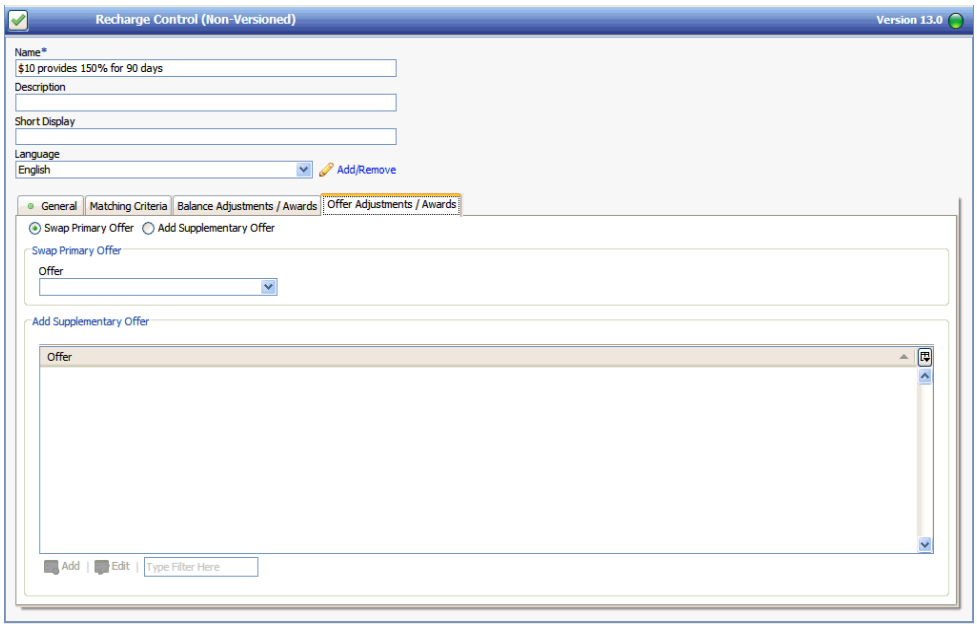
  In this case, $0.00 is added to the subscriber's core balance (it remains at $10.00). The recharge effective offset is zero (30 - 30). However, this value of zero is added to today (because the expiration date was in the past). This is allowed, so the subscriber is activated and core expiration date is set to today.
- A subscriber's primary offer maximum core balance is $100.00 and his current balance is $85.00. He attempts to recharge with a $20.00 recharge voucher. An adjustment amount of –$10.00 causes the effective value of the recharge to become $10.00 so the total credited to the account results in a balance of $95.00 which is less than the primary offer maximum. This is allowed.
- A subscriber's primary offer maximum recharge per session is $75.00 and the face value of the recharge voucher he or she wants to use is $80.00. An adjustment amount of -$10.00 causes the effective value of the recharge to become $70.00, which is less than the primary offer maximum recharge per session. This is allowed.

Comverse ONE Service Fee logic checks for a $0.00 face value and/or a zero Expiration Offset based on the actual recharge voucher values, not the effective values.

Offer Adjustments / Awards Tab

The Offer Adjustments / Awards tab, shown in Figure 13, "Recharge Control Offer Adjustments/Awards Tab" displays the primary and supplementary offers currently associated with a specific RCT row.

Figure 13 Recharge Control Offer Adjustments/Awards Tab

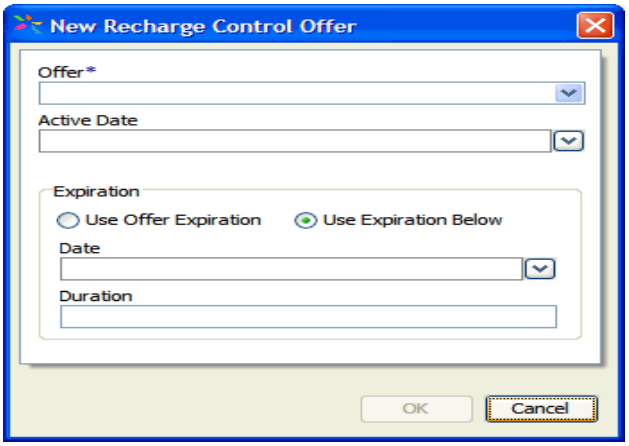


- **Swap Primary Offer**: Specifies that this offer replaces the primary offer on a successful recharge.

- Add Supplementary Offer: Specifies that this offer is added to the subscriber or account on a successful recharge.

The New Recharge Control Offer window, shown in Figure 14, "New Recharge Control Offer Window," enables adding a new supplementary offer to the Recharge Control Table.

Figure 14 New Recharge Control Offer Window

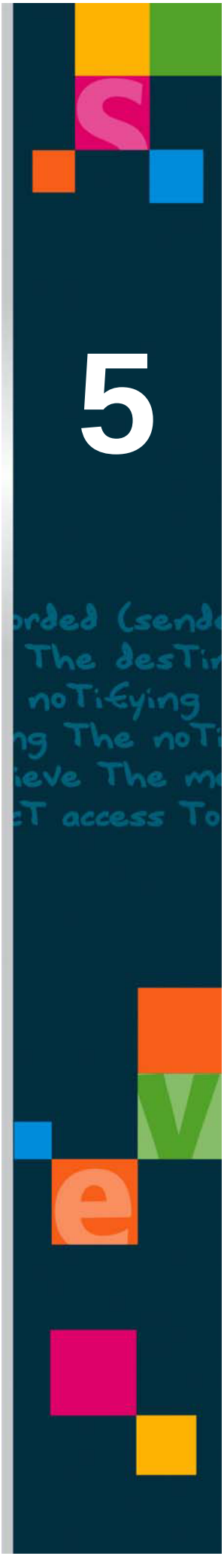


- **Offer**: Select an offer from the dropdown list.
- **Active Date**: Date the offer becomes active. If you leave this field blank, the offer active date becomes the date of the recharge.
- **Expiration**: You have two options for setting the expiration date of the offer:
  - **Use Offer Expiration**: Select this button to use the expiration date of the offer. When you select this button, the **Date** and **Duration** fields become disabled.
  - **Use Expiration Below**: Select this button if you want to use a date or duration other than what is configured for the offer.
    - **Date**: Select to set an explicit expiration date. When you select this button, a calendar appears that enables you to select a date.
    - **Duration**: Select to set the number of days after the offer active date during which this offer is active and available to the user.

NOTE The Inactive Date and Duration fields are mutually exclusive. Set either a specific end date or a duration in days, but not both.

Chapter 5

Card Generator Overview



Overview

The Comverse ONE Card Generator is an off-line software package used to create batches of recharge vouchers, calling cards, and unified cards. A batch can contain up to 999,999 vouchers. Batch files are exported to the CC Batch application, which uploads the voucher data to the voucher database.

The Card Generator is installed on a standalone Windows machine. For security reasons, it is separate from Comverse ONE, and must be protected from unauthorized access.

The Card Generator uses a sophisticated pseudo-random number algorithm to generate the identifying codes for recharge vouchers, calling cards, or unified cards. When the Card Generator is installed, a unique signature is provided to personalize the algorithm for that specific Card Generator, so that other Card Generators cannot produce the same pseudo-random numbers.

The number generation algorithm produces identifying numbers that are long enough (from 9 to 30 digits, inclusive) to make it almost impossible to calculate or deduce other valid numbers from known recharge voucher numbers (for example, from several numbers of used recharge vouchers).

Use of the Comverse Card Generator program is optional. Some operators use other card generation systems that perform similar functions.

Recharge Voucher Batch Creation

The information in this section refers to voucher batches, but the section is valid for batches of calling cards and unified cards also.

The Card Generator creates batches of recharge vouchers, calling cards, or unified cards. Batches are identified by their batch numbers and serial numbers.

To create a batch, the operator specifies the parameters of the batch, including the currency, the value, and in the case of recharge cards, the expiration period offset (the number of days by which the expiration date is extended when a subscriber uses that recharge voucher to recharge). All recharge vouchers of the batch share these parameters. Each voucher differs only in its serial number and identifying code.

Every batch has a unique batch number. Within the batch, every voucher has a unique serial number. The batch number and the serial number uniquely identify a recharge voucher. The identifying numbers are unique across all batches.

Creating the batch in the Card Generator does not physically create the recharge vouchers. The batch is listed in a local database within the Card Generator. Later, the batch can be exported so that it can be loaded into the Comverse ONE voucher database or sent to a print house. Only then are individual recharge voucher records physically generated.

The Card Generator can export three files for each new batch of vouchers: a file for the printer, a file for database provisioning, and a file for inventory control.

Once a batch of recharge vouchers is generated by the Card Generator, it can be exported to a writable CD or other media for a print house to read and process. The file can be encrypted for security reasons. The CD is taken to the print house, the file is decrypted, and the vouchers are printed. Batches of vouchers are stored by the network operator or reseller before distribution.

The database provisioning file contains CC Batch commands necessary to register that batch of vouchers into the rating or voucher database. This file is copied onto a CD or other media and loaded to the database using a CC Batch process.

Fast Voucher Load

The information in this section refers to voucher batches, but the section is valid for batches of calling cards and unified cards also.

The Card Generator also exports records in the Fast Voucher Load file format, which enhances the speed at which vouchers are loaded into the database. This enhanced speed is possible because the data format reflects the format used by SQL Loader, which is used to load the vouchers. The Fast Voucher Load format is shown in Figure 15.

Figure 15 Fast Voucher Load File Format

```
<Batch>
<CreateVoucherBatch>
<Common>
<BatchNumber>10001</BatchNumber>
<CardId>1001</CardId>
<State>Idle</State>
<SerialNumber>1001</SerialNumber>
<batch_count>100</batch_count>
<Reseller>Reseller1</Reseller>
<FaceValue>70</FaceValue>
<CurrencyUnit>US Dollars</CurrencyUnit>
<date_offset>30</date_offset>
<ExpirationDate>2010-10-27</ExpirationDate>
<create_date>2009-10-27</create_date>
<Distributor></Distributor>
<ChangePhonebook>0</ChangePhonebook>
</Common>
<Vouchers>
<CodeNumber>aaaaaaaaaaaa</CodeNumber>
<CodeNumber>bbbbbbbbbbbb</CodeNumber>
<CodeNumber>cccccccccccc</CodeNumber>
<CodeNumber>dddddddddddd</CodeNumber>
<CodeNumber>eeeeeeeeeeee</CodeNumber>
</Vouchers>
</CreateVoucherBatch>
</Batch>
```

As shown in Figure 15, the file starts with information common to each voucher, followed by a list of voucher code numbers. This reflects the format suitable to SQL Loader.

In a Fast Voucher Load, the CCBatch utility reads the export file and determines that it is a Fast Voucher Load. CCBatch calls a Unified API method, which obtains the voucher key and loads the first record. For the remaining records, CCBatch formats an input file compatible with SQL Loader, which loads the remaining records.

Normal Voucher Load

The information in this section refers to voucher batches, but the section is valid for batches of calling cards and unified cards also.

The Card Generator also supports the Normal Load format, which has no common information. Instead, complete information is specified for each voucher enclosed within the `VoucherObject` tag, as shown in Figure 16.

Figure 16 Normal Load File Format

```
<Batch>
<voucherCreate>
<VoucherObject>
<batchNumber>10002</batchNumber>
<serialNumber>1200</serialNumber>
<codeNumber>aaaaaaaaaaaa</codeNumber>
<acctExpOffset>35</acctExpOffset>
<changePhonebook>0</changePhonebook>
<currencyUnit>US Dollars</currencyUnit>
<distributor></distributor>
<expirationDate>2010-10-27</expirationDate>
<expireOffset>35</expireOffset>
<faceValue>
<longValue/>
<value>71</value>
</faceValue>
<identityId/>
<orderNumber/>
<prominExpOffset1/>
<prominExpOffset2/>
<prominValue1/>
<prominValue2/>
<rechargeServerId/>
<shipDate/>
<spName>Reseller1</spName>
<state>1</state>
<subscriberId/>
<ucardCos/>
<ucardSp/>
<voucherType>0</voucherType>
</VoucherObject>
</voucherCreate>
<voucherCreate>
<VoucherObject>
<batchNumber>10002</batchNumber>
<serialNumber>1201</serialNumber>
<codeNumber>bbbbbbbbbbbb</codeNumber>
<acctExpOffset>35</acctExpOffset>
// other information specific to voucher card bbbbbbbbbbbb
</VoucherObject>
</voucherCreate>
</Batch>
```

With Normal Load batch loading, CCBatch reads the export file and determines that it is the Normal Load format. For each `VoucherObject` section, CCBatch makes a Unified API call, passing the data in the section. This is much slower than the Fast Voucher Load format, but CCBatch maintains this slower format for customers upgrading to Comverse ONE from RTB, which did not have the Fast Voucher Load functionality.

