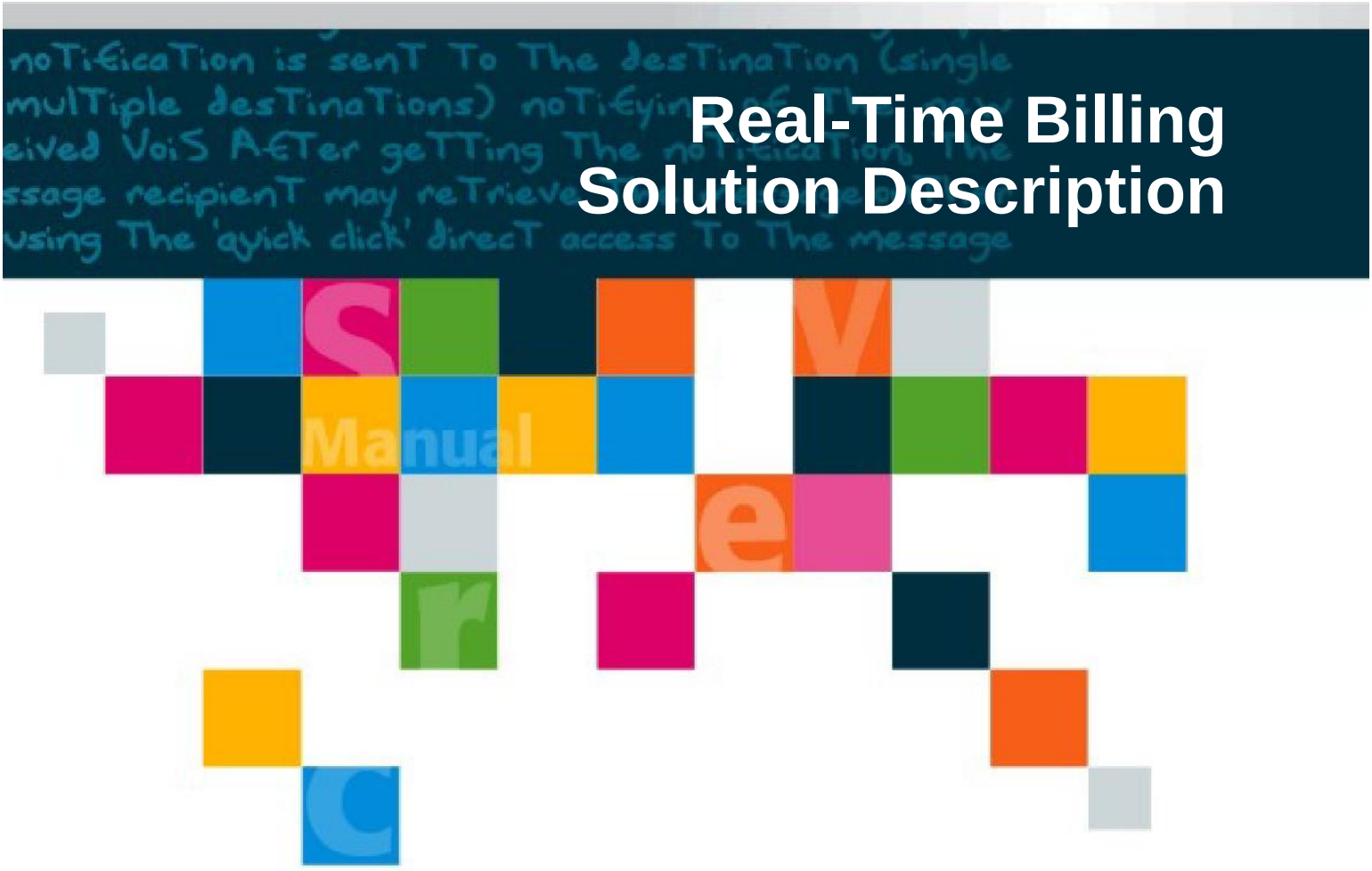
COMVERSE

ComverseONE™

3.5.50

Real-Time Billing Solution Description



Notice

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Disclaimer

All information, if any, relating to Comverse's product roadmap is provided solely as a non-binding expression of Comverse's present intent and is not and should not be deemed to constitute any form of commitment, promise or legal obligation to develop, offer or deliver any product, upgrade, enhancement, software, hardware, documentation or functionality whatsoever. The development (if any), release (if any), and timing of any feature or functionality is and will remain at our sole and absolute discretion.

Revision History

Date	Change	Description
10/15/2010	Initial publication for Comverse ONE 3.5.50.	Posted for GA.

Contents

Figures

Tables

Notational Conventions

Important notes appear in this format

Indicates possible danger to data, software, or hardware

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

Notation	Explanation of Conventions
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 ENIVIRONMENT_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.

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 Billing & Active Customer Management 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)
  - Customer Relationship Management
    (Sales Force Automation, Case Management, Campaign Management)
- Mediation and Roaming Solutions Domain
- Self-Service Solutions Domain

Read the Solution Description first to get an overview of the Comverse ONE solution. The Solution Description 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.

These documents 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 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 Solution 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 Solution 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 Signaling 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.
- *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 prepaid SIM cards.
- *Call Flows Reference*
  Callflows detail the logic flow of specific scenarios. Multiple access numbers can map to the same callflow. Different resellers have the option to publish different numbers but share the same logic.
- *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.
- *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 of the Network Self-Care application.
- *Rating Technical Reference*
  Describes the Unified Rating Engine, which is the subsystem responsible for gathering incoming CDRs and processing them for billing.
- *Reports and Data Extracts Guide* - Real-Time
  Describes the real-time Operational Reports Interface (ORI) and the Data Warehouse Extract Utility.
- *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 vouchers and calling cards.

Billing and Financials Domain (Converged only)

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

- *Advanced Statement Numbering Guide*
  Describes how to configure and use Advanced Statement 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 Add/Copy Header Adapter User Guide*
  Describes the adapter that adds or copies header information in messages.
- *Application Integrator Aggregator Adapter User Guide*
  Describes the adapter that aggregates multiple input messages as a single composite output message.
- *Application Integrator File Adapter User Guide*
  Describes the configuration process and rules for the file adapter.
- *Application Integrator Generic Services User Guide*
  Describes the Null adapter, Trash adapter, and Initiator adapter generic services.
- *Application Integrator Operator Guide*
  Describes the commands that operate the Application Integrator at creation and runtime.
- *Application Integrator Retry Adapter User Guide*
  Describes the use of the Retry adapter to resend messages in case of failed transmissions.
- *Application Integrator Sequence Adapter User Guide*
  Describes the use of the Sequence adapter to generate unique sequence numbers for messages.
- *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 Unified API Client Adapter User Guide*
  Describes Unified API Client Adapter.

- *Application Integrator Unified API Server Adapter User Guide*
  Describes Unified API Server Adapter.
- *Application Integrator User Guide*
  Describes creating integration specifications, creating instances of the Application Integrator, and commands for operation of the Application Integrator, and provides a complete user guide for the iMaker compiler.
- *Application Integrator XSLT User Guide*
  Describes the use and configuration of the adapter that is used with applications (sometimes called edge systems) that transmit or receive XML-formatted data.
- *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 Workflow within those solutions.
- *Workflow User Guide*
  Describes the configuration, operation, structure, and features of Workflow.

Customer Relationship Management

Documentation for Customer Relationship Management within the Customer and Order Management domain include the following:

- *Billing Reports and File Layouts User Guide*
  Describes control reports and other file formats.
- *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 Reference*
  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 a 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 individuals 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*
  Contains technical reference 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 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 and Service 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):

- *Collection API Guide*
  Provides the concepts and functions for the Collection Application Programming Interface (CAPI).
- *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.
- *Mediation API Guide*
  Contains reference information on using the Mediation API.
- *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.
- *Socket-Based API Guide*
  Explains the building applications using the Socket-Based Record Transmission API. Programmers can use the guide to use the records received from the Data system for their own customized downstream application solutions.
- *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.
- *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 are reference material for 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):

- *Administration Guide*
  Provides operations and maintenance instructions for Web applications using the Self-Service Solutions 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.
- *Connectors Development Guide*
  Provides instructions for developing and customizing connectors of the Self-Service Solutions Platform.
- *Core Module Development Guide*
  Provides instructions for configuring and developing features of the core module of the Self-Service Solutions 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).
- *Database Modules Development Guide*
  Provides instructions for configuring, customizing, and developing features of the database module of the Self-Service Solutions Platform.
- *Platform Installation Guide*
  Provides installation and configuration instructions for the Self-Service Solutions Platform.
- *Platform Services Guide*
  Provides instructions for configuring, customizing, and developing features that use the services provided by the Self-Service Solutions Platform.
- *Processors Development Guide*
  Provides instructions for developing and customizing Processors of the Self-Service Solutions Platform.
- *Reports Development Guide*
  Provides instructions for developing and customizing Reports of 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.

- *Web Applications Development Guide*
  Provides instructions for configuring, developing, and deploying Web applications that use the Self-Service Solutions Platform.

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 platform.
- **Reference:** These reference documents are reference material for APIs, databases, configuration files, and so on. These documents are delivered in HTML.

Self-Service Solutions Applications Manuals

A full set of these manuals is available for each Self-Service Solutions Application. 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.
- *Catalog Loader Reference*
  Provides information about the Catalog Loader, including a functional description as well as installation, configuration, and use instructions.
- *Configuration and Development Guide*
  Provides instructions for configuring and developing Self-Service Solutions Application features.
- *Feature Reference*
  Describes the logic and provides use cases for the functional domains of the application.
- *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.
- *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.

Self-Service Solutions Applications 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):

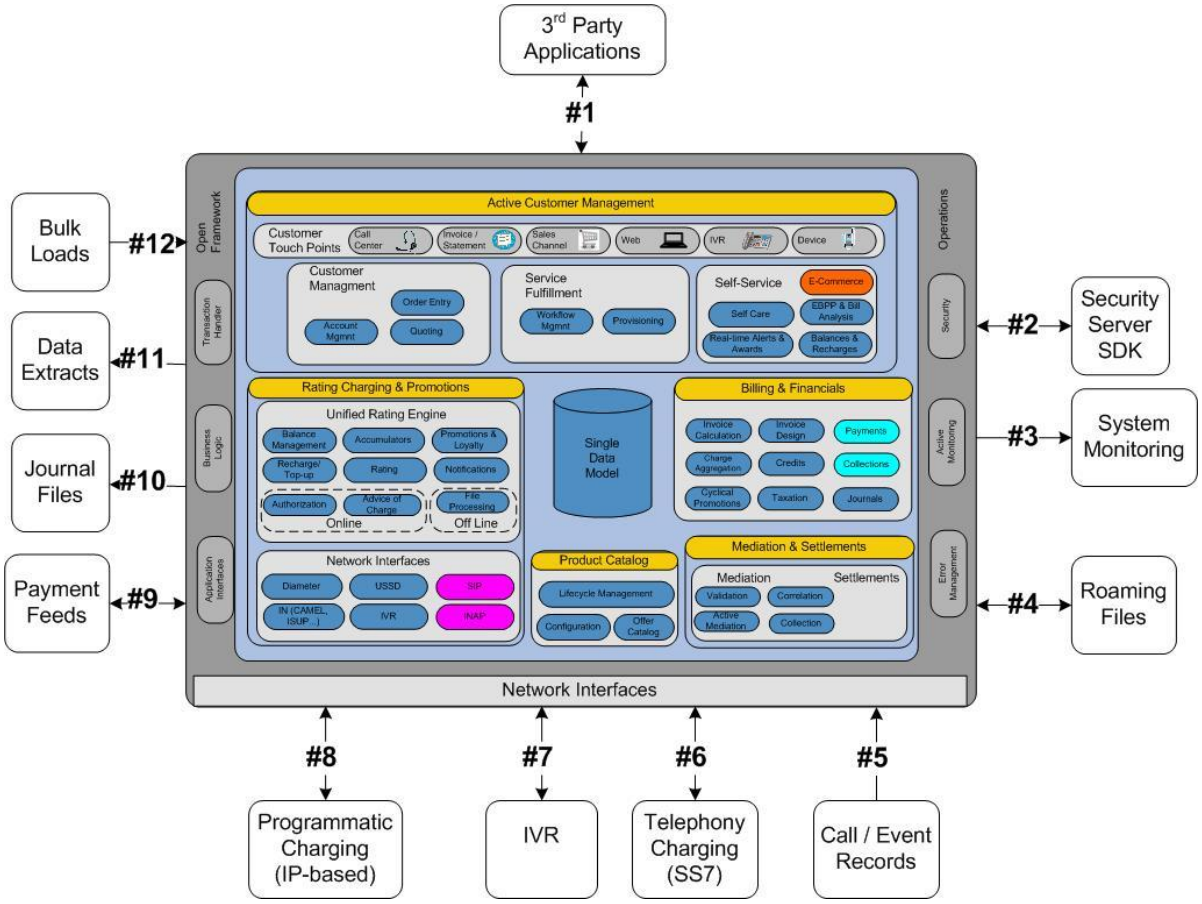
- *Introduction to the Online Catalog Manager*
  Provides a high-level architectural and functional description of the Online Catalog Manager.
- *Online Catalog Manager Getting Started Guide*
  Describes the best way to build product catalogs in the Online Catalog Manager. This manual is a template for 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

Comverse ONE Documentation Roadmap for Integration Points

This section describes which user manuals provide information that is related to the generic integration points (interfaces) between the Comverse ONE solution and an operator's environment.

The architecture diagram in **Figure 1** shows a generic example of the integration points (interfaces) between an operator's environment and the Comverse ONE solution.

Figure 1 Generic Comverse ONE Solution Architecture Integration Points



NOTE

See **Figure 2** Functional View of the Comverse ONE Solution on page 8 for the details of the functional view of the Comverse ONE solution.

Table 1 provides a roadmap to the Comverse ONE user documentation. This table lists the integration points that are numbered in Figure 1 and the names of the manuals that provide information about those interfaces. See the Documentation List above for descriptions of the manuals.

Table 1 Comverse ONE Documentation Roadmap

# from Figure 1	Integration Points (Interfaces)	Related Documentation (Manual Names)

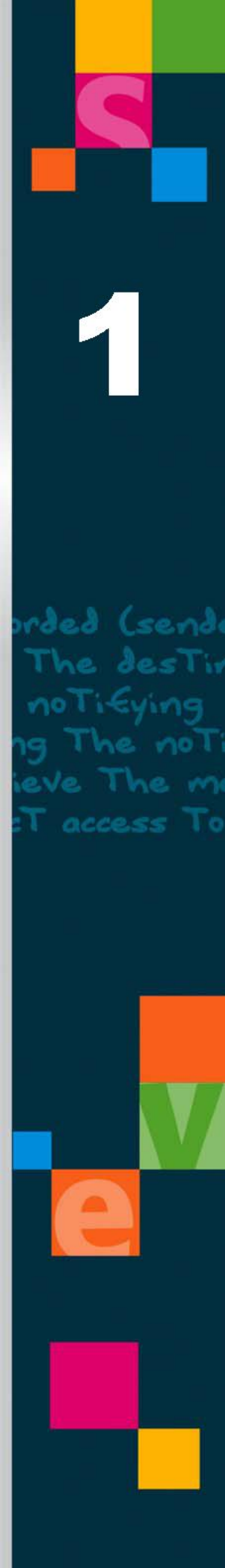
#1	Third-Party Applications	• *Application Integrator manuals:*
		  • *Add/Copy Header Adapter User Guide*
		  • *Aggregator Adapter User Guide*
		  • *File Adapter User Guide*
		  • *Generic Services User Guide*
		  • *Operator Guide*
		  • *Retry Adapter User Guide*
		  • *Sequence Adapter User Guide*
		  • *System Administrator Guide*
		  • *Unified API Client Adapter User Guide*
		  • *Unified API Server Adapter User Guide*
		  • *User Guide*
		• *Self-Service Integration Services Framework API Reference*
		• *Self-Service Integration Services Framework Message Cache Reference*
		• *Self-Service Integration Services Framework Script API Reference*
		• *Unified API Guide*
		• *Unified API Reference (Javadoc) – Note that Javadoc is part of the Comverse ONE software distribution; it is not posted with the other user documentation.*
		• *Workflow Developers Guide*

#2	Security Server SDK	• *Security Server API Guide*
#3	System Monitoring	• *Unified Platform Guide*
#4	Roaming Files	• *Mediation and Roaming Collection API Guide* • *Mediation API Guide* • *Roaming Rating Adapter Guide* • *Socket-Based API Guide*
#5	Call/Event Records	• *Network Interfaces and Notification Guide* • *Real-Time Reports and Data Extracts Guide (contains CDR information)*
#6	Telephony Charging (SS7)	• *Charging Interfaces Guide* • *Network Self-Care Guide* • *Signaling Gateway Unit Guide*
#7	Interactive Voice Response (IVR)	• *Network Self-Care Guide*

# from Figure 1	Integration Points (Interfaces)	Related Documentation (Manual Names)
#8	Programmatic Charging (IP-based)	• *Charging Interfaces Guide* • *Diameter Gateway Unit Guide* • *Diameter Mediation SDK Developers Guide* • *LBA Networking Guide*
#9	Payment Feeds	• *Billing Reports and File Layouts User Guide* • *Billing Technical Reference* • *Collections Guide*
#10	Journal Files	• *Billing Reports and File Layouts User Guide* • *Journals Guide*
#11	Data Extracts	• *Billing Reports and File Layouts User Guide* • *Database Reference* • *Real-Time Reports and Data Extracts Guide (contains CDR information)*
#12	Bulk Loads	• *Bulk Provisioning Guide* • *Inventory Replenishment Guide* • *Back Office Administration GUI Guide*

Chapter 1

Introduction to the Comverse ONE Solution



Welcome

Welcome to the Comverse ONE *Real-Time Billing Solution Description*. This document provides a general overview of the Comverse ONE Real-Time Billing solution.

This chapter includes a high-level overview of the foundation and optional domains of Comverse ONE Real-Time Billing. The following chapters in this document include an overview of the component pieces of Comverse ONE Real-Time Billing, but do not cover the extensions to the Comverse ONE Real-Time Billing solution and the associated and standalone modules.

For more information about the Customer and Order Management domain, the Self-Service Solutions domain, the Billing and Financials domain, and the Mediation and Settlements domain, see the Comverse ONE *Converged Billing & Active Customer Management Solution Description*.

This document is intended for consultants, operators, and anyone else interested in an overview of the Comverse ONE Real-Time Billing solution. Readers should be familiar with the Comverse ONE *Value Proposition* and *Offer Overview* documents. Contact your Sales Representative for more information.

Some of the functionality defined in this manual might not be included in your release of the software. Please contact your Comverse support representative for more information regarding the functionality available within your specific release.

This document is intended for information and operational purposes only. No part of this document shall constitute any contractual commitment by Comverse, Inc.

Each chapter of this document includes cross-references to user documentation where you can find more detailed information about that particular functionality or module.

Overview of the Comverse ONE Real-Time Billing Solution

The Comverse ONE solution is a productized offering designed to support multiple, modular deployments for service providers. The solution is designed in a manner that lets the service provider start with the necessary functionality required by the business, with the option to employ additional modular functionality in the future without requiring substantial rework of what has already been implemented.

The solution is designed with this flexibility to provide the best support for a spectrum of telecommunications operation problems.

The key foundational concepts behind the Comverse ONE solution are described below, as well as a summary view of the overall functionality supported by the solution and its supporting infrastructure.

The Comverse ONE Real-Time Billing solution is derived from and is a subset of the Comverse ONE solution. The Comverse ONE Real-Time Billing solution gives operators an efficient total-management solution to support telecommunications activities and automate business processes. It gives operators the resources they need to manage their subscribers, their operations, and their market offerings efficiently and effectively. It's targeted toward operators who are looking for a prepaid billing solution.

Supported market segments include wireless, wireline, broadband, content and e-business providers, and ISPs.

Key Concepts of the Comverse ONE Solution

The Comverse ONE solution is founded upon several fundamental concepts that enable the service provider to implement the desired functionality in a way that supports its business, at the points in time when it is needed. The key concepts underpinning the Comverse ONE solution include the following:

- A **unified account and subscriber data model** that gives a common view of the customer across all modules
- A **single Product Catalog** that manages the provider's market offerings across the suite
- An **open operational and business framework** that enables providers to leverage the Comverse ONE solution functionality and logic across any complex operational environment

Unified Account and Subscriber Data Model

At the heart of the Comverse ONE solution is the unified data model, which manages customer, billing, charging, rating, balance, and offering data from a centralized point. The model consistently manages data across the entire solution and eliminates the burden of data synchronization across systems and subsystems, which ensures integrity of business data across the entire software solution.

This unified data includes a common account and subscriber model that consistently manages account and subscriber data across the entire customer life cycle – from acquisition, to service delivery and activation, to event authorization and financial management of each customer – without special modeling for certain subscriber types that are supported by the provider. More specifically, modeling of account and subscriber structures and hierarchies are the same for prepaid subscribers, postpaid subscribers, or a mix of both. This lets providers easily expand to support any combination of prepaid, postpaid, or hybrid customer models without requiring significant refactoring of the existing subscriber data. Supporting new types of subscribers is as straightforward as defining new offerings and then provisioning those offerings to customers.

The unified account and subscriber model is also service-agnostic, enabling providers to deliver any type of service (that is, voice, data, content, video, etc.) to customers. Delivery of these services can be modeled in flexible ways ranging from simple single-subscriber models, to family-based multiple-subscriber models, to complex business oriented n-level hierarchies.

Finally, the unified data model is designed to enable fast time-to-market for provider offerings through a business-oriented Product Catalog model that is at the core of the data model. Combining the unified account and subscriber model with this single Product Catalog delivers a robust data model that can be used to manage the business end-to-end.

Single Product Catalog

The Product Catalog is the functional cornerstone of the Comverse ONE solution. It provides the means for defining sellable offerings, implementing accurate rating and charging for those offerings, and controlling how the offerings are delivered to the market through multiple channels. The Product Catalog is the focal point in the service provider's business of delivering their market-driven value proposition for their customers.