Recharge Voucher State

The information in this section refers to voucher batches, but the section is valid for batches of calling cards and unified cards also.

Recharge vouchers can have any of the states shown in table Table 8.

Table 8 Valid Voucher States (From RECHARGE_CARD_STATE_VALUES)

STATE_ID	DISPLAY_VALUE
1	Idle
2	Shipped
3	Active
4	Disqualified
5	Stolen
6	Expired
7	Used by Subscriber
8	Reserved
9	Consumed
10	Suspended
11	Used by Account
12	Used by Voucher Payment
51	Suspended From Idle
52	Suspended From Shipped
53	Suspended From Active

The following discussion of voucher operational details involving resellers, distributors, and operators represents a typical scenario. Other scenarios are possible. Also, voucher transition from idle to active is simply a typical scenario used for illustrative purposes. Operators can transition cards to other states, depending on their operational needs.

Recharge Vouchers are typically created in the Idle state (1). Before the state can be changed, a voucher batch must first be imported into the voucher database, typically using CC Batch (although the Unified API can also be used). The CC Batch user must enter a command to change the state to Shipped (2) or Active (3). A single CC Batch modify command affects the whole batch of vouchers. (Voucher batch information is found in the Batch Information window of the Card Generator.) The distributor or reseller name, order number and shipment date can be specified using CC Batch. After the batch is imported, the Unified API can be used to change voucher attributes if needed.

Typically, when an order is received from a distributor or reseller for a batch of vouchers of a particular face value, the order is processed through the network operator's accounting and inventory system. The proper number of vouchers, for example, a thousand, of an existing batch created for that distributor or reseller (for example, serial numbers 1001 to 2000) are then shipped.

When the vouchers reach the distributor or reseller, the recipient acknowledges delivery and requests voucher activation. The vouchers are marked in the network operator's accounting system as having value and the distributor or reseller is sent an invoice. The 1000 vouchers are typically activated using CC Batch although the Unified API can also be used. A single command

in CCBatch is sufficient to change the state to Active (3). From this point on, these vouchers can be used to recharge subscriber accounts.

When a recharge voucher is used, the system records the date, the time, and the ID of the subscriber or account that was recharged by the voucher. (Or, in the Converged deployment mode, the voucher could have been used as a payment.) The voucher state transitions to one of the used states (7, 11, 12), which means the state can no longer be modified.

If there is a problem with a batch of vouchers or individual vouchers, (for example, if a voucher is stolen) the voucher state can be changed to Disqualified (4) or Stolen (5) using CC Batch or the Unified API. There is no way to re-qualify a voucher that has been marked as Disqualified.

Each batch has a fixed expiration date. Once that date is reached, all of the vouchers in the batch transition to Expired (6) and they cannot be reactivated.

Reserved (8) is a state that is only used as part of the roaming voucher customization, and should not be used for any other purpose. It indicates the voucher has been selected to be used, and will either return to being Active (3), or get marked as used.

Operators can use the following suspended states to temporarily make the voucher unavailable:

- The Suspended From Idle state (51) indicates that the voucher was moved from Idle to Suspended, and can only be moved back to the Idle state.
- The Suspended From Shipped state (52) indicates that the voucher was moved from Shipped to Suspended, and can only be moved back to the Shipped state.
- The Suspended From Active state (53) indicates that the voucher was moved from Active to Suspended, and can only be moved back to the Active state.
- The Suspended state (10) is available as a destination state, however, internally the voucher will be moved into one of the other suspended states (51, 52, 53) depending on the state from which it is being moved.

The Consumed state (9) is reserved for future use for Roaming Voucher.

Table 9, “Voucher State Transitions,” on page 56 defines valid and invalid state transitions.

Table 9 Voucher State Transitions

From →To	idle (1)	Shipped (2)	Active (3)	Used by Sub (7)	Used by Acct (11)	Used as Payment (12)	Expired (6)	Disqualified (4)	Stolen (5)	Reserved (8)	Suspended (10)	Suspended from Idle (51)	Suspended from Shipped (52)	Suspended from Active (53)	Consumed (9)
Idle(1)	-	OK	OK	No	No	No	OK1	OK	OK	No	OK	OK	No	No	*
Shipped (2)	No	-	OK	No	No	No	OK1	OK	OK	No	OK	No	OK	No	*
Active (3)	No	No	-	OK2	OK2	OK2	OK1	OK	OK	OK3	OK	No	No	OK	*
Used by Subscriber (7)	No	No	No	-	No	No	No	No	No	No	No	No	No	No	*
Used by Account (11)	No	No	No	No	-	No	No	No	No	No	No	No	No	No	*
Used as payment (12)	No	No	No	No	No	-	No	No	No	No	No	No	No	No	*
Expired (6)	No	No	No	No	No	No	-	No	No	No	No	No	No	No	*
Disqualified (4)	No	No	No	No	No	No	No	-	No	No	No	No	No	No	*
Stolen (5)	No	No	No	No	No	No	No	No	-	No	No	No	No	No	*
Reserved (8)	No	No	OK3	OK3	OK3	OK3	No	No	No	-	No	No	No	No	*
Suspended from Idle (51)	OK	No	No	No	No	No	No	No	No	No	-	-	OK	OK	*
Suspended from Shipped (52)	No	OK	No	No	No	No	No	No	No	No	-	OK	-	OK	*
Suspended from Active (53)	No	No	OK	No	No	No	No	No	No	No	-	OK	OK	-	*
Consumed (9)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	-

OK1: Only system-initiated transitions to Expired are allowed.

OK2: Active to Used is based on a successful recharge or the use of a voucher as a payment (manual or system-initiated).

OK3: Only system-initiated transitions to and from Reserved are allowed, as part of Roaming Voucher.

*Consumed: The consumed state is reserved for future use for Roaming Voucher.

Encryption

The information in this section refers to voucher batches, but the section is valid for batches of calling cards and unified cards also.

The data stored on the Card Generator and contained in the exported files is very sensitive information. If not properly protected, it can be used for fraudulent purposes. To prevent fraud, it is necessary to encrypt the data.

Before it is sent to the print house, the whole export file can be encrypted using encryption software included with the Card Generator application. At the print house, the file is decrypted using decryption software supplied with the Card Generator. The inputs for the decryption software are the encrypted file and the password.

Once the file is opened, it contains all the raw information including the identifying voucher numbers. This information is needed to print the identifying numbers on the vouchers. Measures must be taken at the print house to protect the decrypted file and the associated information.

Voucher Card Code Hashing

The information in this section refers to voucher batches, but the section is valid for batches of unified cards also. However, calling cards *do not* support hashing.

For security purposes, Comverse ONE provides the ability to store voucher card codes in hashed format in the database, using the MD5 algorithm for hashing. The following settings determine whether voucher card codes will be stored in hashed format in the database:

- The Card Generator "Card Code Hashing" setting. (For more information, see Chapter 6, "Card Generator Configuration."
- Fields in the `RT_SERVICE_REF` table (in the rating database):
  - **`is_hashing_in_use`**: Indicates whether voucher card code numbers are to be hashed before storing in database, when voucher data is sent from CCBatch or third-party clients created with the Unified API.
  - **`is_hashing_done`**: Along with `is_hashing_in_use`, controls hashing behavior for voucher card codes when loaded from CCBatch.
  - **`service_key`**: A string that the internal hashing mechanism uses to hash the voucher card code number. If your system is configured to hash voucher card codes, then the service key must match the value of the "Card Code Hashing" field in the Card Generator.

Voucher card codes are also known as the "secret code" or "secret number."

The `RT_SERVICE_REF` field values for `is_hashing_done`, `is_hashing_in_use`, and `service_key` are cached. Hash settings, once set, cannot typically be changed. For information about how to migrate a non-hashed system to hashing (or vice verse), contact your Comverse representative. Do not attempt a migration without Comverse support.

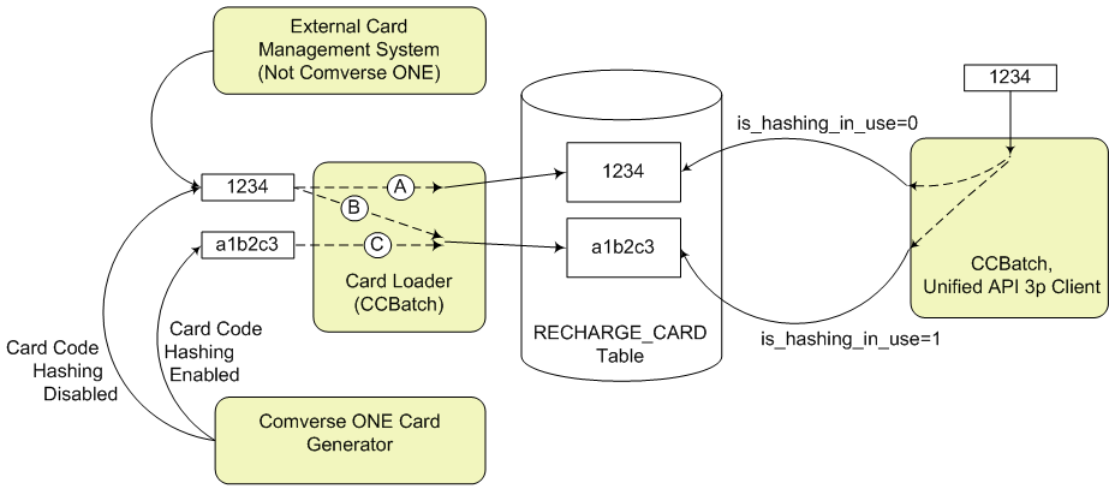
When voucher cards originate in CCBatch or a client application built using the Unified API, hashing is applied if the value of `RT_SERVICE_REF.is_hashing_in_use` is `1`. If the value is `0`, then hashing is not applied.

When voucher cards originate in the Card Generator or another external source, hashing is applied according to the following algorithm:

- If voucher card data contains hashed codes, the cards will be loaded only if both `is_hashing_done` and `is_hashing_in_use` are set to `1`.
- If voucher card codes are not hashed, then they will be hashed before loading if `is_hashing_in_use` is `1` and `is_hashing_done` is `0`.
- If voucher card codes are not hashed, then they will be loaded unhashed into the database if `is_hashing_in_use` is `0`, regardless of the value of `is_hashing_done`.

Figure 17, "Voucher Card Code Hashing," on page 58 illustrates how hashing is applied to a voucher card code depending on the voucher card source and various settings. In the figure, "1234" and "a1b2c3" represent a voucher card code in raw and hashed format respectively.

Figure 17 Voucher Card Code Hashing



Legend for Card Loader Paths		
	is_hashing_in_use	is_hashing_done
A	0	n/a
B	1	0
C	1	1

High Capacity Feature

The information in this section refers to voucher batches, but the section is valid for batches of calling cards and unified cards also.

The High Capacity feature enhances the Card Generator by increasing the total number of vouchers supported and expediting batch generation. Earlier versions of the Card Generator

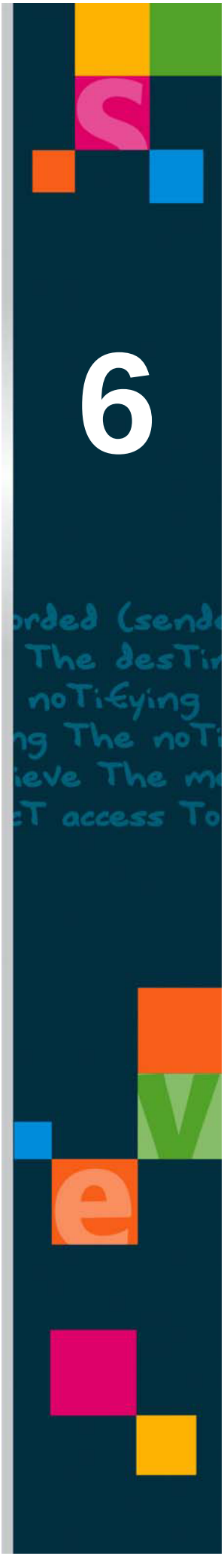
limited the number of vouchers that could be generated by storing all vouchers in a local database to avoid producing duplicates. This method of checking for duplicates slows the batch creation time especially for large databases.

The High Capacity Card Generator supports the ability to enable and disable hashing of the generated voucher codes from both the Configuration screen (at installation time) and the System Options screen (available anytime). Either screen can also be used to enable and disable the Fraction for the Face Value feature.

The Card Generator also allows the user to enable or disable the generation of unified cards, from both the Configuration screen (at installation time) and the System Options screen (available anytime).

Chapter 6

Card Generator Configuration



Installing the Card Generator

The minimum hardware and software requirements needed to install the Card Generator are:

- Pentium class PC
- 64 MB RAM
- 100 MB free disk space
- Video: 1024x768 resolution, 256 colors, suggested monitor size 17" or greater
- CD-ROM Drive
- Windows 2000, Windows XP or Windows Vista.

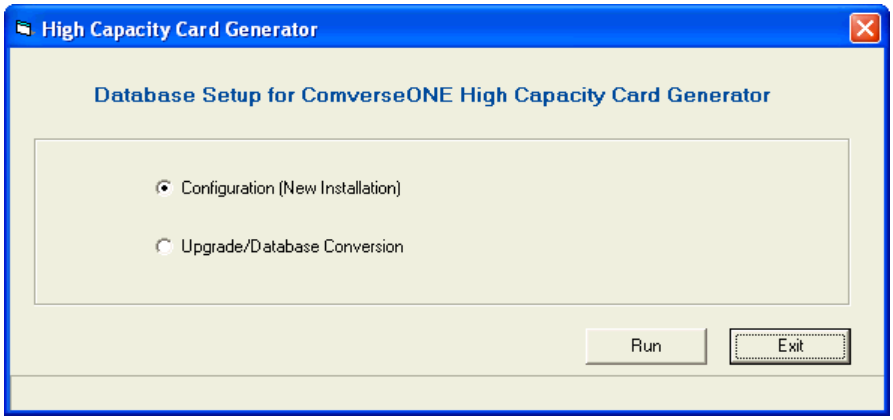
Complete the steps below to install the Card Generator:

1. Double click the Card Generator setup.exe file to run the installation program. The first of five installation Wizard screens appears. Click **Next >** to continue with the installation.
2. The second installation Wizard screen appears. Enter a user name for the primary user of the card generator in the User Name field.
3. Enter the name of the company or organization in the **Organization** field.
4. Select one of the **Install this application for:** buttons:
   - Anyone who uses this computer (All users)
   - Only for me (User)
5. Click **Next >** to continue with the installation.
6. On the third screen of the installation Wizard, click **Next >** to accept the default installation path (C:\Program Files\Comverse\Card Generator<*release number*>\) or click **Change...** to specify a different path in which to install the card generator software.
7. On the fourth screen of the installation Wizard, review the selected settings. Click **< Back** to make any necessary corrections or click **Install** to begin the installation process.
8. When the installation process is complete the final screen of the installation wizard appears. Select the **Launch the program** checkbox and click **Finish** to configure the new card generator installation.

Configuring the Card Generator

Once the Card Generator has been successfully installed, the **Database Setup** screen, shown in Figure 18, "Database Setup Screen," appears. For a new installation, select **Configuration (New Installation)** and click **Run**. Then, click **Ok** in response to the prompt to start configuration.

Figure 18 Database Setup Screen



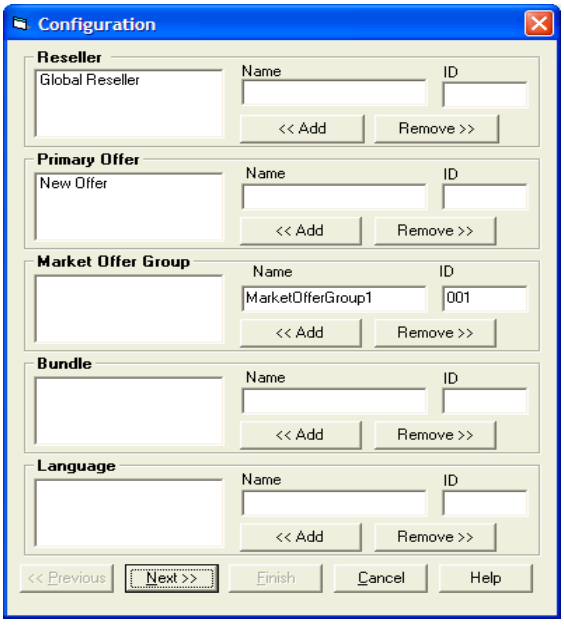
The Configuration window appears. There are four pages that must be completed in the Configuration window.

The values entered during the configuration process are the default values that are used by the Card Generator when creating a batch of vouchers. These values can be modified later in the four pages that display when System Options is selected from the Administrative menu, or, for individual batches, on the page that appears when a new batch is created.

Entering Values on Page One of the Configuration Window

Reseller, primary offer, bundle, and language options are defined on the first page of the Configuration window shown in Figure 19, "Configuration Window - Page One."

Figure 19 Configuration Window - Page One



The fields on the first page of the Configuration window correspond to the fields on the Options window (System Properties tab) after Card Generator installation is complete.

1. In the Reseller frame, create a list of valid resellers to display in a selection list when creating voucher batches.

   a. To add a reseller to the list:

   - In the **Name** field, enter the name of the reseller.
   - In the **ID** field, enter the reseller's ID.
   - Click **Add**.

Operators must be careful to ensure that the combination of Reseller and Reseller ID specified for a card batch in the Card Generator configuration or System Options is accurate. Card Generator does not validate this pair before creating a new batch, and CC Batch does not perform any data validation on batch load.

   b. To remove a reseller from the list:

   - In the list, click to select the reseller.
   - Click **Remove**.

2. In the Primary Offer frame, create a list of valid primary offers to display in a selection list when creating voucher batches.

   a. To add a primary offer to the list:

   - In the **Name** field, enter the name of the primary offer.
   - In the **ID** field, enter the primary offer ID.
   - Click **Add**.

   b. To remove a primary offer from the list:

   - In the list, click to select the primary offer.
   - Click **Remove**.

3. In the Market Offer Group frame, create a list of valid market offer groups to display in a selection list when creating voucher batches.

   a. To add a market offer group to the list:

   - In the **Name** field, enter the name of the market offer group.
   - In the **ID** field, enter the market offer group ID.
   - Click **Add**.

   b. To remove a market offer group from the list:

   - In the list, click to select the market offer group offer.
   - Click **Remove**.

4. In the Bundle frame, create a list of valid bundles to display in a selection list when creating voucher batches.

   a. To add a bundle to the list:

- In the **Name** field, enter the name of the bundle.
- In the **ID** field, enter the bundle ID.
- Click **Add**.

b. To remove a bundle from the list:

- In the list, click to select the bundle.
- Click **Remove**.

Bundles are not supported for calling cards.

5. In the Language frame, create a list of valid languages to display in a selection list when creating voucher batches.

a. To add a language to the list:

- In the **Name** field, enter the name of the language.
- In the **ID** field, enter the language ID.
- Click **Add**.

When creating calling card batches and unified card batches (see Chapter 7, "Using the Card Generator"), you must select a language or you will not be permitted to create the batch. However, languages are only available if you configure them here on page one or later on in the Options window (see Figure 28, "Options - System Properties Tab") after installing Card Generator.

b. To remove a language from the list:

- In the list, click to select the language.
- Click **Remove**.

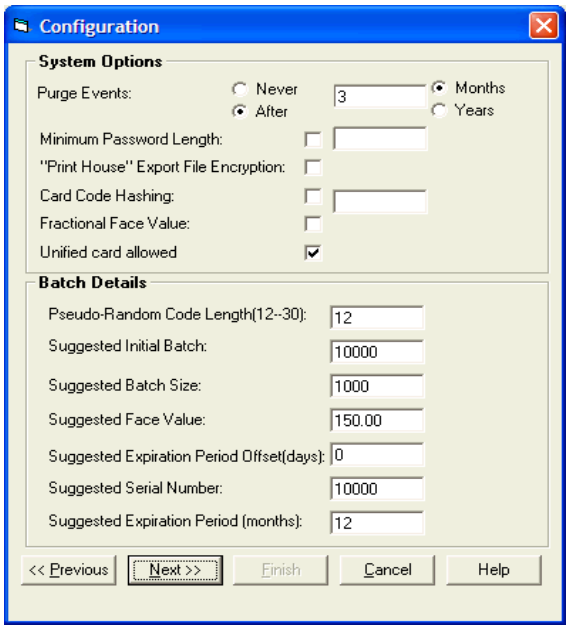
6. Click **Next** to move to the next page of the Configuration window.

The Name and ID of all entities entered in the configuration windows must match the values defined in the Product Catalog.

Entering Values on Page Two of the Configuration Window

Various system options and default values used in the creation of new batches are defined on the second page of the Configuration window shown in Figure 20, "Configuration Window - Page Two."

Figure 20 Configuration Window - Page Two



NOTE The fields on the second page of the Configuration window correspond to the fields on the Options window (Batch Creation tab) after Card Generator installation is complete.

1. From the **Purge Events:** radio buttons, select **After** or **Never**. If **After** is selected, enter a number in the field, and select either the **Months** or the **Years** radio button.

NOTE Because every event is logged, the event log file can grow very large. The purge function enables a priority user to delete events that are older than a configurable time period.

2. Select the **Minimum Password Length** checkbox to set a minimum length for the password, then enter the number of characters in the **Characters** field.

NOTE Passwords can be no longer than twenty characters. It is recommended that the password be at least five characters and less than eight.

3. Select the **"Print House" Export File Encryption** checkbox to encrypt Card Generator output files. The print house uses the decryption tool and a password to decrypt output files.
4. Select the **Card Code Hashing** checkbox to store recharge voucher numbers in the database in a hashed format. This format uses a hashing algorithm that works in conjunction with a five-digit alphanumeric key, entered in the field beside the checkbox. The key must match the value of the `service_key` field in the `RT_SERVICE_REF` table in the rating database. When the checkbox is not selected, the key field is not accessible, and no hashing is used.

NOTE Calling cards do not support hashing.

5. Select the Fractional Face Value checkbox to enable generation of vouchers with fractional currency values.
6. Select the **Unified card allowed** checkbox to allow users to create unified cards. A unified card can be used either as (1) a recharge voucher (to replenish an existing subscriber account), or (2) as a calling card, allowing subscribers to make prepaid calls. Subscribers can use unified cards only if the `ENABLE_UNIFIED_CARD` system parameter is enabled.
7. In the **Pseudo-Random Code Length (9-30)** field, enter the length of the code number used to activate recharge cards. This can be from 9 to 30 characters long. This cannot be modified after the initial configuration.

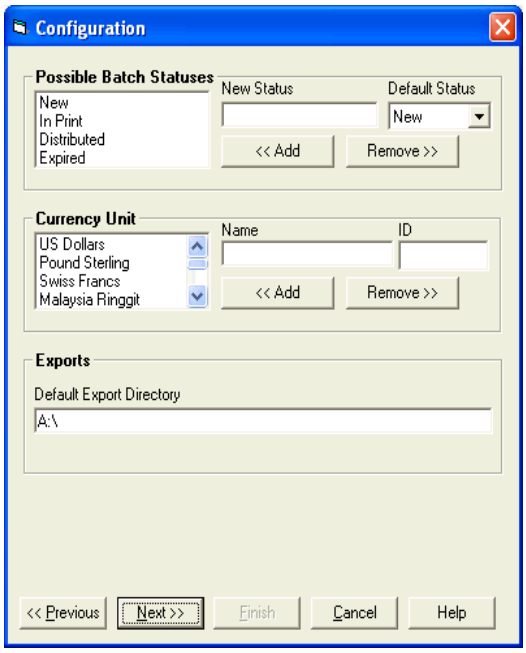
The length of the code number designated for creating batches of vouchers with the Comverse ONE Card Generator must be different than the length of the code number used for voucher batches from external systems that are loaded into the Comverse ONE system.

8. In the **Suggested Initial Batch** field, enter an identifying number for the initial batch. This starting batch number is automatically increased by one each time a batch is created. It can also be modified manually when creating a new batch.
9. In the **Suggested Batch Size** field enter a default value for batch size. This field can be changed during batch creation.
10. In the **Suggested Face Value** field enter a default face value. Any positive number (including fractional values) or zero can be used. This field can be changed during batch creation.
11. In the **Suggested Expiration Period Offset (days)** field enter the default number of days a subscriber or account is extended when a voucher from this batch is used. This can be a positive integer or zero. This field can be changed during batch creation.
12. In the **Suggested Serial Number** field, enter a default serial number for the first voucher in the batch. Any number can be used. This field can be changed during batch creation.
13. In the **Suggested Card Expiration Period (months)** field, enter the default number of months after which the vouchers expire. During batch creation, this period is translated into a date. This field can be changed during batch creation.
14. Click **Next** to move to the next page of the Configuration window.