The Product Catalog is a powerful marketing tool that lets service providers create business-driven offerings and offer them in a timely manner to their end customers. The definition of these offerings can range from the simplest a-la-carte subscriber level offers up through complex cross-account or cross-subscriber "n-Play" bundled offerings.

The Product Catalog supports the definition of multiple payment methods, allowing the provider to define offerings that include a combination of prepaid, postpaid, and hybrid based balances, tailored to align with the service provider's revenue model.

The Product Catalog also supports the ability to provide offerings across multiple provider channels. Offers that are defined in the centralized Product Catalog are propagated to multiple Online Catalogs that are accessed by resellers or virtual operators. The available offers for each Online Catalog can vary from one reseller to the next, through the use of versioning within the centralized catalog. This allows the provider to distribute offerings to multiple markets in controlled fashion.

Through the above capabilities, the Product Catalog acts as a single interface for configuring the business offerings that are ultimately provisioned and managed in the customer care, billing, and rating modules across the Comverse ONE solution, thus enhancing the operator's efficiency.

Open Operational and Business Framework

The Comverse ONE solution provides an open framework that encompasses Operations, Administration, and Management (OA&M), security, and public interface support.

The Comverse ONE solution provides a centralized point for system operations and administration. It includes uniform interfaces for alarm notifications, as well as a centralized agent infrastructure for tracking user activities across the system. This alleviates the disparity in managing central-office and back-office applications introduced with the Comverse ONE solution.

The Comverse ONE solution also provides a common security framework that is leveraged across the entire solution. The security framework provides centralized authentication, authorization, and accounting capabilities that can be used to enforce security needs of the business. The common approach to security across the solution (including single sign-on) gives the technical foundation necessary to help providers meet Sarbanes-Oxley Act of 2002 (SARBOX) requirements and other regulatory directives.

To better enable integrations with other applications or existing environments, the Comverse ONE solution provides a complete set of business-oriented APIs, which expose the full capabilities of the Comverse solution. These APIs deliver a public interface that can be easily integrated with and at the same time hide the underlying complexity of the system. For example, a single "Create X" API method is provided that uses the parameters as appropriate, depending on which underlying modules are in place; this is as opposed to other systems where multiple different "Create X" methods are exposed and integrators are required to choose the correct method.

The open framework delivered with the Comverse ONE solution provides the necessary support and means for the service provider to integrate with third-party applications and then manage operations in complex and diverse environments.

The unified data model, single Product Catalog, and common, open operational and business framework delivered with the Comverse ONE solution provides a solid foundation upon which the functional capabilities of the system are delivered.

Robust Functionality Delivered

The Comverse ONE solution provides a very rich set of functionality to support all of an operator's customer management and financial management needs. The functionality is grouped into the following five functional domains:

- **Rating, Charging, and Promotions***: Provides real-time authorization, notifications, online and offline rating, and comprehensive balance management
- **Customer and Order Management****: Delivers account and subscriber management, marketable offering selection, and order management and fulfillment

  NOTE

  When you acquire the Customer and Order Management domain, it replaces the basic customer-care module, which has fewer features.
- **Self-Service Solutions****: Delivers Consumer, Business, and Channel Care to end users
- **Billing and Financials**: Supports cyclical promotions, unified invoicing and statements, payments and collections, and journaling
- **Mediation and Settlements**: Delivers active and passive mediation, partner settlements, and roaming support

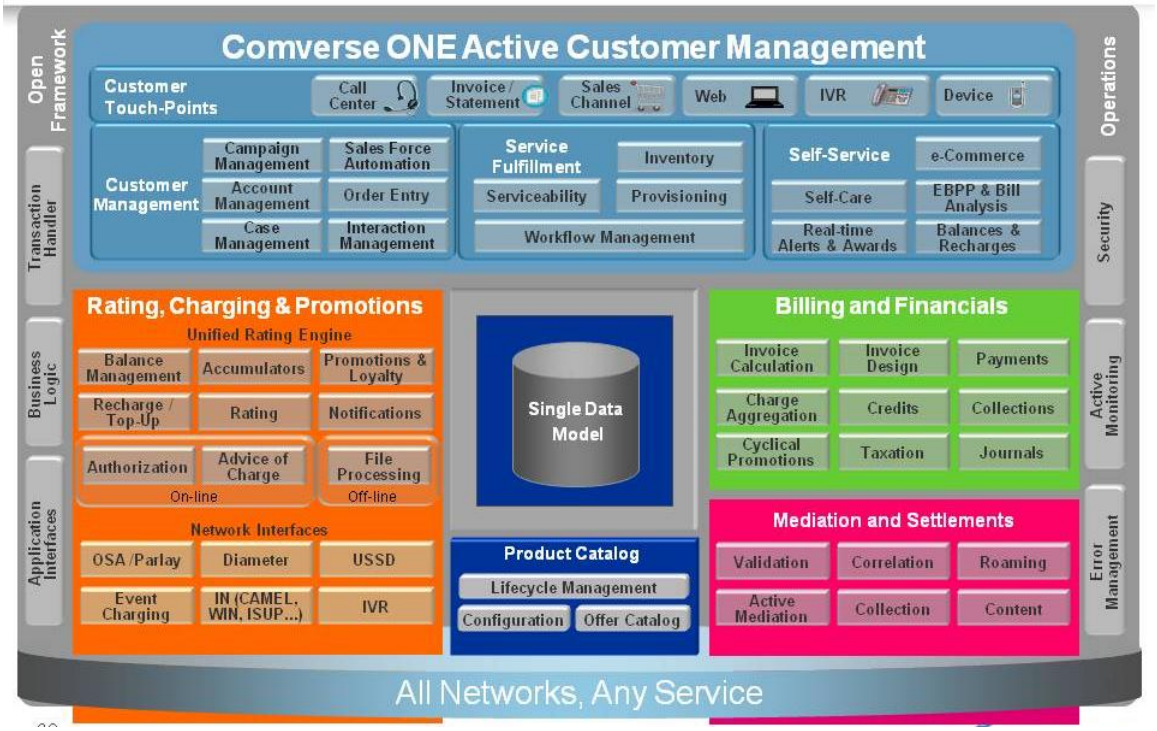
NOTE

*The Rating, Charging, and Promotions domain forms the foundation for the Comverse ONE Real-Time Billing solution.

**The Customer and Order Management domain and the Self-Service Solutions domain together deliver the value of active customer management within the Comverse ONE solution.

These five domains, which are briefly described below, can be selected and deployed by service providers in various combinations to meet their specific business needs. **Figure 2** is a functional view of the Comverse ONE solution.

Figure 2 Functional View of the Comverse ONE Solution



Rating, Charging and Promotions

The Rating, Charging, and Promotions domain covers the functionality involved in interacting with the customer via the operator's network elements on a transactional basis. This includes real-time authorization and session control, pricing and charging a transaction, and providing for rating time promotions. Some of the key features of this domain include the following:

- Unified Rating Engine covering both online and offline processing
- Complete balance management for monetary and nonmonetary units irrespective of payment type
- Support for multiple technologies in a single platform
- Comprehensive charge redirection models
- Real-time promotions that encourage usage and customer retention

Customer and Order Management

The Customer and Order Management domain covers the aspects of managing a customer throughout the customer life cycle from the creating of an order for new services to the recording of a payment from the customer. Some of the key functionality provided by this domain includes the following:

- Complete customer life-cycle management from prospect through order to revenue
- Uniform order fulfillment and delivery process irrespective of payment method or service type; the configurable workflow engine enables extensive and flexible support of a service provider's business processes
- Offer selection, eligibility, and transition guided by rules in the Product Catalog
- Management of inventory assignments and reservations to accounts and subscribers
- Tracking and follow-up on customer interactions with provider
- Geographical eligibility based on serviceability rules
- Sales Force Automation, providing sales lead and opportunity management
- Campaign Management, providing outbound marketing capabilities for identifying interesting moments in a customer's life cycle and to reach out and enhance the coverall customer experience

The Customer and Order Management domain leverages the customer management business logic that is exposed through the Comverse ONE solution open framework.

Self-Service Solutions

Giving end-consumers more control of service and finances is increasingly important to service providers as they strive to provide a better customer experience and at the same time lower their operational costs. The Self-Service Solutions domain provides the operator with comprehensive functionality in this area. This includes the following:

- **Consumer Self-Service**: This functionality is aimed at residential consumers and provides for managing of services, updating customer information, checking balances, and recharging or paying an account.
- **Enterprise Self-Service**: This functionality allows corporate customers to manage their own services without relying on an operator's help. The provided functionality includes managing services and invoice analysis.
- **Channel Self-Service**: This functionality is designed to be used by a dealer or retail outlet to manage a customer. It covers capabilities from customer acquisition and new-service creation to payment processing.

Similar to the Customer and Order Management domain, the Self-Service Solutions domain leverages the customer management business logic that is exposed through the Comverse ONE solution open framework.

Billing and Financials

The functionality covered in the Billing and Financials domain includes all cyclical processing including invoicing and cycle-time discounts. It also includes journal processing, collections, and other activities. A selection of the key functionality includes the following:

- **Cycle-Time Discounts**: These are based on charges during the invoicing cycle or taking into account historic consumption.
- **Taxation**: Usage and other charges can be taxed accordingly at rating or invoicing time. Support for tax exemptions is also available.
- **Invoice Rendering**: Invoice templates can be created and generated in various formats including formats for printing.
- **Payment Processing**: This includes support for a variety of payment methods including credit/debit cards, checks, and electronic funds transfer (EFT).
- **Collection Management**: Delinquent accounts can be managed via configurable collection scenarios depending on account attributes.
- **Journaling of All Financial Transactions**: Revenue-impacting transactions generate entries for billed/unbilled, and earned/unearned revenue.

Mediation and Settlements

The Mediation and Settlements domain covers all the collection of records from network elements and trading partners in a non-real-time manner. The domain also performs initial processing of those records. The following are the three key areas of functionality provided for in this domain:

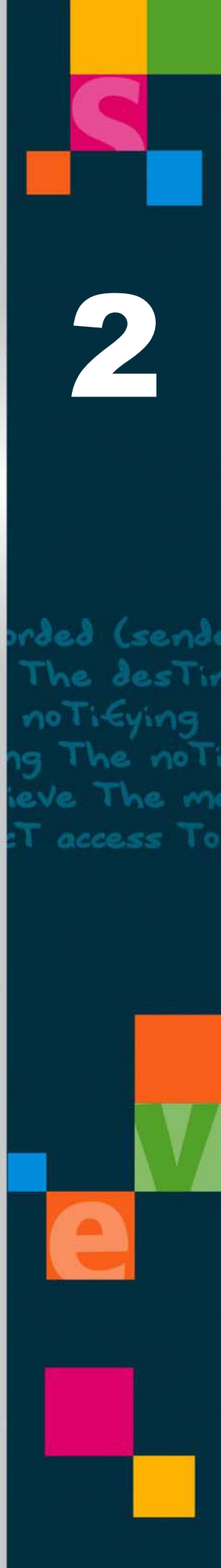
- **Mediation**: The mediation system collects data associated with various events from several network elements and then correlates the usage events to form an aggregated "billable" event. The aggregate billing event can then be rated and billed by the billing system.
- **Roaming**: This area handles processing for all non-real-time based transactions. It includes both in-collect and out-collect processing and supports both Cellular Intercarrier Billing Exchange Record (CIBER) and Transferred Account Procedure (TAP) standards.
- **Revenue Settlements**: This functionality allows an operator to effectively manage revenue sharing, financial settlements, and partner relationships with value-add suppliers.

Accelerate Time to Maximum Revenue

In summary, the Comverse ONE solution is an engineered solution that provides the best-in-class functional offerings for meeting opportunities and challenges that service providers will face in capturing and growing revenue from customers and subscribers.

The solution is designed on a solid, scalable foundation with a unified data model, market-oriented Product Catalog, and an open framework at its core. This solid foundation can be extended, as appropriate, through several feature-rich domains that deliver active customer management, billing, charging, and network-oriented service management to meet any service provider's business needs.

With the Comverse ONE solution, service providers have a solution that can grow with their business, at their pace, to meet future technology, operational, and business challenges.



Chapter 2

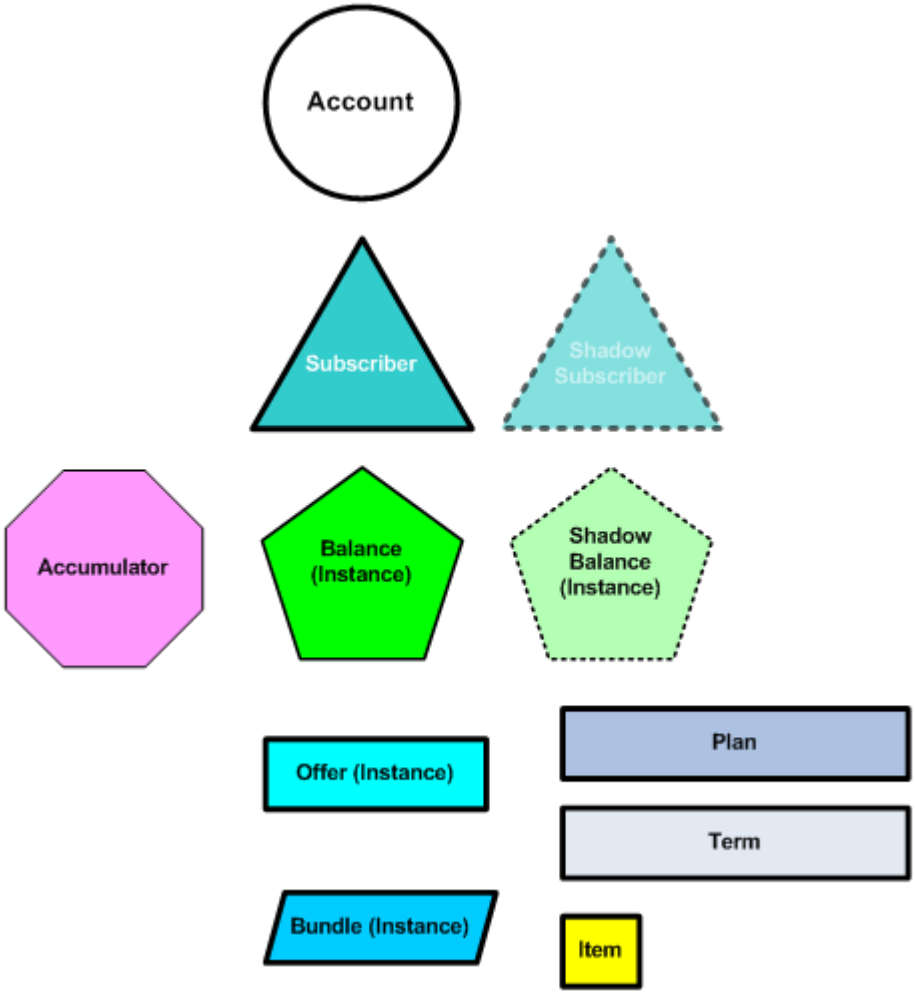
Key Concepts

Data Model Legend

The Comverse ONE solution makes use of a robust and flexible data model that supports new products and offers that operators want to quickly implement as they grow and seek to capture higher revenues. The figure below shows the shapes and colors used to represent important data model entities.

Depending on the functional behavior required from a data model entity (such as account) and the domains being deployed by the operator, the information resides on the Rating database or the Customer database. For example, if only the Rating, Charging, and Promotions domain is deployed, the applicable entities will be present on the Rating database. When the operator decides to use other domains, such as Customer and Order Management, some of these entities will be kept on the Customer database and data migration will be needed during this transition.

Figure 3 Data Model Legend



Accounts and Subscribers

An account represents the liable party and owns the accounts receivable. It can have the following entities as potential children: account (other accounts, as part of a hierarchy), subscriber (zero, one, or multiple subscribers), offer (zero, one, or multiple offers), and bundle (zero or one bundle).

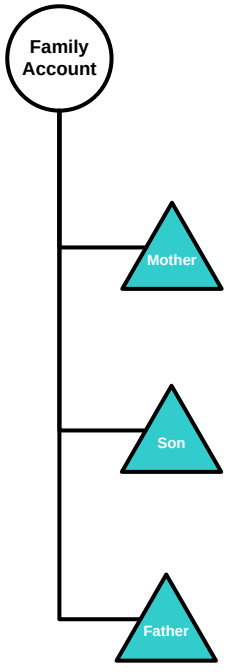
Accounts can be organized into hierarchies and have a presence in both the Customer database and the Rating database. Accounts can have real-time balances and accumulators.

The subscriber represents the delivery point of service. Subscribers can have bundles (zero or one bundle) or offers (zero, one, or multiple offers) as potential children. Subscribers have a presence in both the Customer database and the Rating database. Subscribers can have real-time balances and accumulators.

The figure below shows the relationship between an account and its subscriber instances. In this example, the family account has three subscribers, representing the mother, son, and father.

The Comverse ONE Real-Time Billing solution also supports the concept of single subscriber accounts. This allows for creating a subscriber, while behind the scenes an account is created that includes some basic attributes. Logically speaking, it creates one entity that is both an account and a subscriber.

Figure 4 Account/Subscriber Instance



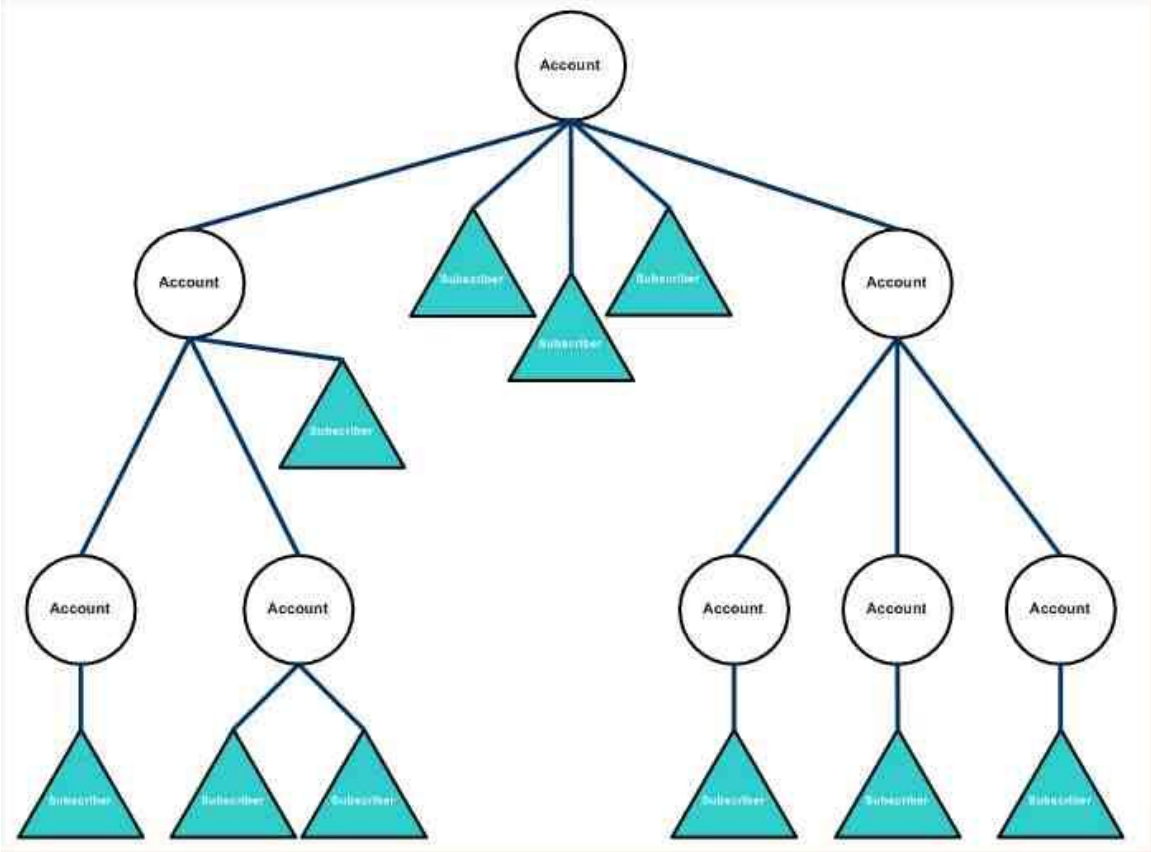
Accounts and subscribers have states. The account state indicates its invoicing and activity status. The subscriber state indicates the service status of the subscriber (for example, idle, active, suspended, fraud-locked, or disconnected). The customer and subscriber life cycle is managed throughout the solution via ordering, activation, invoicing, and other activities.

Account Hierarchy

As shown in the sample account hierarchy below, account hierarchies can be N levels deep and each tier can be N accounts wide. Accounts can have just one subscriber, many subscribers, or no subscribers, and each of them holds reference to the immediate parent and the root hierarchy account.

Account hierarchies can be used to reflect a customer's organization structure, geography, departments, and so on. They can also be used to define which accounts receive invoices and how some charges are redirected. See Charge Redirection on page 21 for additional information.

Figure 5 Account Hierarchy



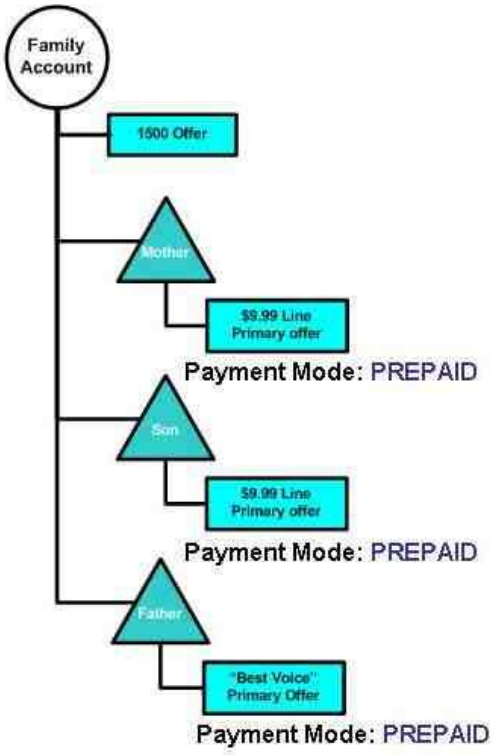
Bundles, Offers, Plans, Items, and Terms

An *item* is the most fundamental entity you can deliver to a customer. Types of items include usage, service, and provisioning. Items can be grouped into *plans*. Types of plans include usage, service, promotions, and inventory.