Entering Values on Page Three of the Configuration Window

Default values relating to how batches are handled are defined on the third page of the Configuration window shown in Figure 21, “Configuration Window - Page Three.”

Figure 21 Configuration Window - Page Three



NOTE The fields on the third page of the Configuration window correspond to the fields on the Options window (Format tab) after Card Generator installation is complete.

1. The **Possible Batch Statuses** field contains a default list of possible statuses provided with the system: New, In Print, Distributed, Expired.
   a. To add a new status to the Possible Batch Statuses list, enter the name in the **New Status** field and click **<< Add**.
   b. To remove a status from the Possible Batch Statuses selection list, select the status and click **Remove >>**.
2. From the **Default Status** dropdown list, select a default status for use during batch creation.
3. The **Currency Unit** field contains a list of currencies supported by Comverse ONE:
   a. To add a new currency unit to the Currency Unit selection list, enter the name of the unit in the **Name** field, enter an ID for the new currency unit in the **ID** field, and click **<< Add**.
   b. To remove a currency unit from the Currency Unit selection list, select the unit in the **Currency Unit** selection list and click **Remove >>**.

NOTE No currency default is set here; only currency options are configured.

4. In the **Default Export Directory** field, enter the designation of the device most often used to capture card batches.

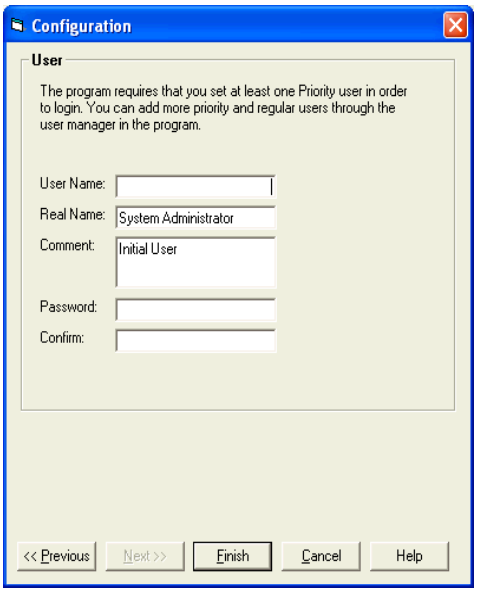
NOTE The default export directory can be any valid path, including a writable CD drive, a directory on the hard drive, or other writeable medium. Large batches might not fit on a CD.

5. Click **Next** to move to the next configuration page.

Entering Values on Page Four of the Configuration Window

A Priority user is defined in the fourth page of the Configuration window shown in Figure 22, "Configuration Window - Page Four."

Figure 22 Configuration Window - Page Four



1. In the **User Name** field, enter the user name of the priority user.
2. In the **Real Name** field, enter the full name of the priority user.
3. In the **Comment** field, enter any comments about the user (optional).
4. In the **Password** field, enter the priority user's password. The password must contain the minimum number of digits previously set in the Password Length field on the first page of the Configuration window.
5. In the **Confirm** field, reenter the password to confirm its correctness.
6. Click **Finish** to complete configuration.

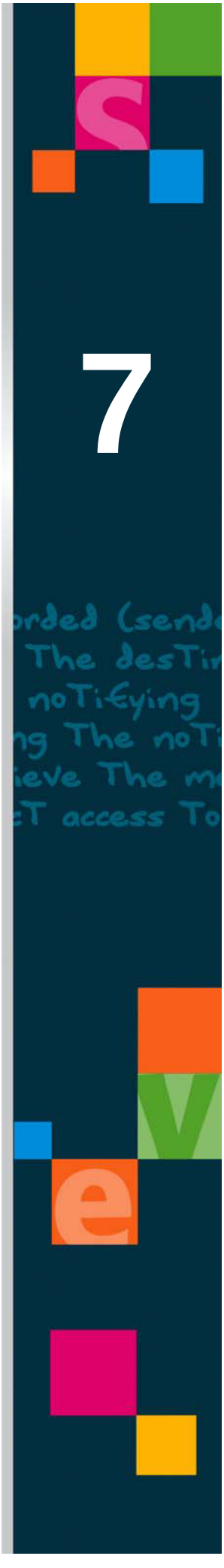
NOTE There can be only one Priority user.

NOTE For security reasons, the actual passwords do not display.

The passwords entered in the Password and Confirm fields must be exactly the same. If they are not, the Save button is not enabled and the user cannot save the change.

Chapter 7

Using the Card Generator



Logging In and Exiting the Card Generator

1. On the desktop, click the **Card Generator** icon. The Login window appears.
2. In the **User Name** field, enter the user name.
3. In the **Password** field, enter the password.
4. Click **OK**.
5. To exit the Card Generator, select **Exit** from the File menu.

Creating Users

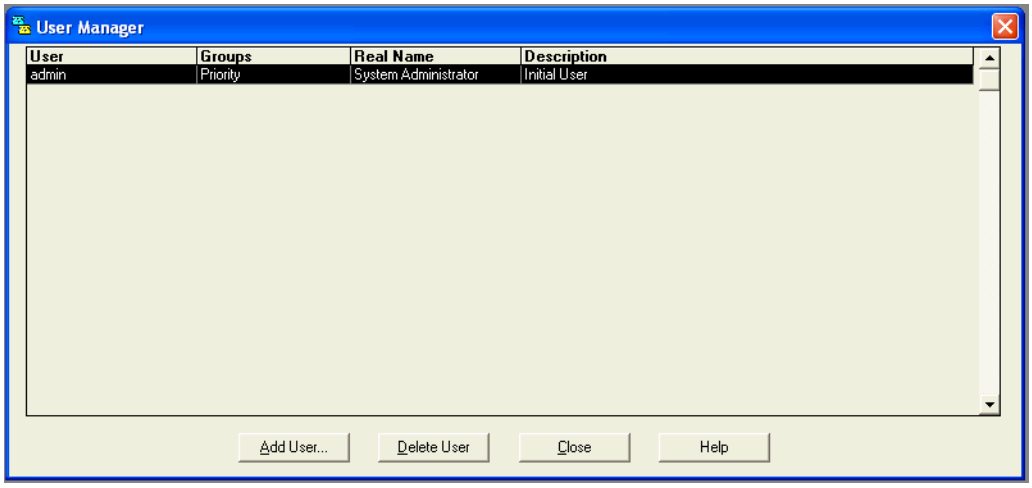
Three types of users can be defined on the Card Generator:

- **Priority**: Has full administrative access to all functions. including Event Viewer, Users and Groups (User Management) and System Options screens.
- **Management**: Can create and export recharge voucher batches.
- **Clerical**: Can view recharge voucher batches and change the status of batches.

NOTE There can be only one Priority user. The Priority user is created when the Card Generator is initially installed.

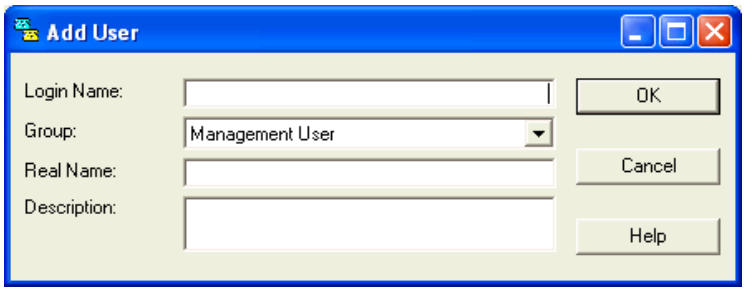
1. From the Administrative menu, click **Users and Groups**. The User Manager window, shown in Figure 23, "User Manager Window," appears, listing all currently defined users and the group to which they belong.

Figure 23 User Manager Window



2. Click **Add User.** The Add User window, shown in Figure 24, "Add User Window," appears.

Figure 24 Add User Window



3. In the **Login Name** field, enter a user name (no longer than twenty characters).
4. In the **Group** field, select the group (Management or Clerical) to which the user is assigned.
5. In the **Real Name** field, enter the user's full name (optional).
6. In the **Description** field, enter a description of the user's role or similar information (optional).

NOTE When a Management or Clerical user is created, a password is not automatically assigned. The system requires the user to set a password before logging in to the system for the first time.

Deleting Users

The following procedure describes how to delete a user.

1. In the User Manager window, select the user's name.
2. Click **Delete User**. A confirmation dialog box appears. Click OK to delete the user from the database.

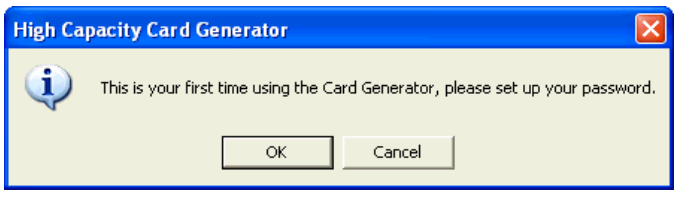
NOTE A Card Generator user cannot be deleted while that user is logged in.

Setting a Password

Passwords must be defined the first time a user logs in to the system.

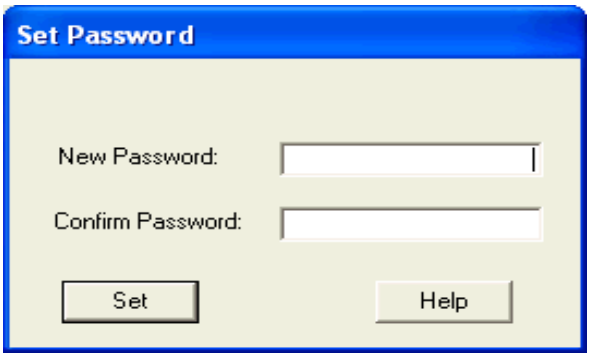
1. When logging in for the first time, at the Login window, in the **User Name** field, enter the username.
2. Click **OK**. If the Card Generator recognizes this as the first log in for the user, the **First Time Login** dialog box, shown in Figure 25, "First Time Login Dialog Box," appears.

Figure 25 First Time Login Dialog Box



3. Click **OK**. The Set Password window, shown in Figure 26, "Set Password Window," , appears.

Figure 26 Set Password Window



4. In the **New Password** field, enter a new password.
5. In the **Confirm Password** field, reenter the password to confirm.

NOTE For security reasons, the actual passwords are not shown.

NOTE The passwords entered in the **New Password** and **Confirm Password** fields must be exactly the same. If they are not the same, an error prompt appears and the user must retry the attempt to set the password.

6. Click **Set**. The new password is saved and the user is logged on.

Changing an Existing Password

The following procedure describes how to change an existing password.

1. From the Administrative menu, select **Change Password**. The Change Password window, shown in Figure 27, "Change Password Window," appears.

Figure 27 Change Password Window

2. In the **Old Password** field, enter the current password.
3. In the **New Password** field, enter a new password.
4. In the **Confirm Password** field, reenter the password to confirm.

NOTE For security reasons, the actual passwords are not shown.

NOTE The passwords entered in the **New Password** and **Confirm Password** fields must be exactly the same. If they are not, an error message appears.

5. Click **Change**.

Creating Voucher Batches

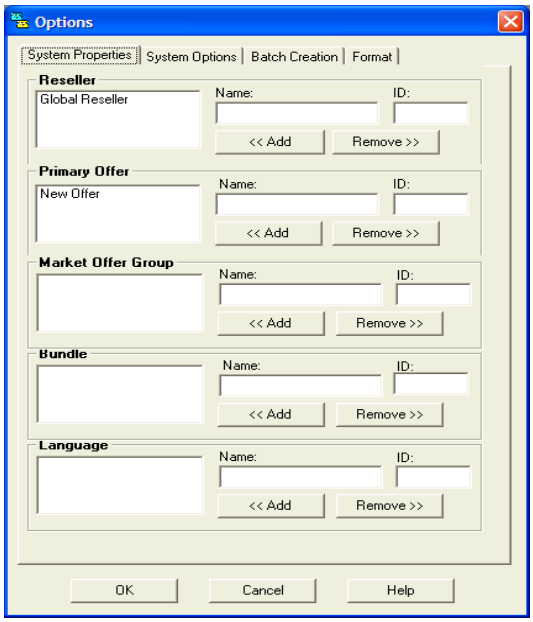
The primary task of the Card Generator is to create batches of recharge vouchers cards.

Modifying Default Values

The default values used in the creation of a batch of vouchers are configured on installation. many of these default values can be modified in the four Options screens.