Plans can be grouped into *offers*, which in turn can be grouped into *bundles*. Offers can be primary, supplementary, or account type. Bundles are managed in the Customer database and the Billing database and can be at the account or subscriber level. Every subscriber bundle must have a primary offer. Every subscriber must have one (and only one) primary offer, either through a subscriber bundle or through a primary offer. An offer is the most granular object that can be delivered to an account or subscriber by a CSR. Offers can group plans, terms, balances, and accumulators. The Comverse ONE solution supports primary, supplementary, and account offers.

The figure below shows sample offers for a family account.

Figure 6 Account/Subscriber Instance with Offers and Payment Modes

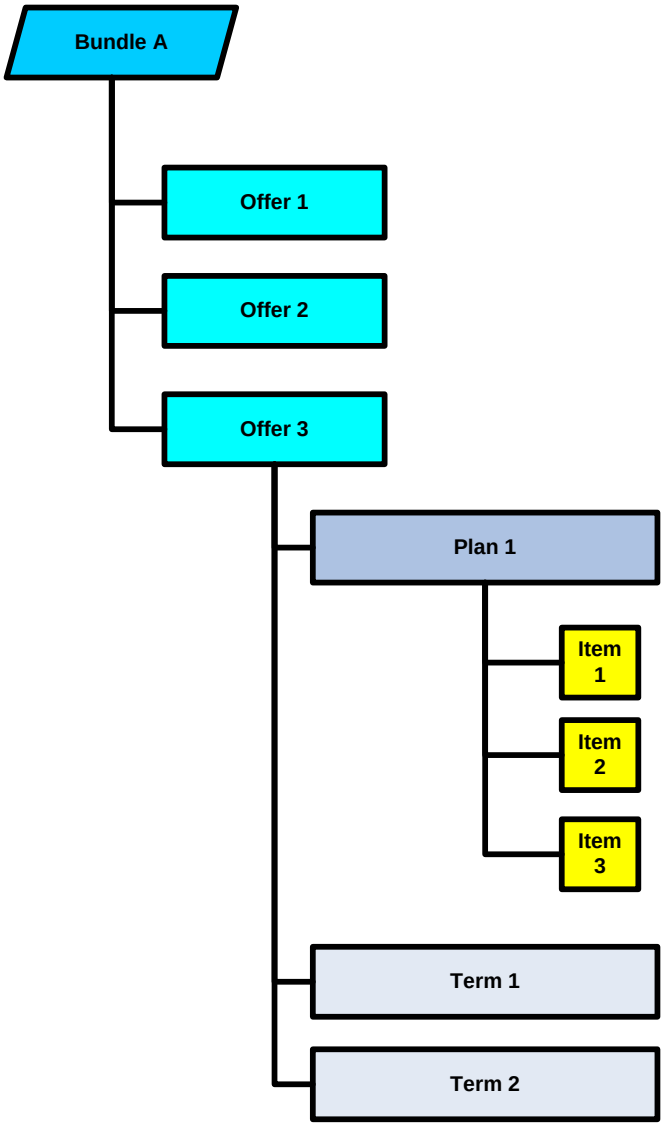


Both offers and bundles have their own set of criteria or *terms* for behavior. A term defines some pricing aspect of the agreement that is represented by the offer or bundle. Types of

terms include recurring charge, non-recurring charge, and contract term (that is, the duration of the contract).

The figure below shows the relationship of bundles, offers, plans, items, and terms.

Figure 7 Bundles, Offers, Plans, Items, and Terms



Balance Management

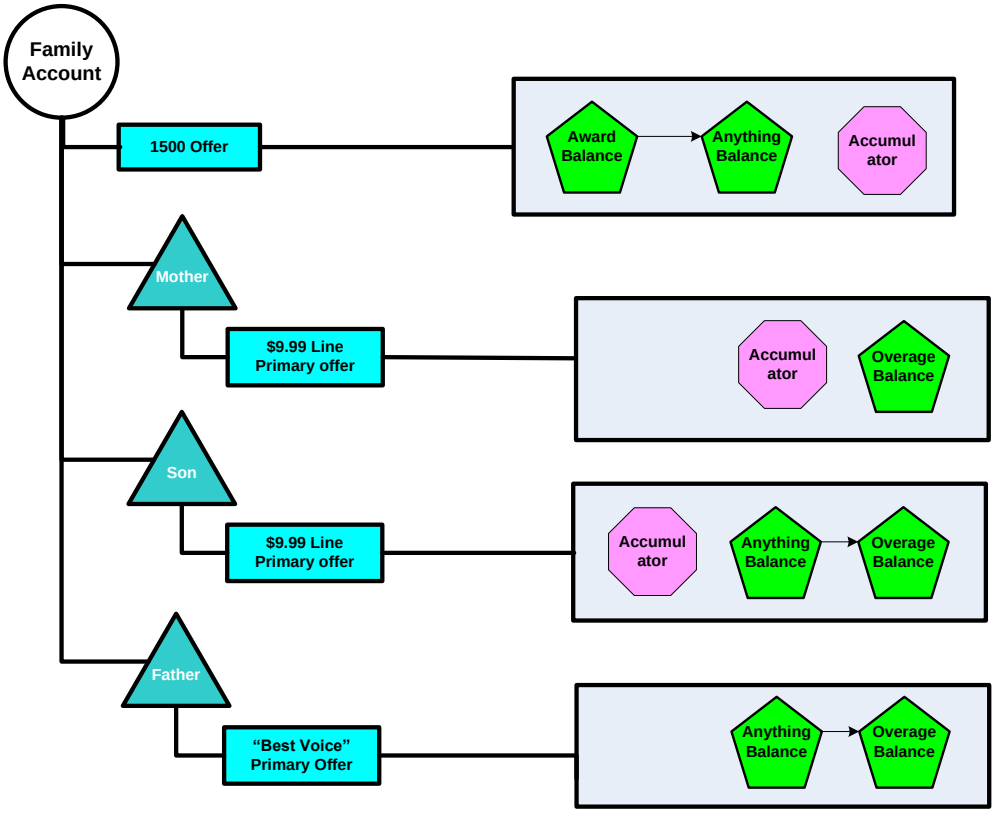
Balances can be at the account or subscriber level and can represent real-time funds (monetary) or units (nonmonetary). Prepaid balances are decremented with each use.

Balance management capabilities include (1) eligibility of balances for particular services; (2) targeted promotions for specific balances; and (3) tracking the granting, consumption, and expiration of awards, bonuses, or notification triggers and so on.

Accounts and subscribers can have none, one, or multiple accumulators. Accumulators track charges or events of a defined type and optionally trigger awards or promotions upon reaching a defined threshold. An account accumulator will accumulate events and charges at the account level, while a subscriber accumulator will accumulate charges and events at the individual subscriber level.

The figure below shows the relationship of balances and accumulators in a sample family account. Note that 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 associated to that account (see "Shadow Balances" on page 21) or by other subscribers or accounts (see "Liability Redirection" on page 22). Accounts do not have usage or usage plans, but accounts potentially have recurring/non-recurring charges, balances, and promotions plans.

Figure 8 Balances and Accumulators



Charge Redirection

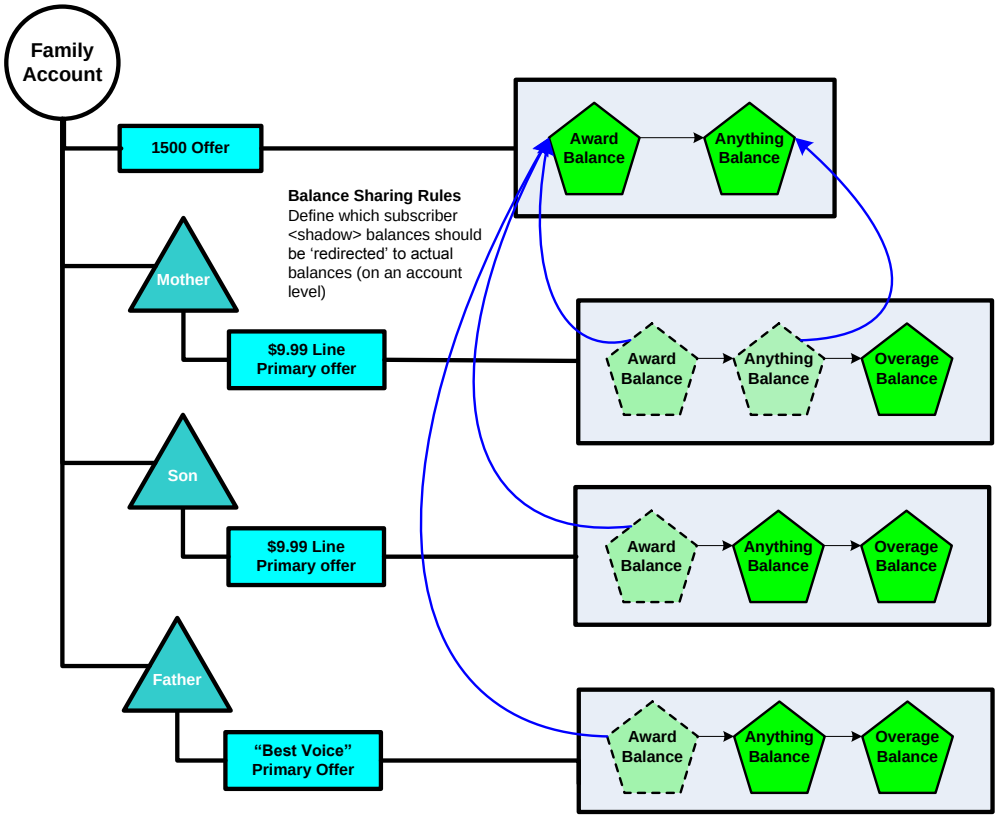
There are two ways to support charge redirection using the Comverse ONE solution: (1) shadow balances and (2) liability redirection.

Shadow Balances

Shadow balances are used for charge redirection from a specific balance to a different specific balance. A shadow balance (represented by the dotted-line pentagons in the figure below) can point to a real balance of any parent account in the same hierarchy. Balance-sharing rules define which subscriber shadow balances should be redirected to actual balances on an account level. CSRs can also set a limit on how much the shadow balances draw from the account-level balance. Shadow balances are cyclically reset.

The figure below shows the relationship of shadow balances in a sample family account. In the figure, the mother's award consumption draws from the family account-level award balance. In this case, all award balances (for mother, son, and father) point to the award balances from the family account.

Figure 9 Charge Redirection: Shadow Balances



Liability Redirection

In addition to shadow balances, the Comverse ONE solution supports the concept of liability redirection. Liability redirection is a way to redirect charges from an account or subscriber to another account, or from an account or subscriber to a shadow subscriber on another account. Liability redirection can be pointer-based or shadow-subscriber-based.

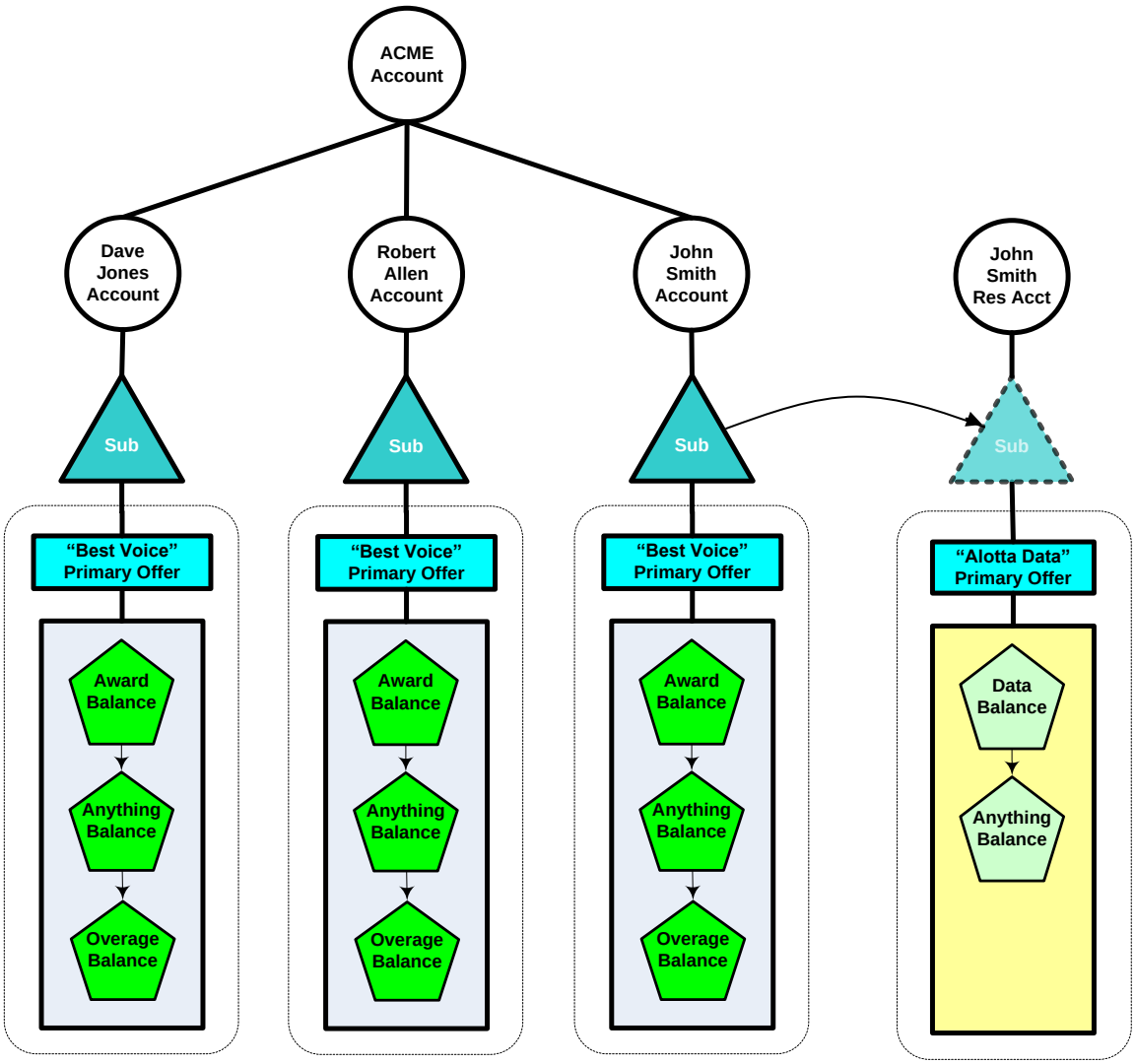
Pointer-based liability redirection is used in situations where tariffs of the source entity are used to rate the call and the target account is paying for the charge. The CSR can set up the details of the redirection. For example, company XYZ might want its Finance department to pay for the invoices of its Sales and Operations departments.

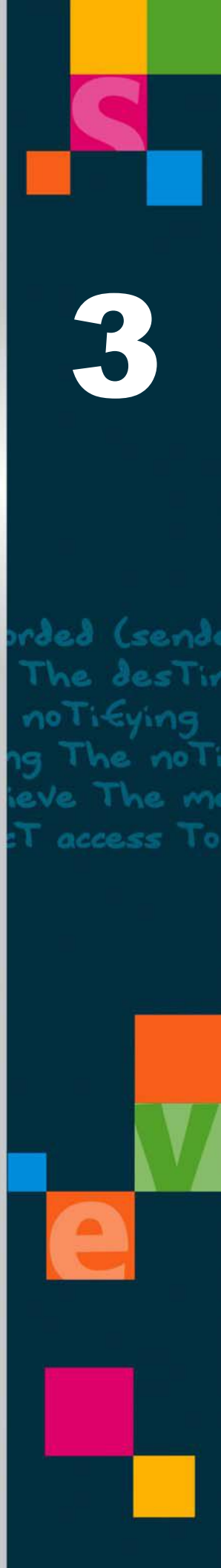
Shadow-subscriber-based liability redirection is used to override usage charges by using the target subscriber's rating plan. Internally, the original subscriber and the associated shadow subscriber have independent life cycles. The shadow subscriber has its own payment methods and primary offer/bundle and/or supplementary offers. The CSR can set up the details of the redirection using Customer Center.

In the example shown in **Figure 10**, Acme pays for John Smith's phone and voice service. But John also wants data service, even if he has to pay for it himself. When he requests this service, the CSR creates a shadow subscriber including the following (as represented in the far right column of the diagram below):

- John's own account
- A shadow subscriber
- A data offer
- A data balance
- John's own monetary balance

Figure 10 Liability Redirection: Shadow Subscribers





Chapter 3

Component Pieces of the Comverse ONE Real-Time Billing Solution

This chapter describes the Product Catalog and the Rating, Charging, and Promotions domain, which are the foundation component pieces of the Comverse ONE Real-Time Billing solution.

Product Catalog

The Product Catalog is a single-point interface that manages all aspects of service provisioning in the Comverse ONE solution. It allows quick and accurate creation and management of offers, bundles, plans, and terms. This can bring about dramatic reductions in operator product-development cycles. The Product Catalog provides a holistic view of all relevant data and enables marketing-offer personalization and segmentation.

Not only does the Product Catalog eliminate duplication of efforts, it also facilitates coherence and enhances life-cycle management and eases operational constraints. Due to its easy-to-use object-oriented interface, you can achieve faster turn-around time from product conception to market availability.

In addition, all prepaid offers can be managed via a single interface, and multiple service categories (wireline, mobile, cable, and so on) can be bundled together. The Product Catalog also provides extensive capabilities for market segmentation, offer profiling, and inter-product rules. This allows operators to support brand and dealer offer segmentation. Data sets are versioned and are propagated in a coordinated manner.

The Product Catalog supports evolution from prepaid or postpaid to converged (for those cases in which the operator moves to the Comverse ONE Converged Billing & Active Customer Management solution), along with single service to multiplay evolution. This centralized management of rating and billing definitions improves accuracy of configuration and reduces revenue leakage. Multilingual and multicurrency product, billing, rating, and charging definitions are supported.

The Product Catalog interfaces are available for retrieving marketing offers and bundles and for loading basic rating and charging data.

One of the most salient attributes of the Product Catalog is its use of logical layers. These logical layers are aimed at different user groups. For instance, the Marketing/Packaging layer is where the customer-facing market offers are configured, while the Service layer is where services and usage activities are defined. Other layers are the Rating and Billing Definition layer and the Basic System Infrastructure layer.

For More Detailed Information

This chapter provides only a general overview of the Product Catalog. See the following Comverse ONE solution user documentation for more details about the Product Catalog:

- *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.
- *Unified API Guide*
  Chapter 5, "Online Product Catalog," of the *Unified API Guide* provides information about several APIs that support Online Product Catalog functionality. It primarily presents APIs that you can use to accomplish the more common Online Product Catalog tasks.

High-Level Functionality of the Product Catalog

The Product Catalog enables coherent and flexible service provisioning in the Comverse ONE solution via a single easy-to-use interface. It is organized into logical layers corresponding to different operational domains and user groups:

- **Basic System Infrastructure Layer**: For configuration of basic system data such as units and currencies
- **Service Layer**: For defining usage activities and service-related details such as notifications and access numbers
- **Rating and Billing Definition Layer**: For setting up rates, balances, accumulators and promotions
- **Marketing/Packaging Layer**: For configuring customer-facing market offers

The use of these logical layers eases configuration of products and services. For example, the Marketing/Packaging layer, with its drag-and-drop capabilities and user-friendly format, presents the building blocks that a marketing user can select when creating new bundles and offers, resulting in reduced time to market.

To allow for flexible marketing logic, the Product Catalog supports various configurable methods for product organization, filtering, and marketing, including the following:

- By using segmentation keys and product rules, operators can target products based on customer profiles
- Market-driven rules for product sales and ordering can be defined to identify required, optional, and compatible product associations
- With the Product Catalog's support for plan transitions (for example, 2G Mobile plan to 3G Mobile plan), operators can avoid having to do a "cancel and replace"
- Support for multiple lines of business enables cross-product and cross-market bundling of offers
- Multiple distinct brands can be managed within the Product Catalog
- In addition to multicurrency and multilanguage support, data extensibility allows for content-rich product definitions

- Regional distribution of products can be managed; for example, in deployment scenarios involving a single instance of the Product Catalog with multiple instances of the Comverse ONE solution

The Product Catalog also provides comprehensive product life-cycle management:

- Information is edited and validated within an Offline Catalog, before being propagated to an Online Catalog that provisions the Comverse ONE solution systems
- Multiple users can edit Product Catalog information simultaneously without risk of corruption or confusion, due to the check-in/check-out paradigm
- Data to be propagated to target systems is clearly segregated into *versions* — timestamped sets of service provisioning information that become the live data at the appropriate times
- A full audit trail is maintained of all data changes and propagation operations
- The Product Catalog supports propagation of versions to multiple test and production environments
- The use of future-dated versions allows an operator to preprogram product deployment and to profile market offerings over time:
  - Multiple future-dated versions can be propagated to and stored in the Online Catalog
  - Version activation and expiration is managed automatically by the online environment

In addition, use of dates and durations within a version give fine-grain control of an entity's life cycle and provide marketing flexibility to support use cases such as the following:

- Based on the quantity of recharges in the month, award 50 short message service (SMS) messages to be consumed within 15 days
- All new Premium Plan prepaid customers activated before June 30 get free access to Sports News services for the first three months

The reseller concept is an important feature of the Product Catalog. Operators can define multiple reseller-specific market offers and propagate reseller versions independently. The reseller concept enables the following:

- **Branding and Virtual Network Operators (VNOs)**: Each brand or VNO corresponds to a different reseller
- **Security and Scope Configuration**: Product Catalog user access can be limited to one or more resellers
- **Regional Product Variations for Geographically Dispersed Operators**: Resellers can be associated with regions

Further product-distribution flexibility is given by the dealer concept. A reseller has one or more dealers. Dealers can be grouped together and associated with a subset of the reseller market offering.

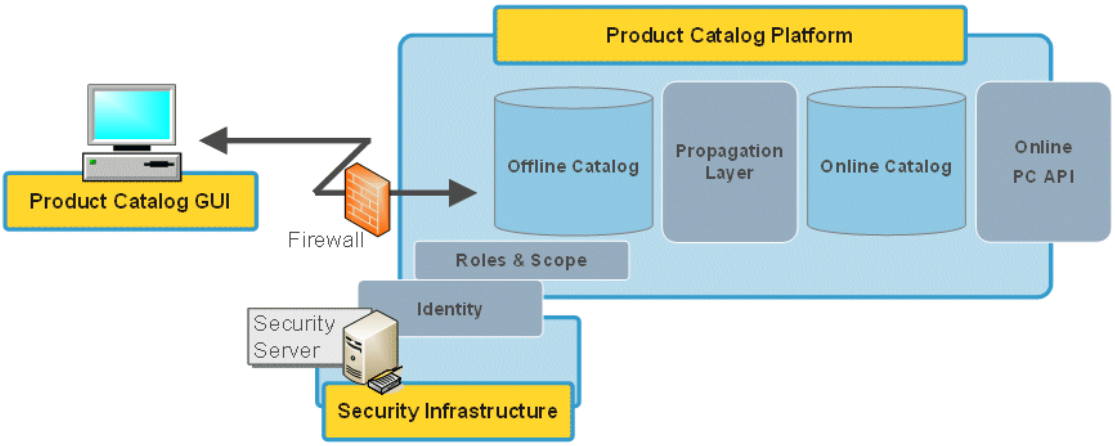
The combination of reseller, dealer, region, and product groupings gives robust and flexible support for different business models and deployment choices.

The Comverse ONE solution offers ease and flexibility for operators wishing to transition from a prepaid-only environment to converged products. The Product Catalog facilitates this by adapting automatically to the Comverse ONE deployment environment and requires no additional configuration when an operator moves from prepaid-only products to a converged market offering. An operator can therefore migrate from the Comverse ONE Real-Time Billing solution to the Comverse ONE Converged Billing & Active Customer Management solution with a prepaid-only market offering and progressively introduce convergent offerings.

Product Catalog Functional Architecture

The figure below shows the functional architecture of the Product Catalog.

Figure 11 Product Catalog Functional Architecture



The Product Catalog is managed via the Product Catalog GUI, which is a Java-based graphical user interface that can be deployed locally or remotely via secure connection. Security services handle user authentication and drive role and scope authorizations within the Product Catalog.

The GUI provides an easy-to-use interface for managing data in the Offline Catalog. It can contain multiple versions per reseller, corresponding to information that:

- Has been previously propagated to live environments
- Is currently live
- Is in preparation for future propagation

The Offline Catalog also contains service versions. A service version holds operator-wide service definition and system configuration information that does not vary per reseller.

Information from the Offline Catalog is propagated to an Online Catalog. Multiple propagation-target Online Catalogs can be identified, the nominal use case being to support distinct test and production environments.

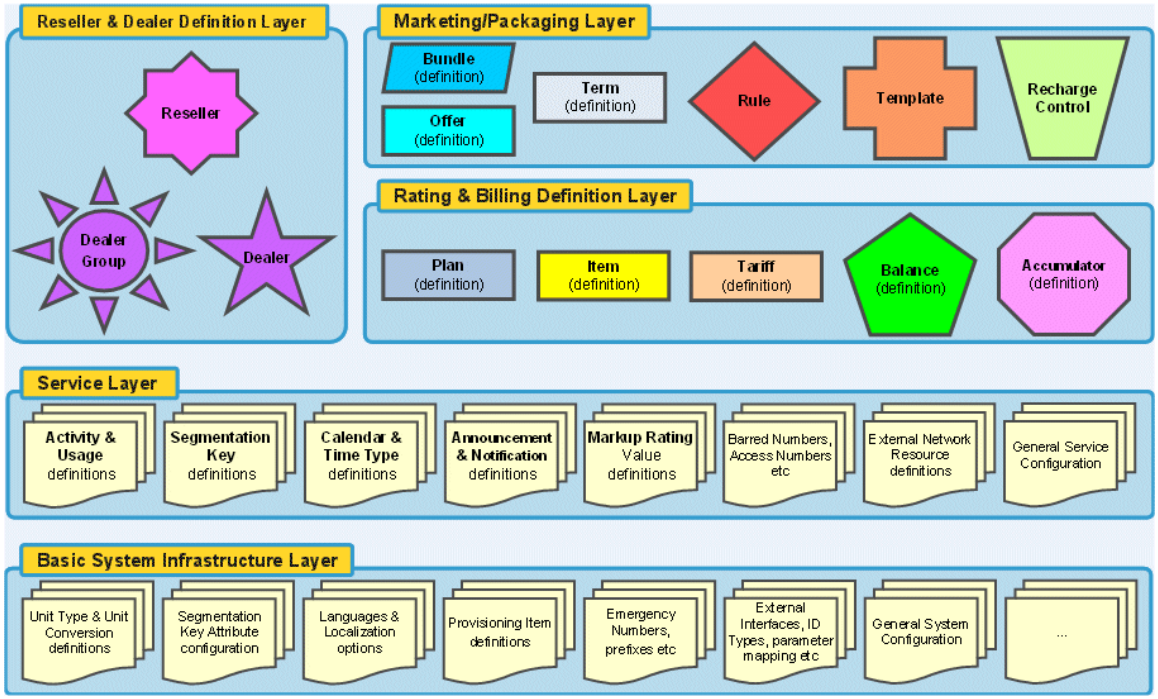
The Online Catalog contains current live versions and can contain future-dated versions. Only one service version and one version per reseller can be live at any given time.

The online Product Catalog API is part of the Comverse ONE solution's Unified API. It uses information in the Online Catalog and primarily provides product selection and browsing services for Customer Center and self-service.

Product Catalog Model

The figure below is a schematic view of the Product Catalog model and its organization within the GUI.

Figure 12 Product Catalog Model



A Product Catalog user manages information in the Offline Catalog within the context of a reseller version and associated service version. The currently selected versions identify the information that will be shown via the layers. Details of what the user can see and do depend, of course, on authorized roles and scopes.

Reseller and Dealer Definition Layer

Defining a new reseller is the equivalent of creating a new brand or VNO. Once defined, information relevant to this reseller can be created in other layers and versions of this information can be propagated to the Online Catalog.

Defining a new dealer is equivalent to creating a new distribution channel for a reseller. Dealer groups allow products to be associated with specific dealers. Used together with the region concept mentioned earlier, dealer and dealer groups allow flexible support of various product distribution scenarios.

Marketing/Packaging Layer

All information in this layer is reseller-specific. This is where market offerings are defined.

- Offers are composed from plans, balance definitions, and so on that have been defined in other lower layers. There are three types of offers:
  - **Primary Offers**: Every subscriber must have one primary offer. A primary offer defines the core aspects of the subscriber (from a service-provisioning perspective).
  - **Supplementary Offers**: Apply to subscribers. Depending on their composition, these can extend service provisioning aspects of the subscriber (for example, access to data services) or can simply impact usage rating (for example, unlimited weekend SMS messages for $5/month).
  - **Account Offers**: Apply to accounts, typically associating balance and accumulator definitions with offers.
- Bundles are composed from offers. Offers can be mandatory or optional within a bundle. Subscriber bundles apply to subscribers and contain a primary offer. Other characteristics of bundles are:
  - Subscriber bundles apply to subscribers, must contain one primary offer and can contain any number of supplementary offers.
  - Account bundles apply to accounts and can contain account offers and subscriber bundles. Subscriber bundles can be defined as mandatory within an account bundle, implying that one of the subscribers associated with an account having this account bundle must have the mandatory subscriber bundle.
- Recurring charge terms, non-recurring charge terms and contract duration terms can be associated with bundles and offers. Bundle terms can be configured such that they override offer terms (that is, the relevant offer terms are ignored and only the terms associated with the bundle are taken into account).
- Various prerequisite and inclusion/exclusion rules can be configured for market-driven product compatibility and availability

- Templates can be configured to drive product-related account management activities. For example, a plan override template is used to drive actions that result in the subscriber changing from one offer to another.
- Recharge control provides flexible management of how a recharge impacts the subscriber's balances and offers.

Rating and Billing Definition Layer

This logical layer contains the main, reseller-specific building blocks from which marketing offers are composed.

- Plans of various types define the base characteristics of offers. The plan types include the following:
  - **Usage Plans**: Group together usage items that associate usage activity with tariff plans. For example, it is via a usage plan that the tariff "12 cents per SMS message" would be configured for an offer.
  - **Service Plans**: Contain service provisioning information. For example, a service plan would define how to enable a subscriber on the GSM network.
  - **Rating Time Promotion Plans**: Define awards and discounts to be applied at rating time, depending on thresholds applied to accumulators.
  - **Tariff Plans**: Define charging conditions.
  - **Supplementary Offers**: Apply to subscribers. Depending on their composition, these can extend service provisioning aspects of the subscriber (for example, access to data services) or can simply impact usage rating (for example, unlimited weekend SMS messages for $5/month).
  - **Account Offers**: Apply to accounts, typically associating balance and accumulator definitions with offers.
- Balance and accumulator definitions are associated with offers and indicate how and what balances and accumulators should be instantiated when the offer is subscribed.

Service Layer

This logical layer primarily contains reseller-specific service provisioning information, although some global (that is, service-versioned) information is included here for ease of use. For example, initial activity usage types (AUTs), which are global, and final AUTs, which are reseller-specific, are managed together.

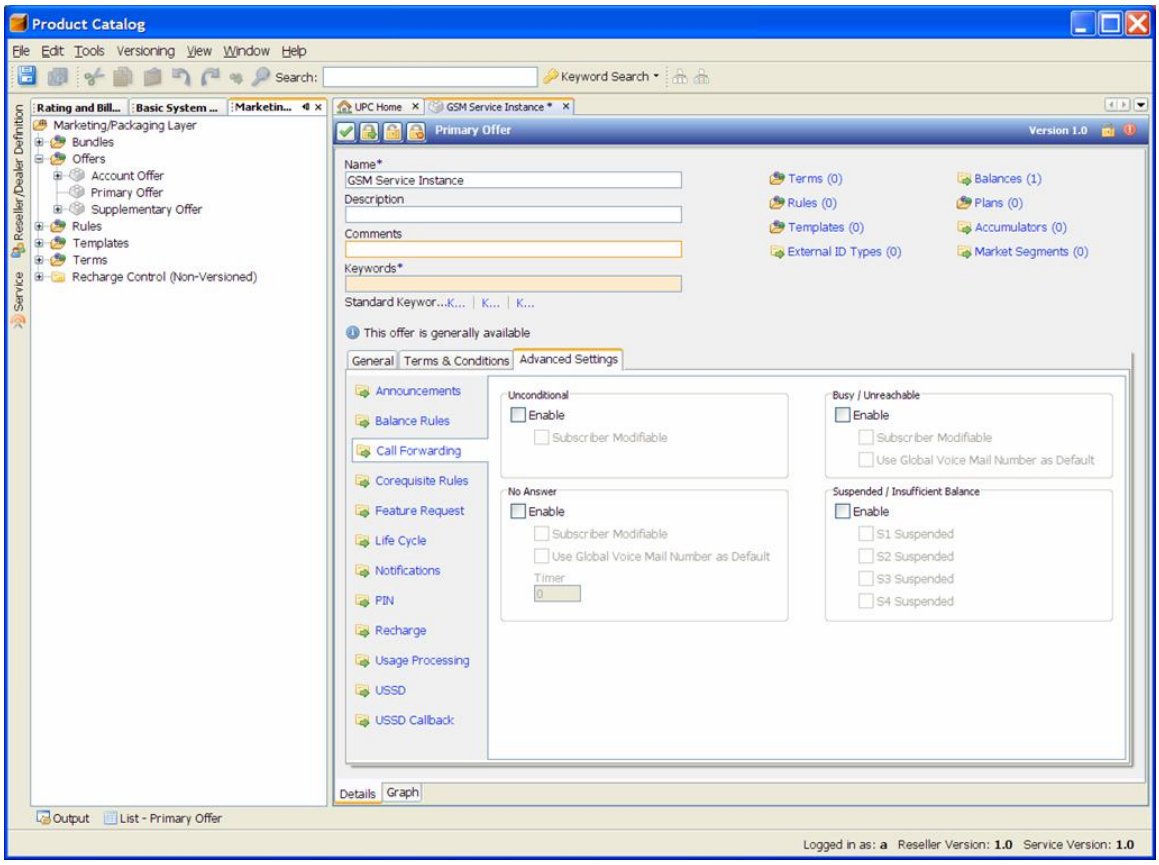
Basic System Infrastructure Layer

This layer contains global (service-versioned) system data definitions.

Easy-to-Use Product Catalog Graphic UI

The Product Catalog GUI uses standard visual interface patterns as shown below.

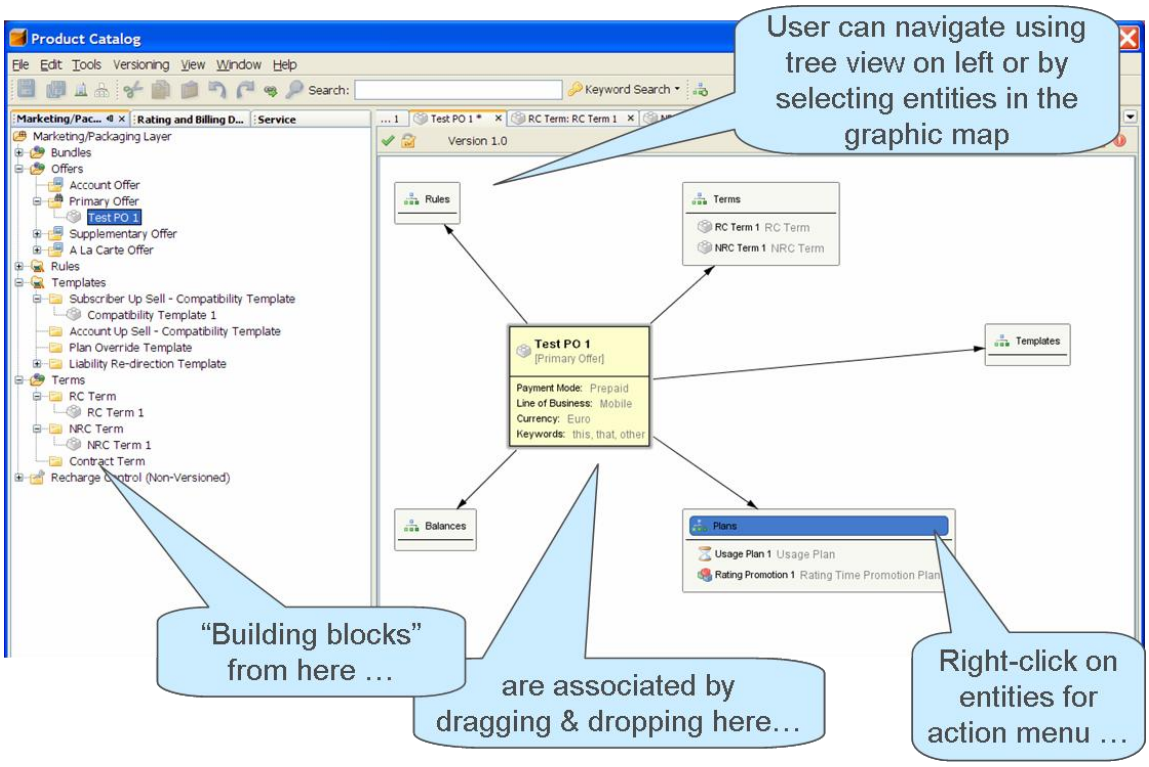
Figure 13 Product Catalog Easy-to-Use GUI



Any user familiar with typical business applications will quickly become accustomed to the GUI. Navigation within layers is on the left, the menu and toolbars are at the top, and the rest of the workspace is subdivided as necessary, depending on the entity being managed.

In addition to the above "classic" view, the Marketing/Packaging layer also incorporates a graphic marketing view, allowing bundle and offer composition to be rapidly viewed and easily managed with drag-and-drop actions, as shown in the figure below.

Figure 14 Product Catalog Marketing View

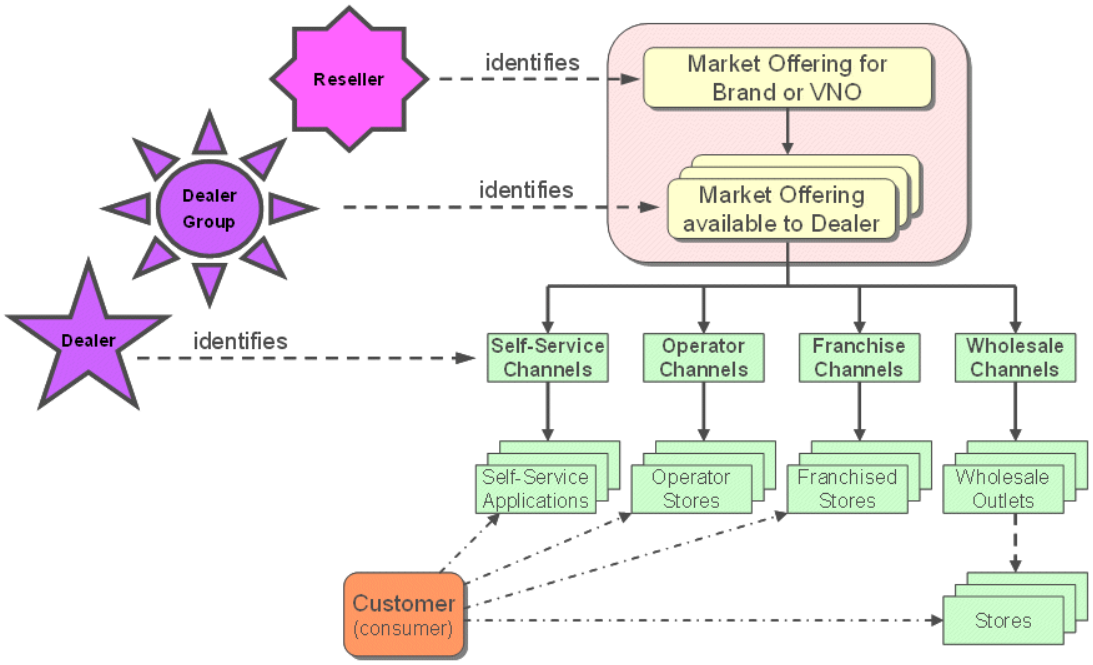


Product Segmentation and Market Distribution

Product segmentation and distribution is structured through the Product Catalog via a number of concepts:

- **Resellers**: Enable you to manage different market segments, since bundles, offers and so on are not shared across resellers. This concept is used for branding and for VNOs.
- **Dealer Groups**: These are specific to each reseller. Bundles and offers are assigned to dealer groups, enabling the sale of these products by dealers assigned to the group. Note that a dealer is more generically a "distribution channel" and the exact meaning depends on operator requirements. For example, the Comverse ONE solution's Self-Service component is identified as a dealer, thus allowing the choice of products available via this channel to be controllable from the Product Catalog.

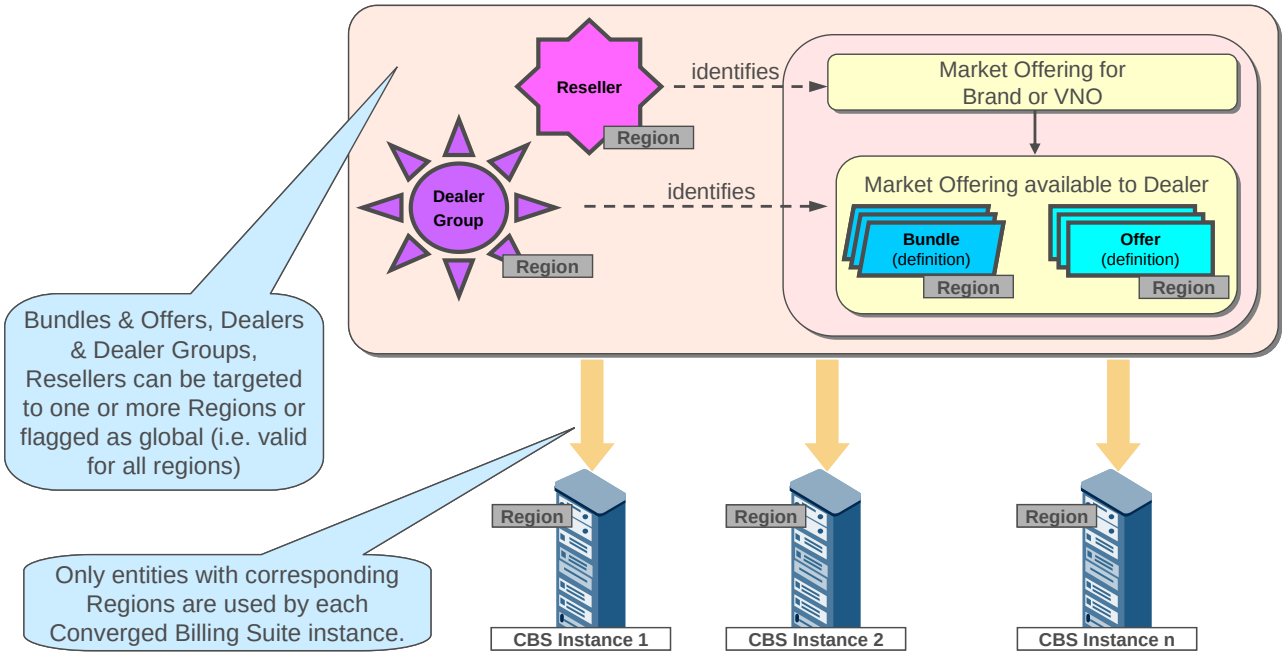
Figure 15 Product Segmentation and Market Distribution



- **Regions**: Also referred to as business domains, regions are intended to drive the physical distribution of information within a Comverse ONE solution deployment that has multiple instances. Characteristics of regions include the following:
  - Each Comverse ONE solution instance is associated with a region.
  - Resellers, dealers groups and dealers can be available to all regions or specifically associated with individual regions.
  - Bundles and offers can be available to all regions or specifically associated with individual regions.
  - The Comverse ONE solution instances take into consideration provisioning information only for resellers, dealer groups, offers, and bundles that are available to their region.
  - Only dealers within a corresponding region can access that Comverse ONE solution instance.