1. From the Administrative menu, select **System Options**. The Options window, shown in Figure 28, "Options - System Properties Tab," appears with the System Properties tab active.

Figure 28 Options - System Properties Tab



2. On the **System Properties** tab, add and remove reseller names, primary offers, market offer groups, bundles, and languages (the values added are available in dropdown selection lists when creating batches).

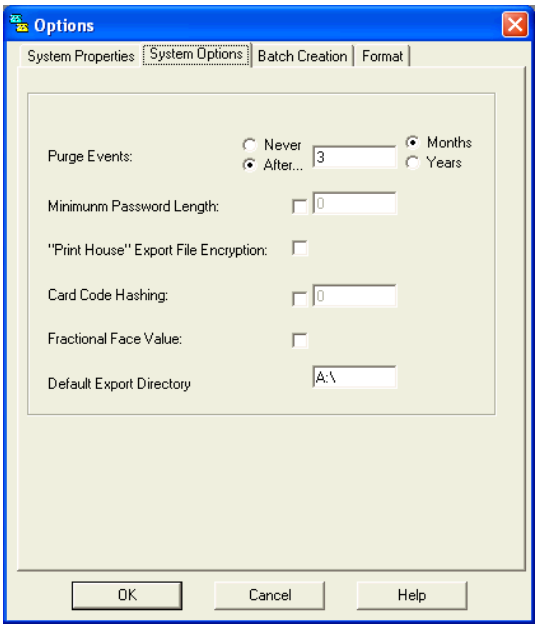
NOTE When creating calling card batches and unified card batches (see "Creating a Batch of Vouchers," on page 81), you must select a language or you will not be permitted to create the batch. However, languages are only available if you configured them during installation on page one of the Configuration window (see Figure 19, "Configuration Window - Page One"), or here on the System Properties tab of the Options window.

NOTE Bundles are not supported for calling cards.

NOTE Operators must be careful to ensure that the combination of Reller and Reseller ID specified for a card batch in the Card Generator configuration or System Options is accurate. Card Generator does not validate this pair before creating a new batch, and CC Batch does not perform any data validation on batch load.

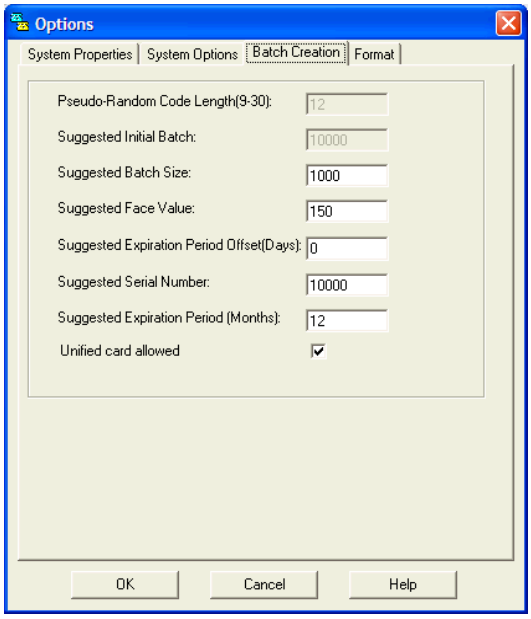
3. Click the **System Options** tab, shown in Figure 29, "Options - System Options Tab," and modify event log, password information, export file encryption and hashing as necessary.

Figure 29 Options - System Options Tab



4. Select the **Fractional Face Value** checkbox to enable a fractional value with up to six decimal places.
5. Select the **Batch Creation** tab, shown in Figure 30, "Options - Batch Creation Tab." Modify the default batch-related information as necessary.

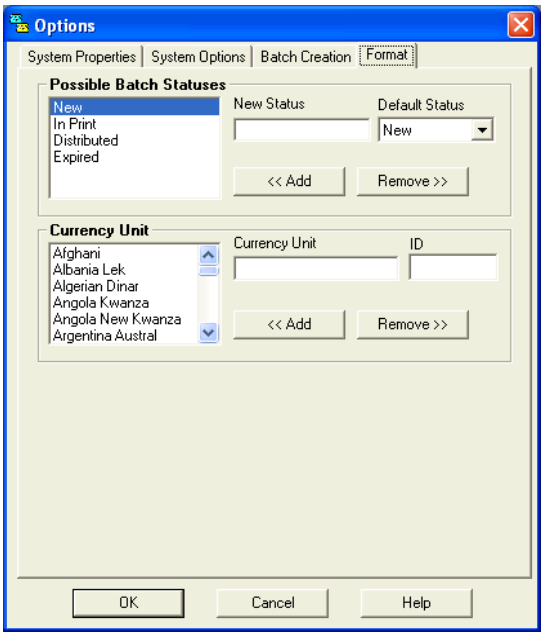
Figure 30 Options - Batch Creation Tab



Select the **Unified card allowed** checkbox to allow users to create unified cards. A unified card can be used either as (1) a recharge voucher (to replenish an existing subscriber account), or (2) as a calling card, allowing subscribers to make prepaid calls. Subscribers can use unified cards only if the `ENABLE_UNIFIED_CARD` system parameter is enabled.

6. Select the **Format** tab, shown in Figure 31, "Options - Format Tab." Modify format-related information as necessary.

Figure 31 Options - Format Tab



7. Click **OK**. The changes are saved on all four tabs and the Options window closes.

Creating a Batch of Vouchers

Batches of recharge vouchers are created in the **Recharge Batch** window.

1. From the Cards menu, select one of the following:
   - **Calling Card**: Calling cards allow subscribers, via interactive voice response (IVR), the ability to make a prepaid call after dialing an access number and providing basic personal information such as card number and account number.
   - **Recharge Card**: Recharge cards allow a subscriber to recharge an existing subscriber account.
   - **Unified Card**: A unified card can be used either as (1) a recharge voucher (to replenish an existing subscriber account), or (2) as a calling card, allowing subscribers to make prepaid calls. Subscribers can use unified cards only if the `ENABLE_UNIFIED_CARD` system parameter is enabled.

You can create unified cards only if you enabled them (1) in the Configuration window during installation (see Figure 20, “Configuration Window - Page Two,” on page 67) or (2) the Options window after installation (see Figure 30, “Options - Batch Creation Tab,” on page 80).

A batch information window appears. The content of the window depends on the type of card you selected from the Cards menu. See Figure 32, “Calling Card Batch Information Window,” Figure 33, “Recharge Card Batch Information Window,” and Figure 34, “Unified Card Batch Information Window.”

Figure 32 Calling Card Batch Information Window

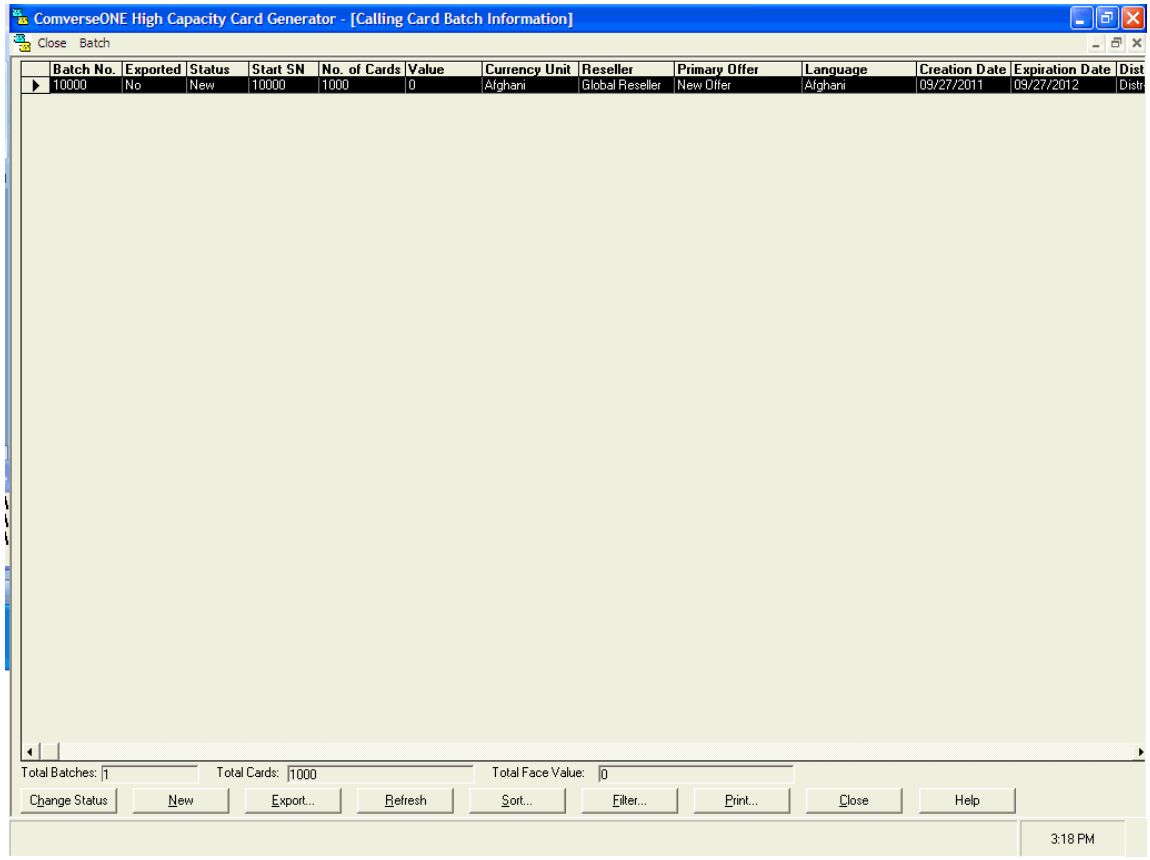


Figure 33 Recharge Card Batch Information Window

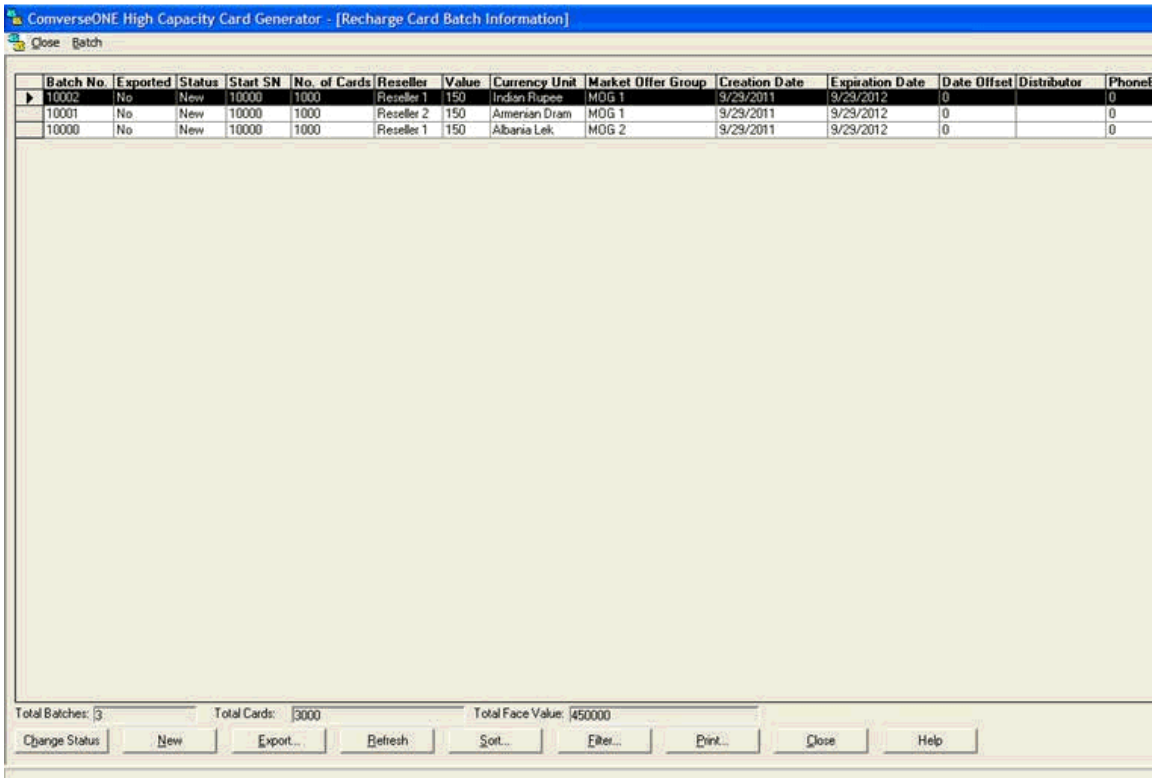
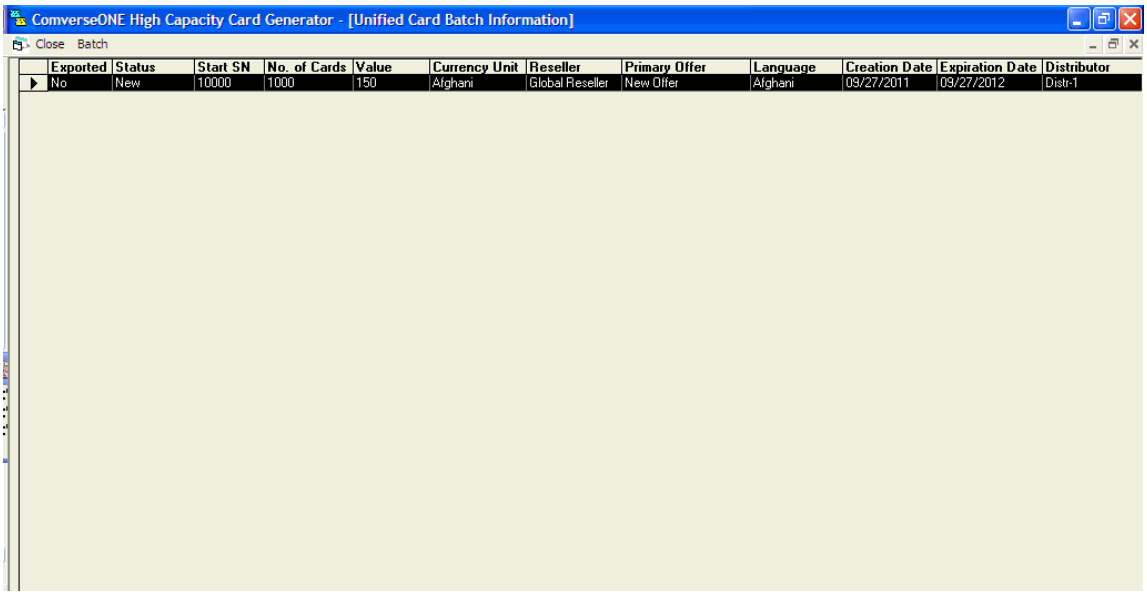