The figure below illustrates product distribution by region.

Figure 16 Product Distribution by Region



Reseller Version Life-Cycle Management

Resellers have their own dedicated and versioned subset of the Product Catalog data. They maintain their Product Catalog data in a separate partition and have no access to the Product Catalog data of other resellers. Each reseller version is linked to a service version. Elements within a reseller version can reference the service version, but not vice versa.

- Versions cycle through a number of states, including:
  - **Design**: Data in the version can be modified in the Offline Catalog.
  - **Test**: The version is locked for preproduction testing. It cannot be edited, but it can be propagated to test environments.
  - **Production**: The version has been published to the Online Catalog of a production environment.
  - **Live**: The version is currently active in a production environment.
  - **Superseded**: The version is no longer live.

The figure below illustrates the reseller version life-cycle management.

For more details see the *Product Catalog* user documentation.

Rating, Charging, and Promotions Domain

This section describes the Rating, Charging, and Promotions domain within the Comverse ONE Real-Time Billing solution. The Rating, Charging, and Promotions domain provides rating and charging capabilities through the Unified Rating Engine, the Unified Recurring/Non-Recurring Charge Server, and other features, as described below. The Rating, Charging, and Promotions domain also includes application interfaces and network self-care.

For More Detailed Information

This section provides only a general overview of the Rating, Charging, and Promotions domain. See the following Comverse ONE solution user documentation for more details about the Rating, Charging, and Promotions domain:

- *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 prepaid SIM cards.
- *Call Flows Reference*
  Callflows detail the logic flow of specific scenarios. Multiple access numbers can map to the same callflow. Different resellers have the option to publish different numbers but share the same logic.
- *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.
- *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 of the Network Self-Care application.

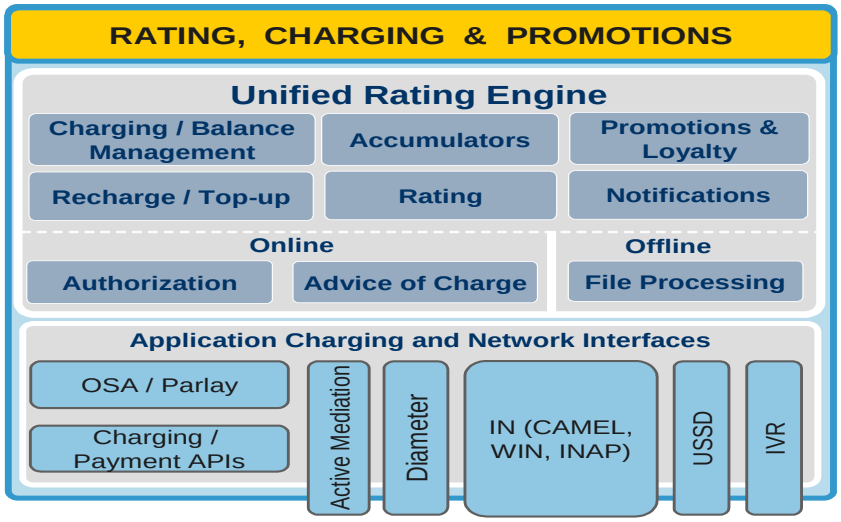
- *Rating Technical Reference*
  Describes the Unified Rating Engine, which is the subsystem responsible for gathering incoming CDRs and processing them for billing.
- *Reports and Data Extracts Guide - Real-Time*
  Describes the real-time Operational Reports Interface (ORI) and the Data Warehouse Extract Utility.
- *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 vouchers and calling cards.

Rating, Charging, and Promotions Core and Premium Capabilities

The core capabilities for the Rating, Charging, and Promotions domain in the Comverse ONE Real-Time Billing solution include real-time rating platform, basic lean customer care, the Product Catalog, balance management, real-time promotions, choice of one of the supported IN-signaling interfaces for real time voice charging, network self-care, and voucher and recharge.

The premium capabilities for the Rating, Charging, and Promotions domain in the Comverse ONE Real-Time Billing solution include calling circles, IVR Self Service, application charging interfaces, CAMEL 3 SMS/GPRS, USSD callback, and other IN-signaling interfaces.

Figure 17 Rating, Charging, and Promotions Domain Functional Map



Unified Rating Engine

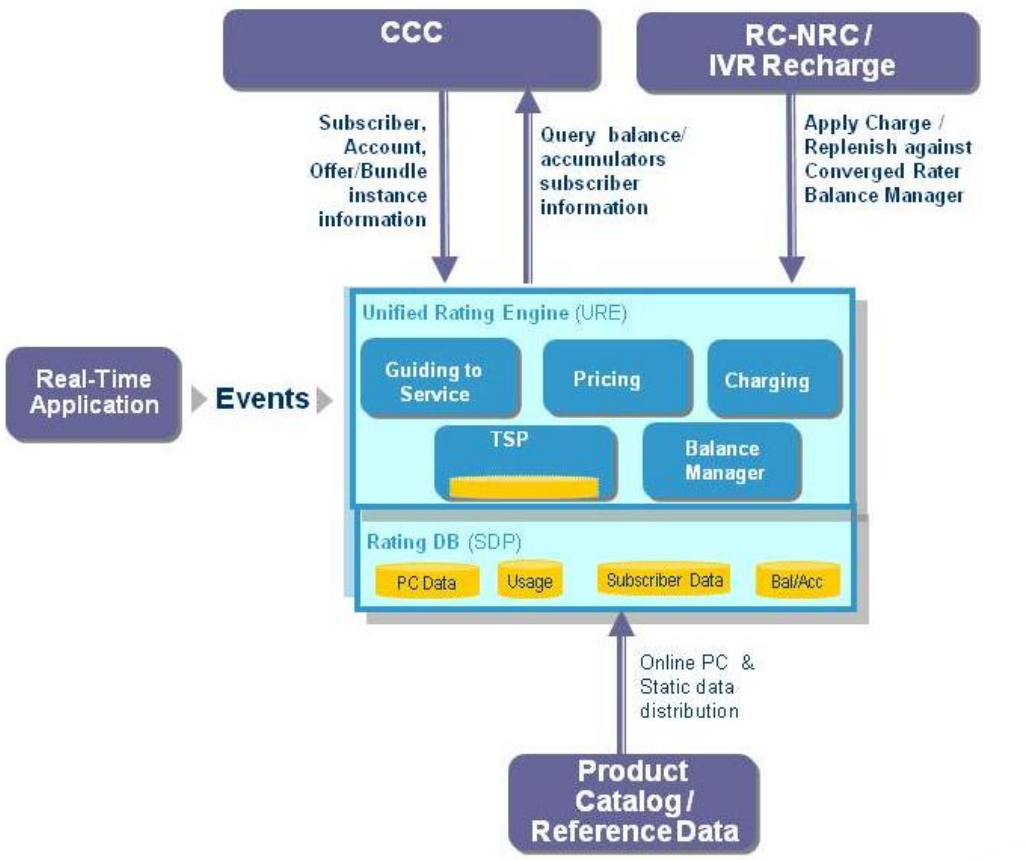
The Unified Rating Engine (URE) supports rating, charging, and real-time promotions for both online and offline event processing. It supports many rating features to meet a wide range of requirements from the wireline, wireless, and Internet broadband industries.

Broadly, the Unified Rating Engine functionality addresses the various functional and technical challenges faced by Real-Time Operators in the following categories:

- Online and offline event processing and robust architecture
- Flexible rating and charging model
- Liability and charge redirection
- Real-time balance management
- Real-time promotions and grants management

The figure below shows the Rating, Charging, and Promotions functional architecture and its integration with the rest of the Comverse ONE solution.

Figure 18 Unified Rating Engine within the Comverse ONE solution



Unified Rating Engine: Usage Event Processing in Online Mode

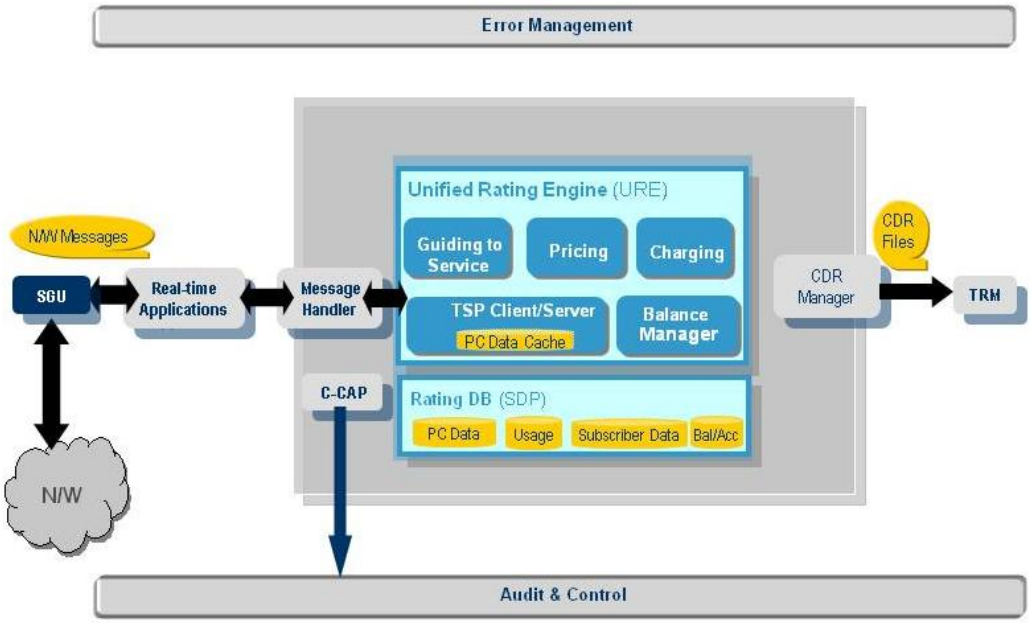
The Unified Rating Engine can process usage events for any network activity, such as phone calls, downloads, email, stock quotes, and on-demand events such as pay-per-view movies. In the Prepaid solution, the Unified Rating Engine always runs in online mode with the exception of outage usage records processing done in offline mode.

Online Event Processing

The real-time applications such as call processor, CAMEL 3 SMS/GPRS, Event Charging, OSA, and Diameter (Comverse SLE, Packet Switch, and IMS) provide input to the Unified Rating Engine in real time. The Unified Rating Engine is run in online mode to process usage events received via real-time applications. For details on each of the mentioned real-time applications, see "Application and Network Interfaces" on page 55.

The figure below shows the processing of events via the Unified Rating Engine in online mode.

Figure 19 Online Event Processing



The following is a brief description of some of the components shown in the above diagram:

- **Signaling Gateway Unit (SGU):** Performs load balancing of network messages.
- **Real-Time Applications:** Includes Call Processor, GPRS, Cap3Sms, Event Charging Interface, OSA, IMS (Diameter), and USSD. Provides real-time session control and interfaces with the Unified Rating Engine (URE).
- **Message Handler:** Handles the IPC interface between the real-time applications and the Unified Rating Engine. Supports OMNI and System V IPC.
- **CDR Manager:** Manages the CDR files generated by real-time applications.
- **TRM (Trilogue Manager):** External applications extract CDRs from TRM.

The Converged CDR Accumulation Process (C-CAP) is used for the file processing of roaming and outage records (internal as well as external).

Flexible Rating and Charging

The Unified Rating Engine's flexible rating and charging model enables network operators to easily adapt to the evolving customer models. Rating schemes can be defined for each type of service offered, such as Voice, SMS, Multimedia Messaging Service (MMS), Web-

browsing, and more. These can range from very simple flat-rate charging to complex usage-based schemes, taking into account the number of parameters.

The Unified Rating Engine has a notion of activity usage type (AUT). AUT is classified as Initial AUT or Final AUT. Every usage event received from network elements or from mediation to the Unified Rating Engine is mapped to Initial AUT. The Initial AUT is translated into the Final AUT based on rating segmentation keys. This is to allow different rates for the same Initial AUT based on the various input parameters from network or from mediation. The section below explains the various segmentation keys included in the Unified Rating Engine for Initial AUT to Final AUT translation.

The various parameters based on which the Unified Rating Engine can vary the rate are summarized below:

- **Rating Segmentation Keys:** The Unified Rating Engine uses rating segmentation keys to translate the incoming usage event or physical service (that is, initial usage activity type) to determine the logical service (that is, final activity usage event). This enables the Unified Rating Engine to differentiate the various types of services offered and provides the flexibility to price the services according to location-based attributes, configurable subscriber-based and account-based attributes, and special features such as F&F, Calling Circle, and Access Method.

  Table 2 describes the supported rating segmentation keys.

Table 2 Supported Rating Segmentation Keys

Segmentation Key	Attributes	Comments
Access Method	CAAN, Calling Card	The access method segmentation key consists of existing system parameter: CAAN and Calling Card.
Account	Default attributes: Account Category, Regulatory ID, VIP Code	Operator can select (at system level, from a predefined list of account attributes) the attributes that can be used for defining account segmentation key.
Location	Location Relationship	The location segmentation key is a compound expression consisting of a Location Relationship (Point Class Origin, Point Class Target), Jurisdiction, Distance Band ID, Zone Class.
Special Feature	F&F, Calling Circle, Intra-Hierarchy, and On-Net	The special feature segmentation key consists of an existing system parameter for friends and family and calling circles and so forth.
Subscriber	Default attributes: Class of Service, Subscriber Class, Subscriber Type	Operator can select (at system level, from a predefined list of subscriber attributes) the attributes that can be used for defining subscriber segmentation key.

- **Tariff Plan, Tariffs, and Rating Keys:** The Unified Rating Engine uses the rates defined in the Tariff Plan associated with the usage event (that is, the Final AUT) for calculating the rates.
  - **Tariff Plan:** Tariff Plans specify the pricing for the usage, including rate and taxation. It consists of Tariff Sets and Tariffs, Units, Default Currency, Taxation Configuration, Reservation Configuration, repricing options (for pre-rated usage), Calendar, and Rating Keys.
  - **Tariff:** Consists of basic pricing configuration such as Currency, Unit, initial charge per number of units, and additional charge per number of units (for example, $1.00 for first 60 seconds and $0.15 for every 30 seconds thereafter). Up to five Tariffs can be used simultaneously to price a usage. The charge can be negative (telescoping charges), where the rate decreases over a period of time (for example, $1.00 per 60 seconds for the first five minutes, then $0.90 per 60 seconds for the next three minutes, then $0.50 per 60 seconds thereafter).
  - **Tariff Sets:** Consists of currency and one or more Tariffs that are applied when that particular currency is chosen (not a reusable entity).
- **Additional Parameters for Differentiating Rates:** The additional parameters the Unified Rating Engine can use to differentiate pricing are: duration, consumption (for non-atomic activities), subscriber time zone, and account expiration.
- **Tariff Plan Override:** The Unified Rating Engine can differentiate the pricing based on subscriber balance values, subscriber home zone, subscriber longevity, special days, happy hour, favorite areas, and favorites URLs. The values in the specified parameters can be used to override the associated tariff plan for the consumed service, at the subscriber level.

The Unified Rating Engine determines rates based on the supported tariff plans (for example, flat rate, usage-based rate, incremental rate). It calculates base event charge (exclusive of unit credits and discounts), unit credited charge (charge inclusive of unit credits, but exclusive of discounts), value of unit credits, value of discounts, net charge (inclusive of unit credits and discounts), and tax value. It updates reservation information, and updates eligible balances and accumulators with the calculated charges. Finally, it generates monetary transaction records (MTRs) and usage records for downstream processing.

Charge and Liability Redirection

The Unified Rating Engine guides usage events received in online mode or offline mode to the using subscriber or to any other liable parties based on the external ID types and external IDs. Examples of external IDs include originating number, target number, or third-party number.

By default, the liable party for any usage is the using subscriber (technically the owning account of the subscriber). Via liability redirection, a different liable party can be specified for any usage. Liability redirection criteria are defined via the liability redirection template, which has one or more rules in which each rule specifies the criteria for redirecting the specified charges to a liable party. Liability redirection is supported based on the following criteria:

- All usage charges or a specified usage charge

- B-Number (that is, the destination number for a call or SME, and so on)
- Date/time period based (that is, the date and time when the usage was initiated)

Liability redirection allows redirecting charges from/to the following:

- Account to account
- Subscriber to account
- Subscriber to shadow subscriber (that is, a different identify for the corresponding real subscriber)

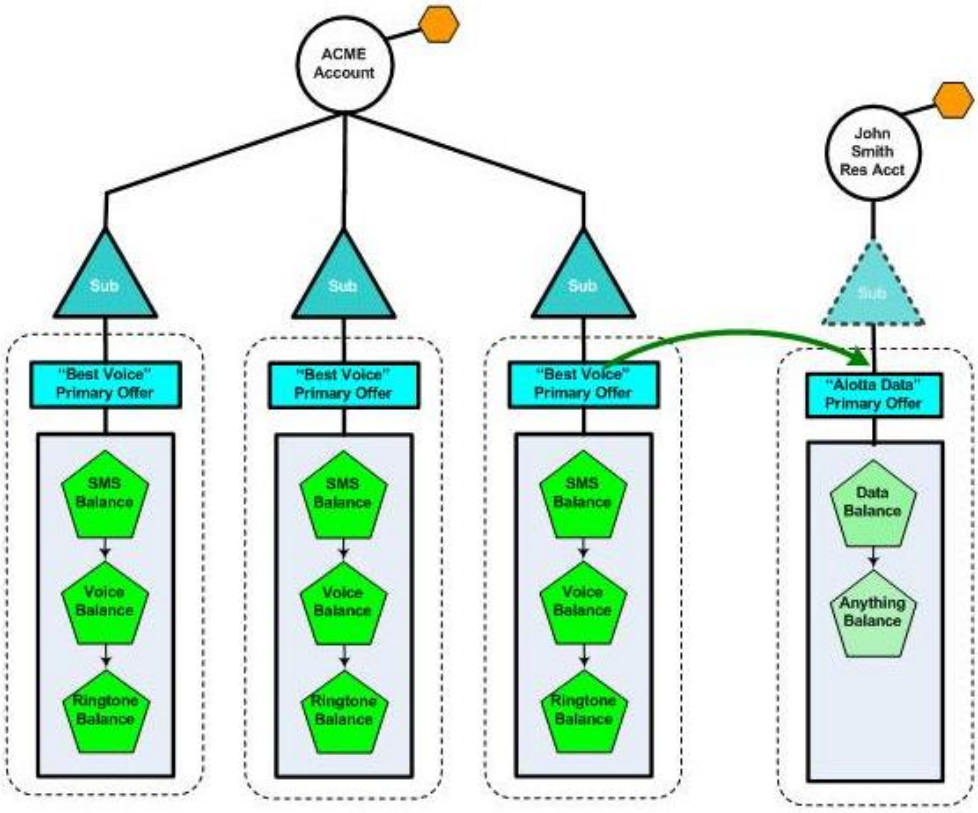
Use Case for Liability Redirection

In the example below, Acme pays for John Smith's phone and voice service. But John also wants data service, even if he has to pay for it himself. When he requests this service, the CSR creates a shadow subscriber including the following (as represented in the far right column in **Figure 20**):

- John's own account
- A shadow subscriber
- A data offer
- A data balance
- John's own monetary balance

The shadow balance is based on the liability redirection template (based on all usage or a specific usage charge, B-number, and date/time period).

Figure 20 Liability Redirection: Shadow Subscribers



Real-Time Balance Management

The Unified Rating Engine provides real-time balance management, whereby multiple balances or credit limits or spending limits can be configured per subscriber; each balance can be targeted to a specific service. The balances are managed by a reservation mechanism that charges a subscriber multiple times during a transaction instead of once at the end. A reservation is an allocation of money and/or data types set aside from the subscriber's balance to ensure that sufficient funds are available from the start of a chargeable data session or event through to its completion.

One balance is designated as the "core" monetary balance and controls the subscriber life-cycle states. Additional balances can be configured in the system, each with its unit type (for example, currency, minutes, kilobytes, SMS, MMS, and so on) and expiration date. Which balances are used, and in which order they are used, is fully configurable by the operator.

The basic balance attributes and characteristics are detailed below:

- Prepaid balances are decremented with each use.
- Balances can be monetary or unit-based.

- Balances can be real or shadow:
  - **Real Balance:** Manage available amounts that can be or are consumed
  - **Shadow Balance:** Acts as a pointer to a real balance and enables balance sharing. Shadow balances do not have prepaid or postpaid notion.
- All balances start from a positive value and count down:
  - Balance value represents remaining available amount (that is, available amount = current value – balance minimum)
  - Any addition to the balance amount increases [+] the value of the balance; any consumption from the balance decreases [-] the value of the balance
- The balance unit is used to determine if the balance can be used for a particular usage/charge.
- Balance payment types do the following:
  - Used to determine if the balance can be used for a particular usage/charge
  - Typically inherited from the instantiating offer
  - Shadow balances do not have a payment type
  - Instantiated at subscriber/account
- The balance inclusion/exclusion list consists of AUTs (or AUT groups), time types, and RC/NRCs for which this balance can be used.
- There are minimum and maximum values that this balance can reach.
- Balances are instantiated through offers and typically inherit the prepaid attribute from the instantiated offer.
- The same balance ID can be instantiated only once at an account/subscriber:
  - This means that although the balance is referenced in multiple offers, the balance is instantiated only once at the subscriber/account, and there is only one current value for the balance.
  - However, other balance-related attributes (such as minimum/maximum values, initial value, inclusion/exclusion, and relative balance priority) are referenced to the offer, meaning that these attributes "change" depending on which offer is using the balance.
- For subscriber balances, the priority order is based on the guided-to offer, the offer balance priority configured in the subscriber's UpSell template, and the balance charge order in the offers.
- Balances from the guide-to offer have the highest priority, with the balance charge order of the guided-to offer determining the relative priority of these balances.
- The remaining balances are taken in the relative offer priority order, based on the balance priority from the UpSell template.
- The relative priority of each offer within a bundle is specified in the bundle.
- A subscriber can have offers that are not part of the UpSell template:
  - All of these offers have higher priority over the offers from within the UpSell template, with the order based on the date/time of instantiation; (the more recent the instantiation, the higher the priority).
  - If there are multiple offers from outside the UpSell template that have the same date/time of instantiation, then the higher the offer ID, the higher the priority.

- Within each offer, the offer balance charge order is used to determine the relative priority of the balances.

Real-Time Promotions and Grants Management

The Unified Rating Engine's real-time promotions capabilities enable network operators to design and implement promotion plans that encourage subscriber usage and increase customer loyalty. Real-time promotions allows subscribers to be rewarded immediately, in real time or in deferred mode, upon reaching certain usage levels within a configurable period of time.

The Unified Rating Engine promotions can be used at a very granular level, allowing for more flexibility and creativity when planning new campaigns. The promotions can go down to the level of measuring usage and granting bonuses for a specific time of day and for a specific amount of usage in a specific period of time. Cross-service promotions are supported, in which one service is the promotion trigger and another service is the beneficiary. For example: Talk 100 minutes a month and get 50% off any SMS messages.

The Unified Rating Engine usage-based promotion capability has been further enhanced to support granting promotions based on multiple accumulators, qualification criteria at an accumulator level (for example, accumulate calls greater than 60 seconds up to 300 seconds), rate of accumulation, resetting accumulator at threshold level, fixed discount values, and account-level accumulations.

Real-Time Accumulators: Measures chargeable activity in real time (such as calls, recharges, data, and SMS) to enable granting awards and discounts in real time based on measured usage:

- Accumulates currency, units, events, number of recharges, or recharge value
- Criteria for accumulation includes service types (for example, international calls) and time types (for example, peak/off-peak)
- Qualification criteria includes the minimum value before accumulation begins and the maximum value at which accumulation stops
- Calculates rate of accumulation (that is, amount accumulated multiplied by rate)
- Accumulators can be reset at a defined frequency or when reaching a specific threshold
- Account-level accumulators can measure any usage that was redirected to the account-level balances

Real-Time Bonuses: Balance-based bonuses grant free future usage in real time when a predefined threshold is reached:

- Balanced-based bonuses can be granted for immediate use or for future use (that is, deferred awards)
- Balanced-based bonuses can be tracked as grants that can be independently managed (that is, an independent expiration date can be specified for each award granted)

- Bonuses can be awarded to more than one balance upon reaching specified thresholds
- One or more supplementary offers can be awarded via bonuses upon reaching specified thresholds
- At minimum, the bonus is based on one accumulator (which is designated as the primary accumulator)
- Additionally, corresponding to each threshold, up to four accumulators can be specified that are used as qualifying criteria for determining bonus eligibility

Real-Time Discounts: Discounts are percentage or fixed-amount reductions in real time against the total charge of the event:

- Only monetary balances can be discounted
- Discounts can be awarded to any activity or part of activity upon reaching predefined thresholds
- Discounts expire at the end of the period of the accumulator from which it was awarded

Use Case for Real-Time Promotions

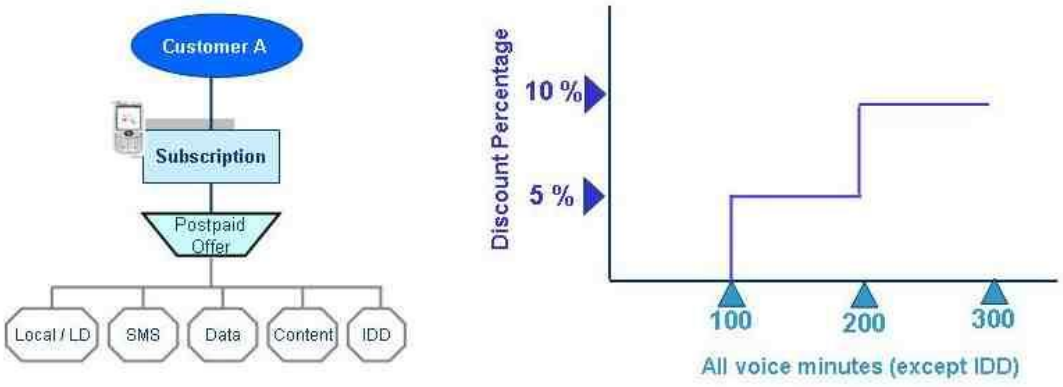
Real-time promotions can include the following:

- **Real-Time Tiered Discounts:** For example, a 10% discount on international direct dialing (IDD) calls after 100 minutes of roaming calls in a month.
- **Real-Time Awards:** For example: 10 short message service (SMS) free messages after sending 100 SMS messages in a month; one free movie after ordering five PPV movies within a week; one free video clip after purchasing two ringtones in one day.

Notifications can be sent to customers as they approach or reach award levels.

The figure below illustrates a promotion scenario.

Figure 21 Use Case: Real-Time Promotions



Unified Recurring/Non-Recurring Charge Server

The Unified Recurring/Non-Recurring Charge (RC/NRC) Server applies recurring and non-recurring charges to all subscribers. It is a separate process from the overall invoicing process for calculating and applying recurring and non-recurring charges. Separation of this process from the overall invoicing process allows for more timely charging of recurring charges and non-recurring charges and updates to real-time balances.

The Unified Recurring/Non-Recurring Charge Server includes the functionality described below.

Recurring Charges

- Ability to apply an RC on a specific date via configuring the apply day. The configured apply day can also be changed per subscriber.
- Ability to specify the period of RC application for the apply date to a day before the next apply date or for a fixed calendar period.
- Ability to apply RC at specific frequencies (for example, daily, weekly, monthly, quarterly, or yearly bill cycle; specified number of days; and so on):
  - Can be applied directly by the CSR (upon activation, for example).
- Ability to specify charge codes and/or general ledger (G/L) codes and tax codes corresponding to each RC.
- Ability to prorate RCs based on apply date or service end date/duration.
- Ability to apply in arrears, in advance, and multiple cycles in advance.
- Ability to apply RC one time, or always, or never, when subscriber is in post-active state.

- Ability to specify how RCs need to be applied when there are insufficient funds in the subscriber's account (that is, allow full charge, allow partial charge, allow no charge, allow until zero).
- Ability to give awards (that is, balance values) when RC is applied.
- RC-based balance grants rollover can be specified in terms of bill cycles
- Ability to send notification on successful and unsuccessful (due to lack of funds) application of charge.
- RCs can be applied in batch mode and in real-time mode.
- Can prorate based on activation, termination, rate changes, and tax changes. Also supports crediting on retroactive disconnect.
- Can suppress generation of charges due to subscriber states (suspension, fraud-lack, post-active state).
- Can deliver unit-based and monetary-based awards.
- Awards can be prorated based on charged amount.
- Can be conditionally redirected to accounts within the account hierarchy.
- RC rates can vary based on rating keys such as currency, subscriber type, subscriber class, and class of service.
- RCs can be charged to multiple balances.
- If the subscriber does not have enough funds to pay the RCs for nonprimary offer services, the corresponding services will be disabled. The availability or unavailability of services within the primary offer can be controlled via the subscriber life-cycle state.

Non-Recurring Charges

- Supports various types of NRCs, such as activation and early termination
- NRCs can be charged from multiple balances.
- NRCs can be charged directly from Customer Center (for example, upon activation).
- Notifications can be sent on successful and unsuccessful application of charge.
- Non-recurring charge types enable operators to support various one-time charging business scenarios. **Table 3** lists and describes the NRC types.
- Support for application of one-time charge for the following activities:
  - Add/Update/Remove F&F phone book entry
  - Add/Update/Remove Favorite Area (that is, home zone)
  - Add/Update Favorite Destination
  - Add/Update Happy Hour
  - Add/Update Special Day
  - Add subscriber to account
  - Acquire new child account
  - Bill resend/reissue invoice

Table 3 NRC Types

#	NRC Types	Description
1	Activation	Is intended to be charged before the service is activated.
2	Early Termination	Is applied if the contract is terminated before the contract expires.

Customer Care Client

Customer Care Client is a Windows Forms-based application and is a "thin client" that does not use direct database connection. Instead, Customer Care Client uses Web Services to interact with the Comverse ONE solution. Use the Customer Care Client GUI to navigate to the desired window or dialog box to carry out various customer care tasks.

When you acquire the Customer and Order Management domain, it replaces the Customer Care Client module for those cases in which the operator moves to the Comverse ONE Converged solution. The Customer and Order Management domain has more customer-care features than the Customer Care Client module.

Customer Care Client (CCC) is a basic customer care GUI that supports Comverse ONE Real-Time Billing subscribers. CCC provides the ability to do the following:

- Create and manage accounts and subscribers
- Manage account offers
- Manage subscriber bundles
- Manage subscriber offers
- Manage subscriber supplementary offers
- Recharge the owning account balance
- Recharge a subscriber balance
- Provide support for shadow subscribers and limited liability redirection for subscribers
- Manage subscriber balances including shadow balances
- Manage account balances including target balances for subscriber shadow balances
- Manage vouchers

CC Batch

The CC Batch application enables bulk creation of recharge vouchers and anonymous subscribers. It creates single subscriber (1SA) accounts only for the subscribers.

CC Batch processes files containing commands that create the vouchers and subscribers. It interfaces with the Comverse ONE Unified API to provide secure login and other services.

For vouchers, CC Batch parses an input file from Card Generator, invokes the corresponding Unified API methods, and generates a log file that contains the API's responses to the executed commands as well as any error response. For anonymous subscribers, the input file is created manually. This input file must conform to the XML format required for CC Batch use.

Vouchers can be loaded on a command-by-command basis or can be loaded in a "Fast Load" manner. In CC Batch, if a voucher file is deemed "Fast Load," then CC Batch bypasses the Unified API and loads the vouchers directly into the database.

Recharging

Recharging is the typical way that prepaid subscribers replenish balances. It is also how they extend balance and account expiration dates. In a typical prepaid service, the prepaid balances have an expiration date. When this expiration date is reached, the balances become either unusable or are confiscated. Typically, prepaid subscribers extend the expiration date by recharging,

In addition to topping-up balances and extending expiration dates, recharges can change the subscriber's state (for example, activate, reactivate) and add or remove offers from the subscriber.

Recharges are performed on real, prepaid balances (currency and noncurrency) only. Recharges are not applied to any shadow balances.

The Comverse ONE solution supports the traditional method of recharging by voucher. The subscriber purchases vouchers of various denominational values, typically over the counter at retail outlets, and applies this credit to his or her account via the recharge process. The subscriber can make the recharge request via the following methods:

- **USSD**: Subscriber sends a specific USSD request voucher number in the USSD string. The USSD response informs the subscriber about the recharge result, including updated balances and new expiration date.
- **IVR**: Subscriber calls the IVR recharge menu, either directly to a number dedicated for recharging or by selecting the recharge option from the IVR menu. The subscriber enters the voucher number via DTMF input. After the recharge is successful, the IVR announces the new balances and expiration dates.
- **Self-Care**: Subscriber makes the recharge request via the web. The subscriber enters the voucher numbers 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.

The Comverse ONE solution supports a voucher database in which all the vouchers are stored. For each voucher, the information stored includes the following: batch, serial

number, face value, currency, offset (core balance extension amount), service provider, expiration date, and flag for post-recharge offer change.

The Comverse ONE solution also provides a card generator, which is a software for creating, in batch, encryption-protected recharge vouchers. The software uses a nonrepeating algorithm to generate random secret numbers. The voucher generation process produces a file that can be delivered to the card manufacturer, as well as a file that can be read into the Comverse ONE voucher database, enabling voucher status to be tracked through the voucher life cycle.

The Comverse ONE solution also provides an API for nonvoucher recharge (as part of the Unified API). This refers to a recharge is being performed by an external system (for example, a system that can accept credit-card-based recharge requests from the subscriber) without a voucher. The external system sends the recharge request, including the recharge amount, using this API.

Note that while voucher face values are always in currency, the Comverse ONE solution supports noncurrency recharge requests via the nonvoucher recharge API. For example, a subscriber can request to recharge with 100 SMS messages.

The Comverse ONE solution also supports currency conversion as part of the recharge process. Thus, if the subscriber recharge request is in a different currency from the currency of his or her account, the Comverse ONE solution does the appropriate currency conversion before applying the recharge.

Recharge Control Table

The Recharge Control Table (RCT) is a key concept in the recharging process. All recharge requests are processed through this table. Whether it is a voucher request coming from the USSD, Self Care, or IVR, or a nonvoucher request coming from an external system, the system processes all recharge requests via the RCT process. In the case of a voucher recharge, the system first locates the voucher in the voucher database, determines the applicable voucher data (for example, face value, offset), and then processes the request via the RCT process.

The RCT table is used to modify/extend the actions of a recharge. This is the basic mechanism for enabling a recharge to affect more than just the core balance. Every recharge "consults" RCT and, if a match if found, RCT parameters are used to adjust 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, nonvoucher, IVR recharge, CSR recharge), batch, reseller, primary offer, and so on.

The outcome of RCT processing includes the balance adjustments to one or more balances and the corresponding expiration offsets. It can also include any offer changes.

For example, if a subscriber buys a voucher with a face value of $30.00, when the recharge is processed via RCT, the end result can be that $25.00 is added to the core balance, 100 SMS messages are added to the SMS balance, and the account expiry date is extended by

one month. A different subscriber recharging with the same amount can get a different result, if a different RCT criteria is met.

RCT is a powerful mechanism for the operator to provide differentiated recharging offers to different sets of subscribers. This can also be used to provide special offers applicable only during certain periods. For example, during a special holiday week, the operator can allow the actual balance addition to be 110% of the face value or can award a supplementary offer valid for one month that gives a 10% discount on all international calls.

Application and Network Interfaces

The Comverse ONE solution communicates with the entities that provide service to the end user. At a high level, these entities fall into one of the following domains: (1) Network or (2) Application.

- The Network domain includes telecommunication network elements that provide network connectivity to the user. These network elements can be in the traditional Public Switched Telephone Network (PSTN) network (for example, a Mobile Switching Center [MSC] or Service Switching Point [SSP]), or in packet-switched networks (for example, a Serving GPRS Support Node [SGSN], Gateway GPRS Support Node [GGSN], Packet Data Serving Node [PDSN], or Packet Data Gateway [PDG]), or in next generation networks (for example, an IP Multimedia Subsystem [IMS] or Multimedia Domain [MMD]).

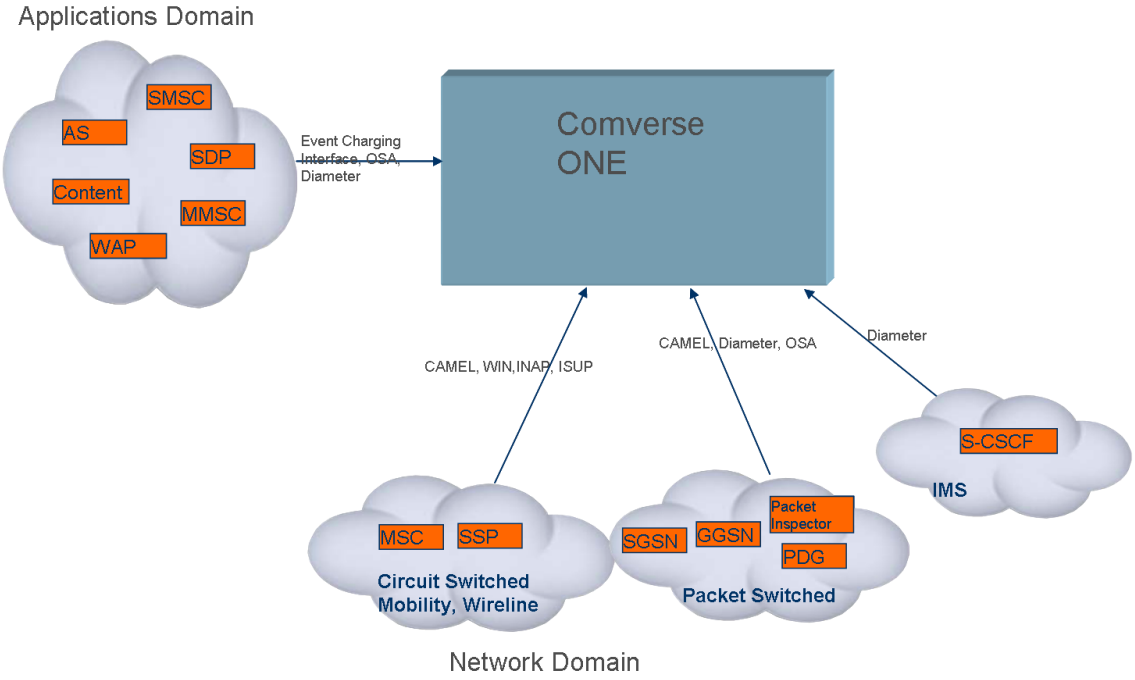
  The components in the network domain provide basic services to subscribers such as voice, SMS, or data access. These network elements follow industry-defined interfaces to communicate with the Comverse ONE solution. Supported standards include CAMEL (for GSM and GPRS networks), Wireless Intelligent Network (WIN) (for CDMA networks), and Diameter (for next generation IP networks). The complete list of supported interfaces is in the Network Self-Care section.

- The Application domain includes applications that are provided to the end user. The subscriber accesses these applications via the network. Examples of these applications include premium SMS (for example, astrology forecasts or sports scores), content (MP3s, ringtones, wallpapers), and ringback tones. These applications can be delivered by application-specific platforms (for example, Fundial to provide ringback tone service) or general purpose Application Server (AS) or Service Delivery Platforms (SDP) that can host multiple applications.

  Unlike the network domain, the charging interfaces from the Application domain are not well standardized.

The following figure shows a high-level view of the Comverse ONE solution interfacing with elements in the network and applications domains.

Figure 22 Real-Time Interfaces Overview



The key interfaces for real-time billing supported by the Comverse ONE solution are defined below.

SS7-Based Protocols

The Comverse ONE solution supports a number of SS7-based protocols to facilitate charging from GSM and CDMA networks. These include:

- **CAMEL-2**: Voice charging for GSM networks
- **CAMEL-3**: SMS
- **CAMEL-3**: GPRS
- **WIN (1S-826)**: Voice charging for CDMA networks
- **IS-41P**: Legacy Nortel proprietary protocol for ANSI mobility networks using Nortel MSCs
- **ISUP**: For ISUP loop-around based solutions
- **ETSI INAP**: Voice charging for European Telecommunications Standards Institute (ETSI) wireline networks; also used sometimes in mobile networks when the Mobile Switching Center (MSC) supports Intelligent Network Application Part (INAP) protocol
- **INAP CS-1R**: For interfacing with Nortel SSPs

- **SIP**: For real-time charging for calls in VoIP and IMS networks where Session Initiation Protocol (SIP) is used for call setup.

In addition to the SS7 interfaces for rating and charging of activities (voice, SMS, GPRS) that are listed above, the Comverse ONE solution supports several other interfaces.

First, the GSM MAP (Mobile Application Part) interface is supported as follows:

- **MAP SendRoutingInfo Message:** These messages are sent by the Comverse ONE solution to the Home Location Register (HLR) when a call request is received over ISUP or via USSD Callback. The purpose of the message is to obtain subscriber's location from the HLR, which is then used in determining the applicable tariff.
- **USSD:** The Comverse ONE solution supports Unstructured Supplementary Services Data (USSD). USSD is defined by GSM standards in Phase 1 and Phase 2. The following is a list of USSD support in the Comverse ONE solution:
  - **USSD Self-Care (USSD Phase 1 and Phase 2):** The subscriber sends a USSD request to perform various self-care activities, such as checking balances, recharging balances, and so on.
  - **USSD Notifications (USSD Phase 2):** USSD Notifications were introduced in USSD Phase 2 specifications only. The Comverse ONE solution sends USSD notifications to the subscriber. These notifications are described in “Network Self-Care” on page 61.
  - **USSD Callback (USSD Phase 1 and Phase 2):** This capability is used in GSM networks to support roaming when no CAMEL-based roaming is available. When the subscriber needs to make a call, she sends a USSD request to the Comverse ONE solution. The request includes the destination number to which the subscriber wishes to make a call. The Comverse ONE solution directs the switch to initiate the calls to the subscriber and the destination, and then connects the two.

Second, the Comverse ONE solution supports Feature Request messaging of ANSI 41 to provide some self-care capabilities to CDMA subscribers.

Third, the Comverse ONE solution supports SMPP 3.4 to send SMS-based notifications to subscribers.

SS7 Connectivity Options

The Comverse ONE solution provides a number of signaling connectivity options for SS7. For regular (TDM) SS7 connectivity, the Comverse ONE solution supports the following:

- **Low-Speed Links (LSL):** ITU (64 kBPS per link) and ANSI (56 kBPS per link).
- **High-Speed Links (HSL):** ITU (2 MBPS per link). The Comverse ONE solution supports the ITU Q.703 Annex A specification for High Speed Link (HSL).
- **SIGTRAN:** SS7 signaling over IP network. The Comverse ONE solution supports M3UA configuration of SIGTRAN.

Call Control Capabilities

For the Intelligent Network (IN) SS7 interfaces mentioned above, the Comverse ONE solution functions as a Service Control Point (SCP) to the network. So in addition to providing real-time rating and charging, the Comverse ONE solution also provides call-control capabilities. These capabilities include:

- **Real-Time Call Monitoring**: The Comverse ONE solution monitors the call duration and, as the balance depletes or a credit limit is reached, it can disconnect the call.
- **Precall Announcements:** The Comverse ONE solution can play certain announcements before connecting the call. These announcements can include low-balance or nearing-account-expiry warnings.
- **Terminating Announcements:** If an originating call cannot be completed due to billing-related issues, such as an insufficient balance, the Comverse ONE solution plays an announcement to the subscriber indicating why the call cannot be established.
- **Activation:** The Comverse ONE solution can move subscribers into an active state, depending how the profile is set up. Certain subscribers can become activated on their first call or when they perform the first recharge.
- **Call Intercept:** The Comverse ONE solution can intercept calls to divert calls to customer care or recharge server. For example, if the subscriber is in a fraud lockout state, the Comverse ONE solution can be set up to redirect all call originations to customer care. Similar diversions can be configured for preactive as well as postactive states.
- **Number Translation for Access Numbers:** For certain short-digits-dialed access numbers (for example, for Network Self-Care), the Comverse ONE solution can translate the dialed number into a full number and direct the network to redirect the call to the translated number.