Figure 34 Unified Card Batch Information Window



2. Click **New** or from the Batch menu, select **New**. A batch configuration window appears. The content of the window depends on the type of card you selected in step 1. See Figure 35, "Calling Card Batch window," Figure 36, "Recharge Batch Window," and Figure 37, "Unified Card Batch window."

Figure 35 Calling Card Batch window

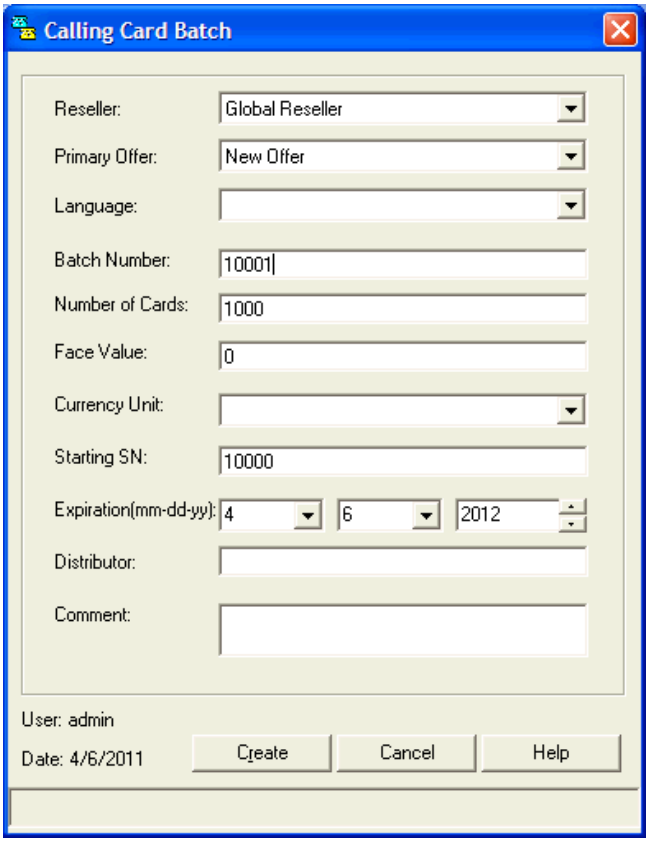


Figure 36 Recharge Batch Window

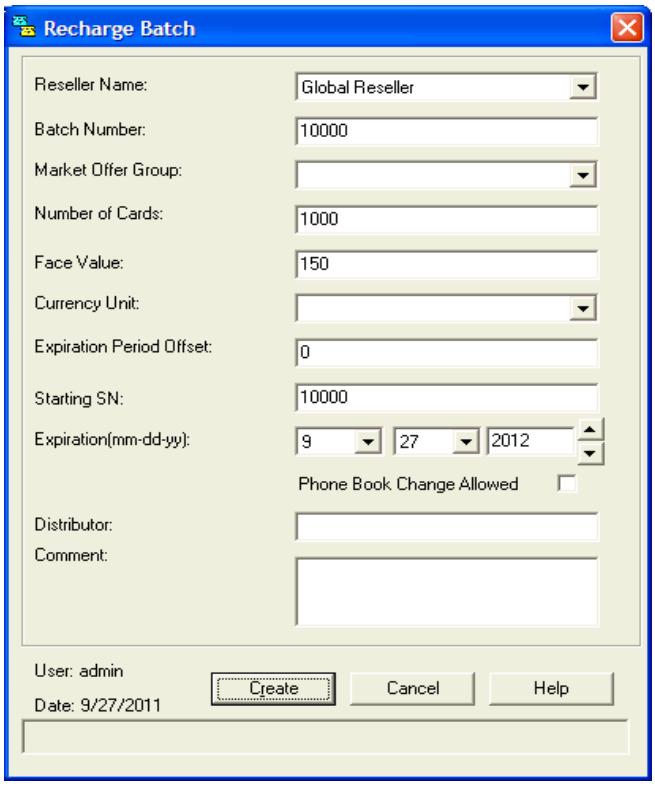
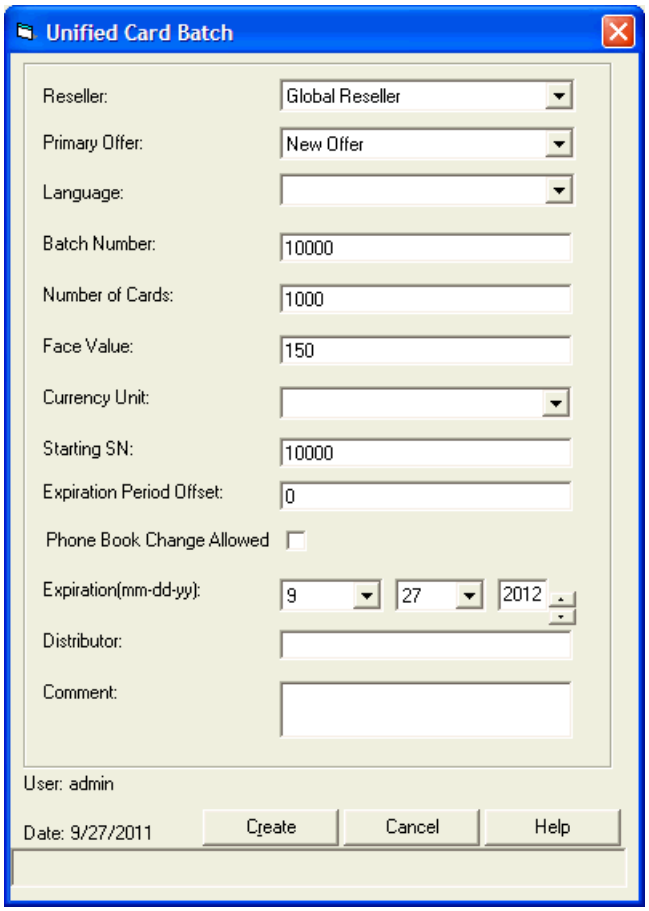


Figure 37 Unified Card Batch window



3. From the **Reseller** dropdown list, select the name of the reseller.

NOTE All of the default values referred to in the following steps are the values configured in the fields during the initial set up of the Card Generator. For example, the default value shown in the Number of Cards field is the value configured in the Suggested Number of Cards field in the configuration window.

4. From the **Primary Offer** dropdown list, select the primary offer.

NOTE The **Primary Offer** dropdown list appears only in the Calling Card Batch window and the Unified Card Batch window.

5. From the **Language** dropdown list, select the language.

NOTE The **Language** dropdown list appears only in the Calling Card Batch window and the Unified Card Batch window.

6. The default batch number is shown in the **Batch Number** field. To change it, type over the existing number. The batch number can be no longer than six digits and cannot be the same as an existing batch number.

7. From the **Market Offer Group** dropdown list, select the market offer group.

The **Market Offer Group** field appears only in the Recharge Batch window.

8. The default number of vouchers to be created is shown in the **Number of Cards** field. To change it, type over the existing number. The number can be no longer than six digits.
9. The default face value of the vouchers is shown in the **Face Value** field. To change it, type over the existing number.
10. From the **Currency Unit** dropdown list, select the currency unit.
11. The default starting serial number is shown in the **Starting SN** field. To change it, type over the existing number.
12. The default expiration period offset of the vouchers, in days, is shown in the **Expiration Period Offset** field. To change it, type over the existing number.

The **Expiration Period Offset** field appears only in the Recharge Batch window and the Unified Card Batch window.

13. The default voucher expiration date is shown in the **Expiration (mm-dd-yy**) fields. This date can be changed by selecting a different date in one or more of the three dropdown lists: month, day, or year.
14. Check the **Phone Book Change Allowed** checkbox to indicate that the system checks if the primary offer allows subscribers to change Friends and Family phonebook information (via IVR) upon a successful recharge.
    - If **Phone Book Change Allowed** is checked, the calling party can change F&F information via IVR after a successful recharge.
    - If this checkbox is not checked, Comverse ONE does not check if the primary offer is defined to allow a subscriber F&F phonebook change.

The subscriber and phonebook prefix associations must first be defined in the Product Catalog. Refer to the Product Catalog User Guide for details on configuring these associations.

The **Phone Book Change Allowed** field appears only in the Recharge Batch window and the Unified Card Batch window.

15. In the **Distributor** field, enter the name of the distributor. The name can be no longer than eight characters, and is optional.
16. In the **Comment** field, enter any comments about the batch. This field is optional.
17. Click **Create**. A message box with the message **Batch Created** appears.

A message box appears with a Batch Creation error message if one of the following conditions exists:

- A required field has not been filled in.
- Parameters are not valid.

- Parameters are not within the permitted range.

Correct the inaccurate information indicated in the message and click Create again.

Working with Batches

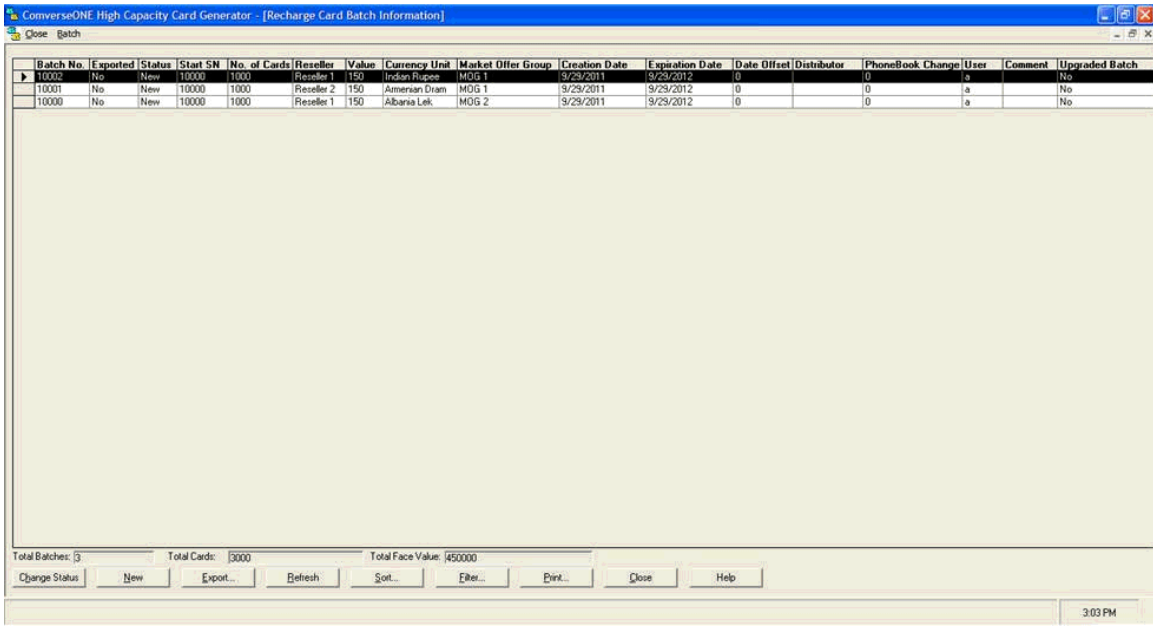
The Card Generator enables users to display lists of batches, sort the lists, and view filtered lists of batches as part of the voucher batch management process.