IP Interfaces

The Comverse ONE solution supports the following IP-based interfaces for the charging clients, which can be application-specific platforms (such as Short Message Service Center [SMSC] or Multimedia Messaging Service Center [MMSC]) or general purpose application servers:

- **Event Charging Interface:** A simple TCP/IP-based interface that allows clients to perform event charging. The requests can be prerated by the client or can require rating and charging by the Comverse ONE solution.
- **Open Services Access (OSA):** A SOAP/XML-based interface that allows external clients to perform event- and session-based charging. The interface is based on the OSA/Parlay Part 12 (Charging) specification.
- **Diameter Credit Control (DCC):** A charging interface defined by Internet Engineering Task Force (IETF) (RFC 4006) and adopted by various standards bodies, such as 3GPP and 3GPP2. Comverse provides an RFC 4006-compliant DCC interface. Note that DCC allows service-specific adaptations to the standard

protocol. With this release, Comverse supports the following DCC implementations:

- **Diameter Charging Interface (DCI):** A generic interface that allows a rich set of services and applications to be charged. Supports both event and session charging.
- **Packet Switched (PS):** 3GPP has defined PS-specific extensions to DCC. These are specified in TS 32.299 and TS 32.251. Comverse provides a compliant interface to these specifications. Using this interface, the Comverse ONE solution can provide real-time charging capability to gateway GPRS support nodes (GGSNs) as well as deep-packet inspection products.
- **IMS:** 3GPP has defined specific DCC extensions to enable real-time charging for Session Initiation Protocol (SIP) sessions in an IMS network. These extensions are specified in TS 32.299 and TS 32.260. With this capability, the Comverse ONE solution can provide real-time charging for SIP sessions over Diameter.

Along with PS and IMS support via Diameter, the following two additional capabilities are provided for Diameter implementation:

- **Midsession Rating Change:** The Comverse ONE solution determines the applicable tariff at the beginning of a session. With this functionality available in DCC, the Comverse ONE solution supports rate changes when there are changes to the parameters that determine the tariff. Examples include a Quality of Service (QOS) change or location change in a data session, or a change of media type (for instance, voice to video) during an IMS session charging via DCC.
- **Advice of Charge (AOC) Support:** Supports nonguaranteed AOC. The "Price Enquiry" request in DCC allows the client to request the price of an activity before actually charging against the subscriber balance.

Business Value of Interfaces

The Comverse ONE solution provides a rich set of interfaces for both the network and applications domains. The key benefits include:

- **Support for Interfaces:** Supports the most commonly deployed Intelligent Network (IN) interfaces for both ANSI and ITU mobility networks. These include CAMEL for GSM/3G networks and WIN (IS-826) for CDMA networks. The Comverse ONE solution has significant deployments all around the network, working with most of the network vendors' MSCs.
- **Multiple Interfaces for Applications Domain:** With three interfaces (Event Charging Interface, OSA, and DCC Comverse Online Charging System [OCS]), Comverse provides multiple options to clients. Thus when a client application has simple event charging requests, the Event Charging Interface can meet the need. On the other hand, for more elaborate charging needs using industry-standard interfaces, DCC will meet the need.
- **Data-Charging Options:** There are options for data charging, using CAMEL 3 GPRS, and DCC PS interfaces. When the operator is looking for basic time- or volume-based tariffing for data sessions, CAMEL 3 GPRS-based charging is sufficient. CAMEL 3 GPRS charging is initiated from the serving GPRS Support

Node (SGSN). On the other hand, the operator might use DCC PS interface charging if:

- The operator wants to control data charging from GGSN as opposed to SGSN. Since GGSNs are typically deployed in the home network, the operator doesn't have to depend on the SGSN in the roaming network.
- The operator wants to perform more granular data charging while identifying services being accessed over the data sessions, such as web browsing, downloads, and so on. The flow-based charging (FBC) support in PS allows different services to be identified and charged during the same data session.

- **IMS Support:** The Comverse ONE solution provides an IMS-compliant online charging interface (Ro interface for IMS).
- **Flexible Diameter Interface:** The DCC infrastructure in the Comverse ONE solution is highly flexible, enabling quick introduction of new service-specific implementations. These adaptations can be created without impacting the core product.
- **Common Platforms:** Common platform for multiple networks and protocols. This is one of the biggest advantages of the Comverse ONE architecture. The Comverse ONE solution supports both legacy (ISUP, IN) as well as next-generation (Diameter) protocols. Since the core platform and database is common across all protocols, an operator's investment is secure as it moves from one network technology to another (for example, CDMA to GSM or a circuit-switched network to IMS).

Notifications

The Comverse ONE solution supports a number of notifications that can be sent to the subscriber. Using these notifications, the operator can actively inform subscribers about key activities regarding their accounts. For example, the operator can remind the subscriber to recharge if he is reaching his account expiry. If the subscriber is nearing a threshold to meet certain bonus criteria, the operator can encourage the subscriber to meet the criteria.

These notifications are enabled by setting notification triggers. When the criteria associated with a trigger are met, the Comverse ONE solution sends the associated notification.

The Comverse ONE solution supports the following two types of notifications:

- **Announcement Notifications**: These are precall and terminating announcements. When the subscriber originates a call and notification criteria is met, the Comverse ONE solution plays the appropriate announcement before connecting the call. Notification triggers for precall announcements include (1) balance or credit limit, (2) expiration date, and (3) recurring charge application. Additionally, when a call attempt fails (due to busy number, network failure, subscriber does not have enough funds, and so on), a terminating announcement can be played to indicate the reason for the failure.
- **Text Notifications**: These notifications are sent by the Comverse ONE solution via either USSD or SMS. Certain processes check various subscriber attributes (such as balance, state, expiration date, and accumulator values) against the configured triggers and send out the notification if the criteria are met. Other notifications can

be sent when a certain activity occurs (such as recharge or state change) if a trigger is sent against that activity.

The SMS notification is sent via a TCP/IP interface and can be configured to send notification to other destinations besides SMS. For example, the destination could be an external application that uses it to change provisioning on HLR.

The triggers supported for text notifications include (1) balance or credit limit, (2) expiration date, (3) activity characteristic, (4) recurring charge application, (5) state change, (6) recharge, (7) primary offer change, and (8) accumulator threshold.

Network Self-Care

The Comverse ONE solution provides a number of mechanisms for subscribers to manage their billing accounts themselves, without the help of a customer service representative. A web-based self-care mechanism provides the most comprehensive functionality. This section describes the self-care functions available to a subscriber via traditional telephony access methods, such as IVR, USSD, and Feature Request. While IVR mechanisms can be used by subscribers of many market segments, such as mobility, landline, or broadband, the USSD- and Feature Request-based self-care mechanisms are available to cell-phone subscribers only.

For More Detailed Information on Network Self-Care

This chapter provides only a general overview of Network Self-Care. See the following Comverse ONE solution user documentation for more details about Network Self-Care:

- *Network Self-Care Guide*
  Describes the configuration, structure, and features of the Network Self-Care application.

IVR Capabilities

An Interactive Voice Response (IVR)-based self-care session starts when the subscriber makes a call to the published self-care number. The call is routed to the IVR system, where the subscriber hears a menu of the options and performs the appropriate action. The Comverse ONE solution supports the following functionality through IVR:

- **Admin Menu**: The main menu from which subscriber selects the desired service.
- **Info Server**: Subscribers can get balance values and associated expiry dates for their balances and shadow balances (self or owning account).
- **Recharge Server**: Subscribers recharge their balances using a voucher (self or owning account or another subscriber). Supported functionality includes (1) the

Recharge Control Table (RCT)-based offer change and (2) post-recharge Friends and Family (F&F) change by the subscriber.

- **Language Server**: The subscriber listens to the available language choices and selects the preferred language.
- **Language Set**: This is not a menu-based server. Each access number is associated with a language. A subscriber dials the specific access number and the Comverse ONE solution sets the associated language as the preferred language.

The operator can set individual access numbers for each IVR function or have the subscribers call the main number and choose a function from the menu.

Self-care is available at the account level and at the service level (that is, if authorized, the subscriber can perform self-care actions for themselves or for the account). A subscriber-level attribute indicates whether the subscriber has permission to access account-level information or only to subscriber-level information. If account-level access is available, then the subscriber can check balances, recharge accounts, or query and pay invoices at the account level also.

The IVR platform provided by Comverse supports multiple languages. The default functionality delivered by Comverse is in English. Other languages can be added as needed.

IVR Architecture

The IVR solution consists of two parts:

- **IVR Platform**: This is where voice connections are made. The prompts are played and customer responses are collected on this platform. It follows the instructions given by the IVR service logic.
- **IVR Service Logic**: The service logic directs the IVR platform on what prompts to play and receives the customer responses collected by the IVR platform. The service logic determines which actions to take based on subscriber input.

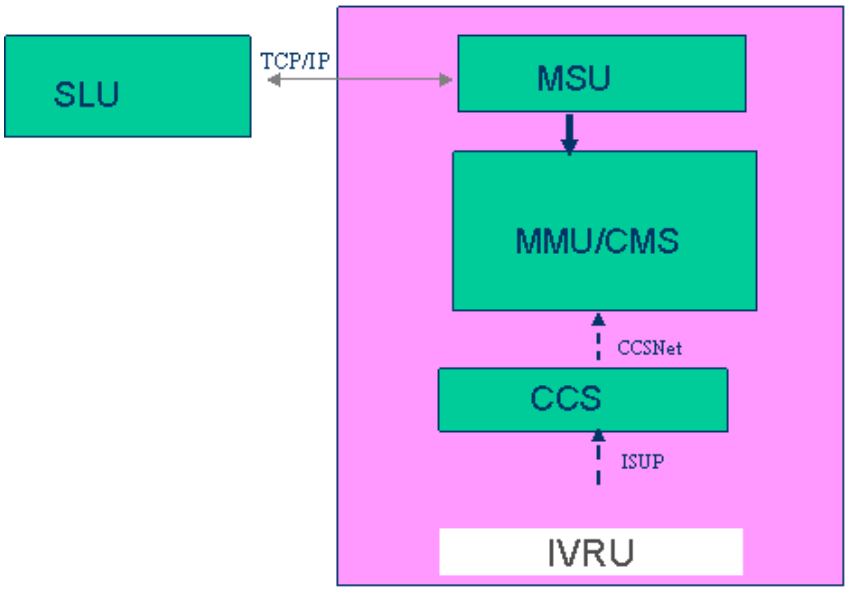
The Comverse ONE solution supports two configurations for IVR:

- **IVRU**: Service logic is embedded within the core call processing. The service logic directly retrieves and updates the Rating database.
- **IVR Self Service**: Service logic is created using a service creation environment and all the interaction with the Rating database and the Customer database is via the Unified Application Programming Interface (API).

The IVRU configuration support is for existing RTB customers who already have an IVRU in their network. All new customers will use the IVR Self Service configuration.

Figure 23 IVRU Architecture and **Figure 24** IVR Self Service Architecture show the difference between IVRU and IVR Self Service architecture. Some of the core Comverse ONE solution components such as Service Logic Unit (SLU), Signaling Gateway Unit (SGU), Rating database, and Customer database are included in **Figure 24** to indicate how the IVR solution integrates with the Comverse ONE solution.

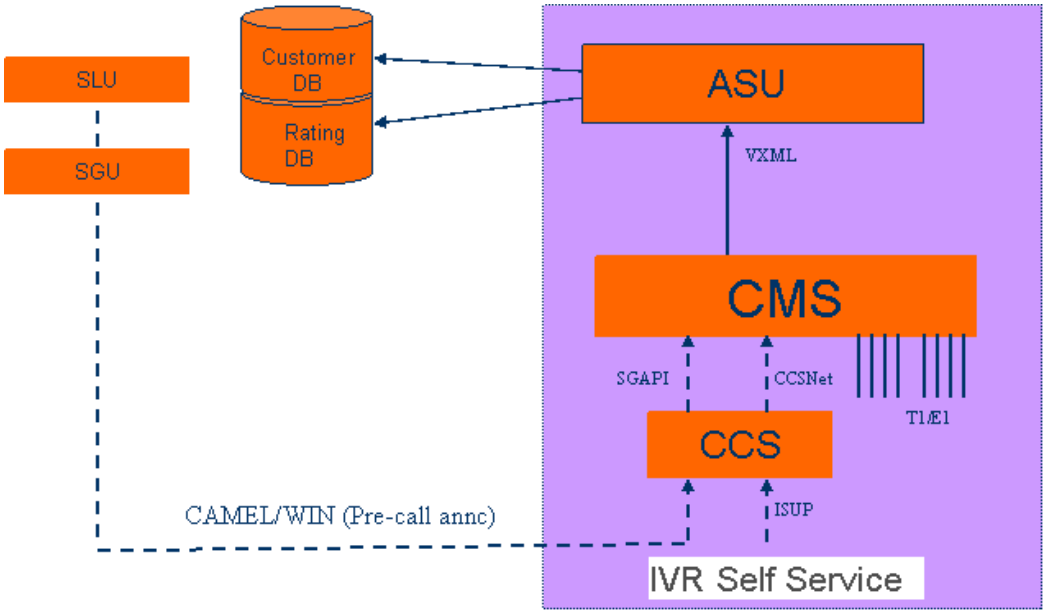
Figure 23 IVRU Architecture



The IVRU configuration consists of the following main components:

- **CCS**: The Call Control Server (CCS) provides the signaling connectivity to the network.
- **MMU/CMS**: The Multimedia Unit/Comverse Media Server (MMU/CMS) hosts all the prompts, plays them as required, and collects responses from the subscriber. Comverse has historically deployed two components for this function. The earlier product was MMU, which has been replaced by CMS.
- **MSU**: The Message Storage Unit (MSU) hosts the syntax of the prompts and provides instructions to MMU/CMS about which prompts to play in which order. The MSU gets all logic instructions from the SLU over a TCP/IP-based proprietary interface.

Figure 24 IVR Self Service Architecture



In the IVR Self Service solution there are three main components:

- **CCS**: Provides the signaling connectivity to the network.
- **Comverse Media Server (CMS)**: Hosts all the prompts, plays them as required, and collects responses from the subscriber. The CMS gets all its instructions from the ASU over the Voice Over XML (VXML) interface. For playing precall announcements, the instructions are received from the SLU over the SS7 interface using either CAMEL or IS-826 protocol, depending on the customer's environment.
- **Application Server Unit (ASU)**: Hosts the specific service logic. All the functionality logic related to Admin Server, Info Server, Recharge Server, Invoice Server, and Language Server is administered by the ASU. The real-time instructions are sent to the CMS over the VXML interface.

USSD Capabilities

For GSM networks, Unstructured Supplementary Service Data (USSD) is a way for subscribers to perform quick self-care without calling customer care or an IVR system. The subscriber sends a predefined format numerical string, called a USSD code. The USSD code maps to specific functionality on the billing system. The Comverse ONE solution performs the necessary function and returns the response in a USSD message.

The Comverse ONE solution supports the following functionality via USSD:

- **USSD Info Server**: Subscribers can get information about their prepaid and shadow balances. For example, subscribers can get balance values and associated expiry dates for prepaid balances. Subscribers can get the information for themselves or for the account to which the subscriber belongs. The account-level

balances are presented only if the subscriber is authorized for account-level information.

- **USSD Recharge**: Enables subscribers to perform voucher-based recharges. Depending on the voucher, the recharge can also result in an offer change.
- **Liability Redirection Override**: A subscriber can override the configured liability redirection rules, to redirect usage charges either to his own account or to a shadow subscriber.

Feature Request Capabilities

In CDMA networks, the Feature Request mechanism can be used for subscriber self-care. However, compared to USSD, Feature Request is rather limited because of the smaller number of characters available in the payload.

The Comverse ONE solution supports the following functionality for Feature Request:

- **Feature Request Info Server**: Subscribers can get information about their prepaid and shadow balances (self or owning account). For prepaid balances, subscribers get balances values and associated expiry dates. Subscribers can get the information for themselves or for the account to which the subscriber belongs. The account-level balances are presented only if the subscriber is authorized for account-level information.
- **Liability Redirection Override**: A subscriber can override the configured liability redirection rules, to redirect usage charges either to his own account or to a shadow subscriber.

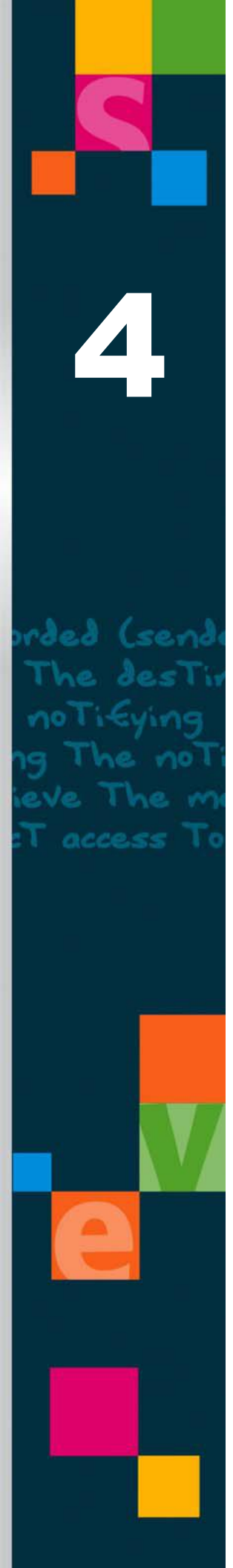
Business Values of Network Self-Care

Key business values for Network Self-Care include the following:

- In developing markets, Network Self-Care provides the primary self-care channel.
- Network Self-Care reduces CSR costs.
- IVR Self Service's service creation environment enables Comverse to provide customized call flows to meet customers' unique needs.
- The Comverse Media Server (CMS), which is the core of the IVR solution, enables the Comverse ONE solution to evolve with new technologies and your changing business needs.

Chapter 4

Infrastructure



This Infrastructure chapter covers the following:

- Unified Application Programming Interface (API)
- Security
- Operations, Administration, and Maintenance

Unified API

The Unified Application Programming Interface (API) is a single framework that maintains full transactional integrity across the portfolio and is adaptive to deployment modes.

For More Detailed Information

This chapter provides only a general overview of the Unified API. See the following Comverse ONE solution user documentation for more details about the Unified API:

- *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

In addition to the material in the Unified API Guide, you can find information about a specific class or its parameters by looking in the API reference documentation (Javadoc) for the Comverse ONE solution.

High-Level Functionality of the Unified API

The Unified API includes the following functionality:

- Supports online transaction processing (OLTP) and batch deployment modes
- Supports Web Services as a standard interface

- The Unified API also includes an Enterprise JavaBeans (EJB) interface, but this interface is highly abstracted and is not intended for direct use by client applications that do not use the client SDK
- Exposes a set of objects and methods that expose a full breadth of integration functions of the Comverse ONE Converged Offer including customer care, balance management, and so on
- Supports virtual network operator (VNO) and dealer concepts
- Customizable by third parties via client software development kits (SDK)
- Provides the technical foundation necessary for your organization to pursue SARBOX compliance
- Supports multiple languages and localization (I18N and L10N)
- Provides backward compatibility to:
  - JavaBeans API Transaction Set users can use the Client SDK.
  - Enterprise JavaBeans (EJB) API Transaction Set users can use the Client SDK.
  - HashMap and Document Object Model (DOM) API Transaction Set users can use the Web Services interface or use techniques like Java Reflection to dynamically map HashMap or XML/DOM requests to the corresponding objects and method calls in the client stubs.
  - C++ API Transaction Set users can use the Web Services interface.
  - CCWS client applications can use the Web Services interface. Comverse does not provide a backwards compatible adapter for CCWS 5.0.

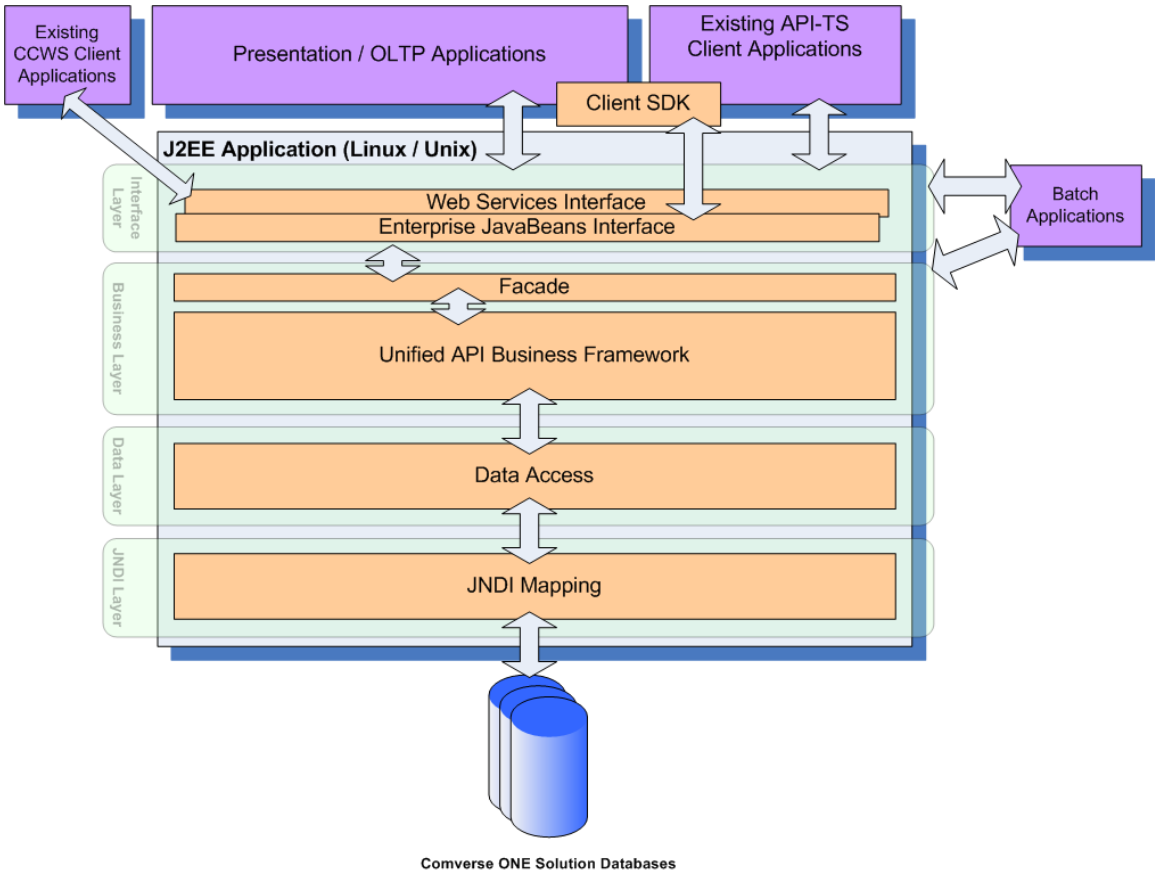
The Unified API interface (method names and signatures) is not backwards compatible with the Kenan FX API Transaction Set. The Kenan FX API Transaction Set is obsolete.