Batch Information Window

The Batch Information window displays detailed information about each batch that was created.

To view a list of batches, from the Cards menu, select **Calling Card**, **Recharge Card**, or **Unified Card**. If you selected **Recharge Card**, The Recharge Card Batch Information window appears as shown in Figure 38, "Batch Information Window". The other windows (Calling Card and Unified Card) are similar.

Figure 38 Batch Information Window



Following are the fields that may appear on the batch information window for the three card types (calling card, recharge card, unified card). Individual differences are noted.

- **Batch No.**: The number of the batch. (Appears only in the Calling Card Batch Information window and the Recharge Card Batch Information window.)
- **Exported**: The date the batch was exported.
- **Status**: The status of the batch. Batch status can be New, In Print, Distributed, Expired, or any other user-defined status.
- **Start SN**: The first serial number of the batch.
- **No. of Cards:** The number of vouchers in the batch.
- **Value**: The face value of the vouchers in the batch.
- **Reseller**: The reseller's name.
- **Market Offer Group**: The market offer group to be associated with each voucher in the batch. (Appears only in the Recharge Batch Information window.) A market offer group is

essentially a division within a reseller, giving an added dimension to the reseller. It is also a matching criteria in the Recharge Control Table. It can be used for purposes such as campaigns to promote subscriber activity. For more information, see "Examples of Matching Criteria," on page 27..

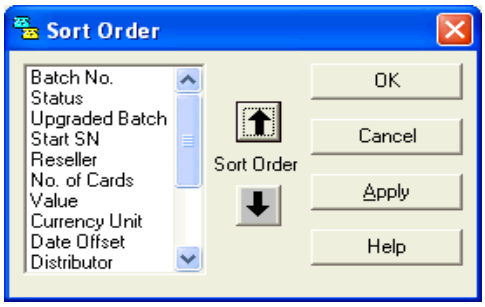
- **Primary Offer**: ((Appears only in the Calling Card Batch Information window and the Unified Card Batch Information window.)
- **Currency Unit**: The unit of the face value of the vouchers in the batch, either a currency or time unit.
- **Language**: Language associated with the card. (Appears only in the Calling Card Batch window and the Unified Card Batch window.)
- **Creation Date**: The date of creation of the batch.
- **Expiration Date**: The expiration date of the current batch.
- **Distributor**: The distributor that ordered the batch.
- **Date Offset**: Number of days the recharge voucher adds to the expiration date of the recharged entity. (Appears only in the Recharge Batch Information window and the Unified Card Batch Information window.)
- **User**: The user who created the batch.
- **Comment**: Comments about the batch.
- **PhoneBook Change**: Indicates if this checkbox was selected for the batch. 1 = yes. 0 = no. ((Appears only in the Recharge Batch Information window and the Unified Card Batch Information window.)
- **Upgraded Batch**: Indicates if the recharge card batch entry was migrated from an earlier Card Generator Version. If the value is set to "Yes", then the recharge card batch cannot be exported again.

Sorting a List of Batches

To organize a long list of batches, users can sort batches based on any of the columns in any of the batch information windows, in any priority desired.

1. From the Cards menu, select **Calling Card**, **Recharge Card**, or **Unified Card**. The desired batch information window appears.
2. Click **Sort**. The Sort Order window, shown in Figure 39, "Sort Order Window," appears. The set of fields available depends on the batch information window type (calling card, recharge card, unified card).

Figure 39 Sort Order Window



3. Select a parameter from the scrolling list on the left and use the **Sort Order** arrow buttons to move the parameter up or down in the list.
4. Continue moving individual parameters until they are in the desired order, from top to bottom.
5. Click **Apply** to sort the list.

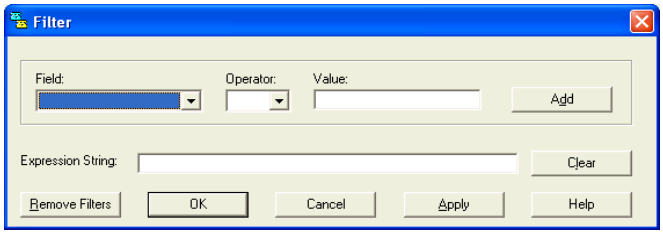
6. Click **OK** to close the Sort Order window. The list displayed in the batch information window is sorted by the criteria provided.

Filtering a List of Batches

The list of batch records can be shortened by filtering the list based on parameter(s) and parameter value(s). The list can be filtered to include only the batches that contain the information selected or that contain specified value(s) for the selected parameter(s). Batches can be filtered based on any of the columns in any of the batch information windows.

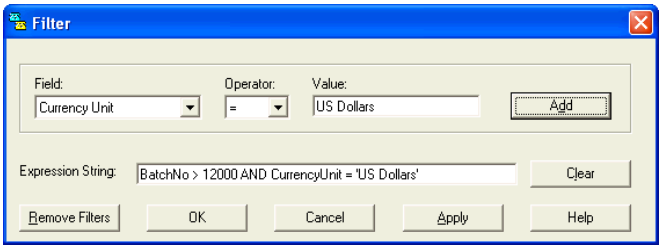
1. From the Cards menu, **Calling Card**, **Recharge Card**, or **Unified Card**. The desired batch information window appears.
2. Click **Filter**. The Filter window, shown in Figure 40, "Filter Window", appears.

Figure 40 Filter Window



3. From the **Field** dropdown list, select a field to filter on. The set of fields available depends on the batch information window type (calling card, recharge card, unified card).
4. From the **Operator** dropdown list, select an operator to filter a selection of parameters:
   - = equals
   - <> less than or greater than
   - > greater than
   - < less than
   - >= greater than or equal to
   - <= less than or equal to
5. In the **Value** field, enter the value(s) relevant to the selected field and operator. For example: **BatchNo > 12000**, where BatchNo is the field, > is the operator and **12000** is the value. This returns only records with a batch number greater than 12000.
6. Click **Add**. The **Expression String** field shows the combination of the selected Field(s), Operator(s) and Value(s).
7. To add more filtering parameters, repeat steps 3 through 6. Additional parameters are concatenated with AND. The example in Figure 41, "Expression String Example," shows the field Currency Unit with the = operator and a value of US Dollars, concatenated with the BatchNo > 12000 entry.

Figure 41 Expression String Example



8. When finished entering parameters, click **Apply**. The list of batches in the batch information window is filtered based on the filter you created.

There are several command buttons that can be used with the filtering process:

- **Remove Filters:** Click to discard all information in the Expression String window.
- **OK:** Click to complete the action and close the window.
- **Cancel:** Click to discard any information in the Expression String field and close the window.
- **Apply:** Click to complete the action without closing the window.

Printing a List of Batches

You can print lists of batches whether or not a filtering parameter was used.

1. From the Cards menu, select **Calling Card**, **Recharge Card**, or **Unified Card**. The desired batch information window appears.
2. Click **Print**. The Print dialog box appears.
3. Click **OK**. The list of batches prints to the default printer.

Deleting Batches

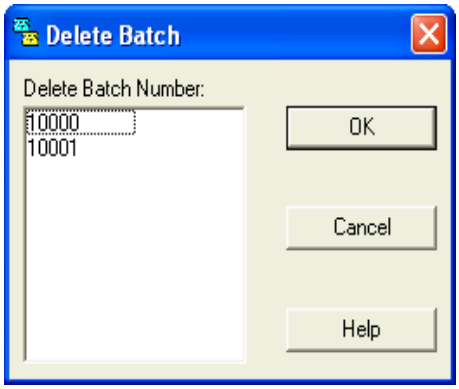
To delete a batch, the batch must either be:

- Exported from the database and expired.
- Not exported.

1. From the Cards menu, select **Calling Card**, **Recharge Card**, or **Unified Card**. The desired batch information window appears.
2. From the Batch menu, select either **Delete Non-exported Batch** or **Delete Exported Expired Batch**. The Delete Batch window, shown in Figure 42, "Delete Batch Window," appears.

   Only batches that can be deleted are listed in the Delete Batch window.

Figure 42 Delete Batch Window



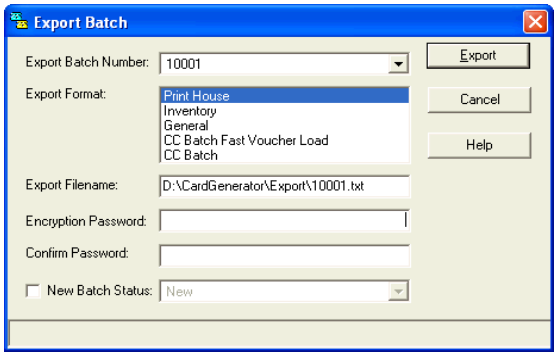
3. From the **Delete Batch Number** list, select the batch to delete.
4. Click **OK**. The batch is deleted.

Creating Batch Export Files

The Card Generator creates export files for the print house, the rating database, and for inventory control.

1. From the Cards menu, select **Calling Card**, **Recharge Card**, or **Unified Card**. The desired batch information window appears.
2. From the Batch menu, click **Export**. The Export Batch window, shown in Figure 43, "Export Batch Window," appears.

Figure 43 Export Batch Window



3. From the **Export Batch Number** dropdown list, select the batch number of the batch to export.
4. In the **Export Format** list box, select the appropriate export format. The available formats depend on the type of card (calling card, recharge card, unified card). Select one of the following formats:
   - **Print House:** Text format file with .txt extension.
   - **Inventory:** Text format file with .inv extension.
   - **General:** Text format file with .gen extension.
   - **CC Batch Fast Voucher Load, CC Batch Fast Load**: XML format file with .ccbatch extension
   - **CC Batch**: XML format file with .ccbatch extension.

5. In the **Export Filename** field, enter the filename and path to which the batch is exported. The default filename is set during installation of the Card Generator. It can be changed for each batch as required.

Large batches might not fit on a CD.

6. If the Export Format is Print House and Print House Export File Encryption option was selected in the configuration, the user must enter a password for encrypting the print house file. Enter the same password in both the **Encryption Password** and the **Confirm Password** fields.

If the Print House Export File Encryption option was selected in the configuration, the decryption tool found in the Card Generator folder (typically C:\Program Files\Comverse\Card Generator3.0.0\CardGenDecryption.exe), must be supplied to the print house along with the current password. Refer to the section "Decrypting Batch Files," on page 98 for details about using the decryption tool.

7. Check the **New Batch Status** checkbox to change the status of the batch.
8. From the **New Batch Status** dropdown list, select the current status of the batch process (**New**, **In Print**, **Distributed**, or **Expired**, or any other user-defined status set during the configuration procedure). If the **New Batch Status** checkbox is selected, the Status column in the Batch Information window is updated to display the status selected to the right of the checkbox (**New**, **In Print**, **Distributed**, or **Expired**). If the checkbox is not selected, the status column remains unchanged.

Batch Export File Format

A predefined export file format for recharge voucher batches, `format_rfile.txt`, is loaded from the initialization files. The file is located in the same directory as the CardGenerator.exe executable file, typically `C:\Program Files\Comverse\Card Generator`<*release number*>`\`.

Predefined export files also exist for unified cards (`format_ufile.txt`) and calling cards (`format_cfile.txt`), and are also located in the same directory as the CardGenerator.exe executable file.

The following is an example of an recharge voucher batch export format (formats for unified cards and calling cards are similar):

```
BEGIN "Inventory"
    date_format="ddmmyyyy"
    header_format="<8,batch_no><8,batch_start_sn><8,batch_count><create_
date><user,8><exp_date><9,face_value>\r\l"
    filename_format="<batch_no>.inv"
END
```

In this case, the filename date format is `mmddyy`, but the header, record, and trailer date formats is `ddmmyyyy`.

The header can contain any combination of the following parameters, or all of them:

- **batch_no**: The batch number

- **batch_start_sn**: The starting serial number of the batch
- **batch_count**: The number of vouchers in the batch.
- **create_date**: The creation date of the batch.
- **user**: The username of the user who created the batch.
- **exp_date**: The expiration date of the vouchers in the batch.
- **face_value**: The face value of the vouchers in the batch.
- **date_offset**: Number of days the recharge voucher adds to the expiration date of the recharged entity.
- **phonebook_change**: Indicates if the calling party can change F&F information via IVR after a successful recharge.
- **reseller_name**: The reseller's name.
- **currency_name**: The currency unit of the face value of the vouchers in the batch.
- **distributor**: The distributor that ordered the batch.

Table 10, "Recharge Voucher Variables" shows the complete list of variables.

Table 10 Recharge Voucher Variables

Recharge Voucher Variables
batch_no
batch_status
batch_start_sn
batch_count
face_value
date_offset
distributor
create_date
exp_date
card_code
hashed_card_code
unhashed_card_code
card_serial
code_length
mog_name
reseller_name
currency_name
currency_id
reseller_id
user
comment
current_date
current_time
phonebook_change
upgraded_batch

The basic rules for export files are as follows:

1. There can be only one header and one trailer (these can take up multiple lines, if specified in the format string).
2. One record is printed for each voucher.
3. The header, record, and trailer are all optional. An export file, for example, can display only a batch number and a creation date.

Fixed-Length Fields

For fixed-length fields; use **<n,variable>** to truncate or pad the beginning of the field if there are more or less than n characters. Use **<variable,n>** to truncate or pad the end of the field.

In the following examples, the batch number "0014589" is used:

- Use <5,batch_no> for output 14589.
- Use <batch_no,5> for output 00145
- Use <10,batch_no> for output 0000014589
- Use <batch_no,10> for output 0014589000

String and Date Variables

String variables are padded with spaces. Numeric variables are padded with zeros. Date variables use a format string rather than padding or truncating.

A date format string for each format that uses a date variable must be included.

- For header_date_format="d/m/y"
- For record_date_format="mm/yy"
- For trailer_date_format="d-mm-yyyy"
- For filename_date_format="ddmmyy"
- For format="d-m-yyyy" (global, this automatically set all four date formats)

A different date format for each format string can be defined but the same date format within a string must be included.

- For header_date_format="dd-mm-yy"
- For header_format="<create_date>\l"
- For trailer_date_format="mm/yyyy"
- For trailer_format="<batch_no>,<exp_date>\l"

The following is an example of the output:

```
30-11-08
10086,12/2008
```

Time Formats

Time formats are done the same way, except the identifier names are different.

- time_format="h:m:s"
- header_time_Format="hh:mm"
- record_time_format="h-mm-s"
- trailer_time_format="hms"

There is no filename time format since the current_time variable is not available for this format.

Standard Fields

For standard fields, use **<variable>**. Example: Use **<batch_no>** for output 0014589

Any endline characters (carriage return, linefeed) must be placed in the format string.

- "\r" for carriage return
- "\l" for linefeed
- "\r\l" if both are used, carriage return comes first

Additional Formatting Information

The backslash, preceding a character, is used as the “escape” chacter to indicate that the character following the backslash should be interpreted as a character and not as part of the format string. The characters \, <, >, and double quotes can be printed with the following \-letter combinations:

- \\ - prints \
- \> - prints >
- \< - prints <
- \q - prints "

For each export format, an export filename can be specified using the variables listed in Table 11, “Recharge Voucher Export Filename Variables.”

- The export filename format is specified using filename_format=""
- The date format is specified using filename_date_format=""or the global date_format=""

Table 11 Recharge Voucher Export Filename Variables

Recharge Voucher Export Format
batch_no
distributor
create_date
exp_date
mog_name
reseller_name
reseller_code
user
current_date

Within a format structure, the lines are read in sequence. Any later line overrides a previous line.

Export Formats

The following formats have been implemented for a recharge voucher in the **format_rfile.txt** file (formats for unified cards and calling cards are similar). They can be modified as necessary.

Within the application, the formats (identified with the BEGIN statement) are shown in the dropdown list in the order in which they are listed in the **format_rfile.txt, format_cfile.txt, and format_ufile.txt** files. The first format is always the default. Following is sample contents of a **format_rfile.txt** file. Contents of **format_cfile.txt and format_ufile.txt** files are similar.

```
BEGIN "Print House"
```

```
    date_format="ddmmyyyy"
    header_format="<8,batch_no>,<8,batch_start_sn>,<8,batch_count>,<create_
date>,<user,8>,<exp_date>,<9,face_value>,<6,date_offset>,<1,phonebook_change>\r\l"
    record_format="<8,card_serial><16,card_code>\r\l"
    filename_format="<batch_no>.txt"
END

BEGIN "Inventory"
    date_format="ddmmyyyy"
    header_format="<8,batch_no><8,batch_start_sn><8,batch_count><create_
date><user,8><exp_date><9,face_value>\r\l"
    filename_format="<batch_no>.inv"
END

BEGIN "General"
     date_format="ddmmyyyy"
     header_format="<8,batch_no><8,batch_start_sn><8,batch_count><create_
date><user,8><exp_date><9,face_value>\r\l"
     record_format="<4,batch_no><6,card_serial>,<card_code>,<hashed_card_
code>,<unhashed_card_code>\r\l"
     filename_format="<batch_no>.gen"
END

BEGIN "CC Batch Fast Voucher Load"
    date_format="yyyy-mm-dd"
 header_
format="\wBatch\x\r\wCreateVoucherBatch\x\r\wCommon\x\r\wBatchNumber\x<batch_
no>\w\/BatchNumber\x\r\wCardId\x<batch_start_
sn>\w\/CardId\x\r\wState\xIdle\w\/State\x\r\wSerialNumber\x<batch_start_
sn>\w\/SerialNumber\x\r\wbatch_count\x<batch_count>\w\/batch_
count\x\r\wReseller\x<reseller_name>\w\/Reseller\x\r\wmogName\x<mog_
name>\w\/mogName\x\r\wFaceValue\x<face_
value>\w\/FaceValue\x\r\wCurrencyUnit\x<currency_name>\w\/CurrencyUnit\x\r\wdate_
offset\x<date_offset>\w\/date_offset\x\r\wExpirationDate\x<exp_
date>\w\/ExpirationDate\x\r\wcreate_date\x<create_date>\w\/create_
date\x\r\wDistributor\x<distributor>\w\/Distributor\x\r\wChangePhonebook\x<phonebo
ok_change>\w\/ChangePhonebook\x\r\w\/Common\x\r\wVouchers\x\l"
record_format="\wCodeNumber\x<card_code>\w\/CodeNumber\x\r"
trailer_format="\w\/Vouchers\x\r\w\/CreateVoucherBatch\x\r\w\/Batch\x\r"
filename_format="<batch_no>.ccbatch"
END


BEGIN "CC Batch"
date_format="yyyy-mm-dd"
header_format="\wBatch\x\r"
record_format="\wvoucherCreate\x\r\wVoucherObject\x\r\wbatchNumber\x<batch_
no>\w\/batchNumber\x\r\wserialNumber\x<card_
serial>\w\/serialNumber\x\r\wcodeNumber\x<card_
code>\w\/codeNumber\x\r\wacctExpOffset\x<date_
offset>\w\/acctExpOffset\x\r\wchangePhonebook\x<phonebook_
change>\w\/changePhonebook\x\r\wcurrencyUnit\x<currency_
```

```
name>\w\/currencyUnit\x\r\wdistributor\x<distributor>\w\/distributor\x\r\wexpirati
onDate\x<exp_date>\w\/expirationDate\x\r\wexpireOffset\x<date_
offset>\w\/expireOffset\x\r\wfaceValue\x\r\wlongValue\/\x\r\wvalue\x<face_
value>\w\/value\x\r\w\/faceValue\x\r\widentityId\/\x\r\worderNumber\/\x\r\wprominE
xpOffset1\/\x\r\wprominExpOffset2\/\x\r\wprominValue1\/\x\r\wprominValue2\/\x\r\wr
echargeServerId\/\x\r\wshipDate\/\x\r\wspName\x<reseller_
name>\w\/spName\x\r\wmogName\x<mog_
name>\w\/mogName\x\r\wstate\x1\w\/state\x\r\wsubscriberId\/\x\r\wucardCos\/\x\r\wu
cardSp\/\x\r\wvoucherType\x0\w\/voucherType\x\r\w\/VoucherObject\x\r\w\/voucherCre
ate\x\r"
trailer_format="\w\/Batch\x\r"
filename_format="<batch_no>.ccbatch"
END
```

Event Viewer

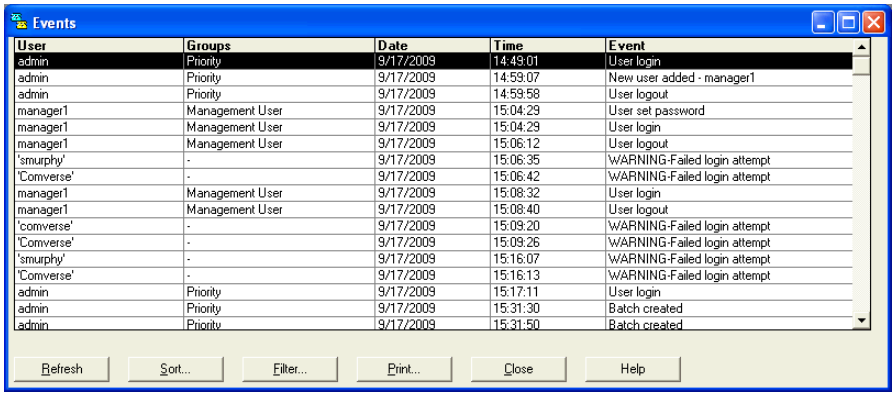
The Event Viewer window displays the Card Generator event log. The Filter feature can be used to selectively display events by time range and event type. Because the tool is highly sensitive, every event or user operation is recorded in the event log. The following events are recorded:

- Failed login attempts
- Successful logins
- Logging out
- Creating a new batch
- Deleting a batch
- Exporting a batch
- Changing the status of a batch
- Adding a new user
- Purging old records

Select **Event Viewer** from the Administrative menu. The Events window, shown in Figure 44, "Events Window," appears.

Click **Refresh** to update the Events window with current information.

Figure 44 Events Window



The following information columns are shown:

- **User**: Name of the user logged in when the event was performed or occurred.
- **Groups**: Group (Priority, Management, or Clerical) to which the user belongs.
- **Date**: Date the event occurred.
- **Time**: Time the event occurred.
- **Event**: Short description of the event.
- **Batch No.**: Batch number of the vouchers processed during this event.

Decrypting Batch Files

If the Print House Export File Encryption option was selected (1) during installation or (2) in the **System Options** tab of the Options window, the decryption tool found in the Card Generator folder (typically C:\Program Files\Comverse\Card Generator<*version*>\CardGenDecryption.exe), must be supplied to the print house along with the password that was specified when the batch was exported.

A print house uses the decryption tool to read encrypted files containing batches of recharge vouchers. The executable file CardGenDecryption.exe is located in the same directory as the CardGenerator.exe executable. The initial screen for the Decryption Tool application is shown in Figure 45, "Decryption Tool."

Figure 45 Decryption Tool

1. Within the decryption tool, in the CardGenDecryption window, click **Open File**. The Open window appears.
2. In the Open window, locate the file to decrypt.
3. Click **OK**. The path and filename of the encrypted recharge voucher file is shown in the **Open File** field.
4. In the **Password** field, enter the password you supplied when you exported the batch.
5. Click **Decryption**. The selected file is decrypted.

Batch Creation Error Messages

The following messages are related to batch creation errors:

```
Batch number already exists. The next free number is [next available unused
batch number goes here]
Batch Number must be greater than zero
Must specify batch number
Batch Number must be an integer
Must specify number of cards
Number of cards exceeds 100,000
Number of cards must be greater than zero
```

```
Number of cards must be an integer
Must specify face value
Face value should be equal or greater than 0
Must specify starting Serial Number
Serial Number should be equal or greater than 0
Serial Number must be an integer
Must specify date of expiration
Expiration Date must be later than current date
Expiration Period Offset must be equal or greater than zero
Expiration Period Offset must be an integer
Face value and expiration period offset cannot both be zero
Must specify date of expiration
Expiration Date must be later than current date
```

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