The Kenan BP C APIs are obsolete.

Unified API Infrastructure

The figure below is a high-level view of the Unified API.

Figure 25 High-Level View of the Unified API



Business Values of the Unified API

The Unified API provides the following key business values:

- A specialized access layer that lets developers rapidly build custom applications and integrate them to Comverse products
- High-level APIs that encapsulate business logic while hiding underlying system complexities and insulating the caller from deployment mode differences
- A high throughput, highly available, and n-tiered service-oriented architecture (SOA) environment that enables efficient integrations between third-party systems
- Enable quick turnaround when developing new client applications using session management utilities
- A client SDK that facilitates application development against the Unified API
- Extensibility for customer own-data validation, data elements, and UI elements

- Exposure via standard interfaces that allows customers to better leverage in-place applications and current coding knowledge

Security

The Comverse ONE solution provides security services that allow customers to safeguard their data and enable users to do the work they need to do to maintain and use the system. Additionally, these capabilities can be used to achieve Sarbanes-Oxley compliance. The Security Server provides centralized authentication, authorization, and accounting to help achieve these ends.

For More Detailed Information

This chapter provides only a general overview of Security. See the following Comverse ONE solution user documentation for more details about Security:

- *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).

High-Level Functionality of Security

Security services are most easily remembered as AAA, for Authentication, Authorization, and Accounting. The Comverse ONE solution provides excellent capabilities for all three of these areas.

Security includes the following functionality: (1) Authentication, (2) Authorization, (3) Accounting, and (4) Single Sign-On.

Authentication

Authentication is the ability to identify the intended user and to verify that the user requesting access is one of the users of the system. This authentication is provided through the exchange login and password security credentials. A robust password creation scheme allows administrators to set the terms and constraints of passwords to ensure that strong passwords are used. Functionality includes:

- Security Server authenticates and provides security assertions that are exchanged between applications
- All security assertions exchanged between applications are digitally signed
- Applications use the Security API to retrieve public keys that are managed by the Security Server
- Applications use the Security Server to authenticate the subject's credentials

Authorization

Authorization occurs when the system grants access and functionality privileges to authenticated users so they can do work. A system of roles and privileges allows administrators control of the user's access to data and the capabilities to view and change the data. Functionality includes:

- GUI applications enforce Role-Based Access Control (RBAC) based on roles carried in the Security Assertion Markup Language (SAML) authentication statement
- The Unified API Server uses Extensible Access Control Markup Language (XACML) to enforce Policy-Based Access Control (PBAC)

Accounting

Accounting is (1) the process of tracking the work that is occurring on the system and (2) the ability to associate any work back to a user. User actions are tracked by user activity records stored in logs, which allows any transaction to be traced to the user who performed the action if needed. The user activity records can be viewed centrally for the entire system. Functionality includes:

- The Unified API server and Unified Rating Engine use the Security API to construct and store user activity records locally
- The Operations Agent periodically transfers the user activity records from the local nodes to a central location
- Back-office users' activity records are captured for all database transactions in the database
- GUI applications that use a middleware rely on the middleware to capture the GUI users' activities
- GUI applications that directly use databases rely on the database to capture the GUI users' activities

Single Sign-On (SSO)

Single sign-on (SSO) is provided to allow users to be Authorized and Authenticated, one time, to gain access to all of the allowed privileges and data in the system. It also provides central administration of security credentials. GUI applications that are launched by a single "launcher" pass around the assertions among themselves for SSO.

Key Business Values of Security

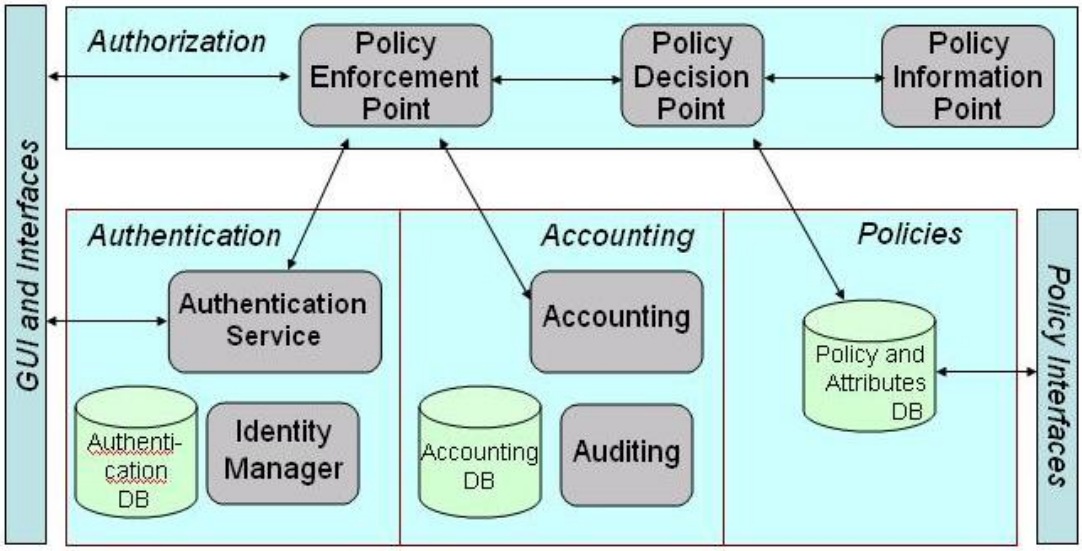
Key business values for Security include the following:

- Provides the technical foundation necessary for operators to pursue meeting the Sarbanes-Oxley directives. Businesses today need to be assured of accurately tracking their finances (for example, monetary transactions in a billing system). To help get a view of this, companies go through Sarbanes-Oxley audits. The Comverse ONE solution provides capabilities to help ensure that data transactions are tracked and completed. To ensure accountability, only responsible parties are given access to the system and are associated with any database changing activities. Sarbanes-Oxley compliance costs can be reduced through the use of the Comverse ONE solution Security capabilities.
- Provides a single security architecture for both central office and back-office applications. Reduces the cost of training and increases the speed to administer changes affecting multiple modules of the system.
- Single sign-on for users of front-office applications reduces the time spent logging into more than one system (or module).
- Provides a preintegrated solution that can be integrated with LDAP, Tivoli, CA (the CA vendor solution for identity management), and so on. Allows the re-use of existing customer's Security Credential databases if desired. Reduces the chance of errors and the time spent transcribing/transferring the information, thus reducing startup costs.
- Provides central administration of security credentials. Reduces the complexity of administering in multiple places, thus increasing the speed to administer.

Functional Architecture of Security

The figure below shows the Security functional architecture.

Figure 26 Security Functional Architecture



Functional Components of Security

The Comverse ONE solution Security capabilities extend to the modules that support the platform. This allows the system to support SSO and central administration of security credentials. The functional architecture (see figure above) includes the following functional components: (1) Authentication Service, (2) Identity Manager, (3) Accounting, (4) Auditing, (5) Policy Decision Point (PDP), and (6) Policy Enforcement Point (PEP).

Authentication Service

Authentication is the ability to identify the intended user and to verify that the user requesting access is one of the users of the system. The Comverse ONE solution Authentication Service provides the following capabilities:

- SAML over the Secure Sockets Layer (SSL) is used to transfer security credentials to and from the applications and the Authentication Service
- The Authentication Service uses digital signatures on the Security Assertions returned to the applications

Identity Manager

The Identity Manager provides mechanisms by which to establish (that is, create and modify) and administer identity credentials for the purpose of authenticating users of the Comverse ONE solution. The Identity Manager provides the following capabilities:

- Enforces password management and policies
- Uses Oracle Database to store security credentials
- Supports a command line interface (CLI) for remote management of security credentials (for example, users, roles, and so on)
- Supports web-based interface for management of security credentials on-site

Accounting

Application accountability is the assurance that all financial-related activities and transactions performed through the application by users (or processes acting on behalf of users) are traced back to those users, to hold them accountable for those activities/transactions. The Comverse ONE solution Accounting module provides the following capabilities:

- The Security API provides a Distributed Audit Service (XDAS)-compliant interface for applications to log user activities
- The Operations Agent periodically forwards local auditing records to the Security Server over a secure channel

Auditing

Application accountability is the assurance that all activities and transactions performed are traced back to the responsible users. The most common mechanism for implementing accountability is auditing. Audit records are available for offline viewing using a utility or via the Security Server CLI/GUI interface

Policy Decision Point (PDP)

The Policy Decision Point (PDP) is where the actual decision regarding the policy is made. User authorization and local policy management is performed in the PDP. The PDP capabilities include:

- A web service that serves as the source to evaluate policies and provide authorization decisions
- Hosting by the Operations Agents on nodes whose applications require Policy Based Authorization
- PDP caches policy sets from the policy repository, and then refreshes the cache as required

- Processes XACML requests from PEP that carry subject, resource, and action as part of SOAP bodies
- Sends requests to the Policy Information Point (PIP) with SAML attribute queries to query attributes on subject, resource, and environment
- Processes SAML responses from PIP that carry attribute assertions, and identifies applicable policies
- Sends XACML responses to PEP with appropriate authorization decisions based on applicable policies

Policy Enforcement Point (PEP)

PEP is the point where the determination is made that a policy (for example, enforcing authorization to the Comverse ONE solution resources) needs to be enforced. The PEP capabilities include:

- Intercepts incoming requests to Web Services and enforces authorization decisions
- Retrieves the security token and subject from SAML authentication statements carried in SOAP headers
- Validates the security token based on its public key
- Sends XACML requests to PDP with subject, resource, and action for authorization decisions
- Processes XACML responses from PDP, and authorizes access to target methods accordingly
- Constructs activity records with subject, request, and action, and logs them using a custom logger

Compliance

The Comverse ONE solution provides security tools that support operators' efforts to become Sarbanes-Oxley compliant. The following capabilities help provide the technical foundation necessary for operators to pursue compliance:

- Employs checks and balances in the system to ensure accurate financial reporting
- Ensures that there are appropriate controls in place to ensure any changes to the system that play a part in financial control or financial data are monitored and audited
- Follows industry best practices and standards for AAA (Authentication, Authorization, and Accounting)
- Adapts to the operator's security infrastructure

Security Obligations

The Comverse ONE solution contributes to the following security services to help provide Sarbanes-Oxley compliance. The following capabilities (grouped by security service) directly support the customer security needs:

- Authentication
  - Require proof of identity in a transaction
  - Confirm that an entity is who it claims to be
  - Confirm that the requests or messages come from the declared source
- Authorization
  - Control access privileges to resources
- Accounting
  - Ensure an audit trail (that is, a sequence of audit records that contain all committed and attempted transactions)
- Integrity
  - Ensure that transmitted messages have not been changed, tampered with en route, or otherwise modified
  - Ensure that the recipient receives the same message that was sent
- Non-repudiation
  - Ensure that subjects cannot deny the authenticity of their signature or the fact that they took part in a transaction
- Confidentiality
  - Ensure that any data a subject exchanges with a remote host remains private
  - Protect information from interception during transmission, and potentially afterward

The Comverse ONE solution Security capabilities comply with the following industry standards:

- Security Assertion Markup Language (SAML) is used for authentication in the following ways:
  - Allows applications to enforce role-based access control (RBAC)
  - Uses XML-encoded request/response protocol to exchange XML-encoded security assertions
  - Ensures that XML-encoded security assertions are declarations of fact, according to an authority (that is, Security Server)
  - Implements rules in using assertions with standard transport and messaging frameworks
- Extensible Access Control Markup Language (XACML) is used for authorization:
  - Consistent with and built upon SAML; allows applications to enforce policy-based access control (PBAC)

Security User Type Functionality

Many users need to interact with the Comverse ONE solution to keep it administered, in good repair, and to make use of the applications. The following explains how security is applied to each of the user types:

- Front-office users (for example, CSRs):
  - Front-office users' identity, passwords, and Role-Based Access Control (RBAC) are centrally managed
  - Front-office users are authenticated by a centralized authentication authority
  - Authentication information is shared among all front-office applications for SSO
  - Front-office applications locally enforce RBAC to UI views and controls on the UI
- Middleware Users (for example, Customer Center, Self-Service, external programs):
  - Middleware users' identity, passwords, and PBAC are centrally managed
  - Middleware users are authorized by a centralized authorization authority
  - Authentication information (that is, token) is embedded in the incoming requests to the middleware
  - Middleware applications enforce RBAC to its public or external interface (for example, SOAP requests)
- Back-office users (for example, users of the Configurator):
  - Back-office users' identity, passwords, and RBAC are managed by Oracle
  - Back-office users are authenticated as database users by Oracle
  - Back-office applications locally enforce PBAC to UI views and controls on the UI
- Operations Support System (OSS) users (for example, Comverse T3/T4, customer's system administrators):
  - OSS users' identities, passwords, and RBAC are centrally managed
  - OSS users are authenticated by a centralized authentication authority
  - Authentication information is exchanged between the Operations Manager and the Operations Agents
  - Operations Manager and Operations Agents enforce PBAC to its public or external Operations, Administration, and Maintenance (OA&M) interface
- Self-Care users (for example, subscribers, dealers, and point of sale):
  - Self-Care users are managed within the security landscape of Comverse Self-Service
  - Self-Care users do not have direct access to the core Comverse ONE components
  - Comverse Self-Service interacts with the Unified API Server as one of the users of the Unified API Server
- Internet users (for example, dealers):
  - Internet users use the Product Catalog GUI over the internet via terminal servers (that is, Citrix)

- Batch users (for example, batch jobs on the Service Data Point [SDP]):
  - Unix users of the batch jobs are provisioned in Oracle as database users
  - Users are provisioned across all database instances/nodes that the batch job interacts with
  - Oracle enforces user privileges and access control to various parts of the databases and transactions
- Database users (for example, Unified Rating Engine, Unified API Server, back-office users):
  - Users' identities, passwords, and RBAC are managed by Oracle
  - Users are provisioned across all database instances/nodes that these applications interact with
  - Oracle enforces user privileges and access control to various parts of the databases and transactions

Operations, Administration, and Maintenance

With the Comverse ONE solution, a new common platform for Operations, Administration, and Maintenance (OA&M) is being introduced. With this new platform, users and administrators will experience improved common control and administration over previous versions of the Comverse ONE products and its derivates.

The platform provides a single centralized control point for all OA&M functions in the Comverse ONE solution. This allows a single GUI and command-line interface (CLI) presentation to operate, administer, and maintain the entire Comverse ONE solution system and to present the administrative capabilities such as process management and alarm notifications, for all units in the Comverse ONE solution.

To support operations, the Comverse ONE solution provides an interface for customers to operate the back-office applications (for example, Rating, Billing and Financials). This allows you to schedule and manage business processes (for example, billing cycles). Scheduling Comverse ONE solution system-wide activities (for example, backup procedures, jobs, workflows across the system, archiving, and billing cycle activities) can be done centrally. The platform is oriented toward low-touch operations and helpful watchdog processes to monitor and restart continuously running processes (for example, Unified Rating Engine and database).

To support administration activities, the Comverse ONE solution provides a central place for monitoring hardware and software failures in real-time, and to raise alarms with appropriate severity and supporting data, and then execute automatic recovery actions where possible. The system supports sending alarms to the operator's network operations center (NOC) or to the Comverse Help Desk (that is, Remote Site Monitoring [RSM] for 24x7 support), depending on your business support paradigm. Integration with the

Comverse Customer Relationship Management (CRM) System and Help Desk can be done for problem reporting. The system can be set up to provide a single alarm for multiple events that represent a root cause. Alarm views of active alarms, alarm history, and related recovery attempts are provided. Alarm escalation can occur for unattended or unacknowledged alarms. The system aggregates and presents trace logs, and allows the adjusting of log levels, across an entire Comverse ONE system. Hardware and software inventory is tracked and audited.

Maintenance activities are also supported with tools that work throughout the platform, including central patch and upgrade execution when needed. Tools and methods to upgrade multiple units of same type in parallel for faster time-to-upgrade are provided. The system allows either data in-place or side-by-side system database upgrading for all the databases deployed in the central office. Tools are provided to archive historical data (that is, call history and call detail record [CDR] data), data extracts, and database backup/restore. The system provides the ability to apply outage records processing for revenue assurance, in the event of an SDP downtime.

For More Detailed Information

This chapter provides only a general overview of operations, administration, and maintenance. See the following Comverse ONE solution user documentation for more details about operations, administration, and maintenance:

- *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.
- *Database Reference*
  Describes all database tables and fields in detail.
- *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.
- *Schedulable Entity Reference Manual*
  Documents all the jobs, monitors, and workflows for each component.
- *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 Signaling 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.

- *Unified Platform Guide*
  Technical overview of the Unified Platform and information on the procedures to manage core systems operations in the Comverse ONE solution.

High-Level Functionality of OA&M

The Comverse ONE solution provides the following functionalities to support Operations, Administration, and Maintenance (OA&M) activities throughout the platform.

Process Management

Taking control of the many processes that can be running throughout the Comverse ONE solution is made easier through the Process Management tools provided. Process Management includes the following functionality:

- Provides a centralized interface to manage and control processes across all related units
- Controls process life cycle (start, stop, suspend, and resume)
- Determines status and statistics of running processes
- Checks process heartbeats to track the health of long-running processes
- Aggregates and provides running processes and process execution history across all related units

Scheduling

The ability to manage a large system requires a coordination of workflows, jobs, and processes. The platform scheduling capability includes the following traits:

- Manages jobs and their schedules across all related units
- Manages workflows that define execution dependency of related jobs in multiple steps
- Aggregates and provides running jobs and job execution history across all related units

Logging

Tracking system activities is done through the Logging subsystem. Consideration is made to centralize the access to logged information to help the user manage all of the information. Logging includes the following functionality:

- Adjusts log level at one or more processes among all related units, without restarting processes
- Aggregates and provides application logs across various units
- Manages and rotates applications logs
- Turns on and off tracing at one or more processes among all related units, without restarting processes

Monitoring and Alarms

Tracking the health of the modules of the Comverse ONE solution is a high priority. A sophisticated set of capabilities is provided to help identify, track, and distribute the information related to faults found on the system. Monitoring and alarms includes the following functionality:

- Detects hardware failures, software failures, and configuration problems, and reports alarms
- Detects soft errors, and performs automatic recovery actions and/or reports alarms
- Aggregates and sends alarms as Simple Network Management Protocol (SNMP) traps, e-mails, or SMS messages

Alarm Aggregation

The capability of alarm aggregation helps to reduce the number of alarms that can percolate up to the northbound manager or responsible party. Alarm aggregation includes the following features:

- Provides a central point to aggregate alarms raised by all the nodes of the Comverse ONE solution
- Allows forwarding different sets of alarms to different types of northbound managers
- Provides a central point to view and clear alarms generated by individual agents or by the entire Comverse ONE platform

System Inventory

To help maintenance workers and planners, the Comverse ONE solution comes with a system inventory capability that tracks the hardware and software components of the system. System inventory includes the following features:

- Maintains a centralized system inventory that is kept up-to-date through upgrades, patches, and expansions
- Provides a unique data model to describe hardware and software properties for each class of units (for example, SLU, SDP, Product Catalog, Billing Server)
- Provides operating environment properties (for example, CPU, memory, power supply, fan, operating system, 3PP, file system, environment)
- Provides network properties (for example, Ports, Ether Channel, Network Topology, Speed)
- Provides storage properties (for example, Fiber Channel Small Computer System Interfaces [FSCI], FC Switches, disks, logical unit [LUN], tape drives, tape cartridges)
- Provides application properties (for example, package information, package dependencies, configuration files)

Packaging and Distribution

The packaging and distribution features include the following:

- Front-office applications are packaged as MSI Files that are distributable via Microsoft Windows Installer
- Central-office applications (that is, SGU, DGU, SLU, SDP) are packaged as Red Hat Package Manager (RPM)
- Back-office applications (including Unified API, Product Catalog, RC/NRC Servers) are packaged as RPM
- Unified Rating Engine is packaged as RPM
- When desired, Citrix is supported for front-office GUI deployments to reduce the operator's operational expenses

Installation and Updates

The Comverse ONE solution provides installation and upgrades capabilities, both for new releases as well as for individual feature activation. Additionally, the following functionality is used:

- Installs multiple applications/units of the same type, in parallel or by other means for faster deployments
- All products/features are packaged such that they are installed based on their interdependencies
- Installation of an application ensures that its dependent third-party products are preinstalled, before continuing
- Installation of a package ensures all its dependent packages are installed, prior to its installation
- Uses a single interface to install patches and minor upgrades for all the derivatives of the Comverse ONE solution

- Uses a centralized interface to query all the installed patches across all the units

Business Values of OA&M

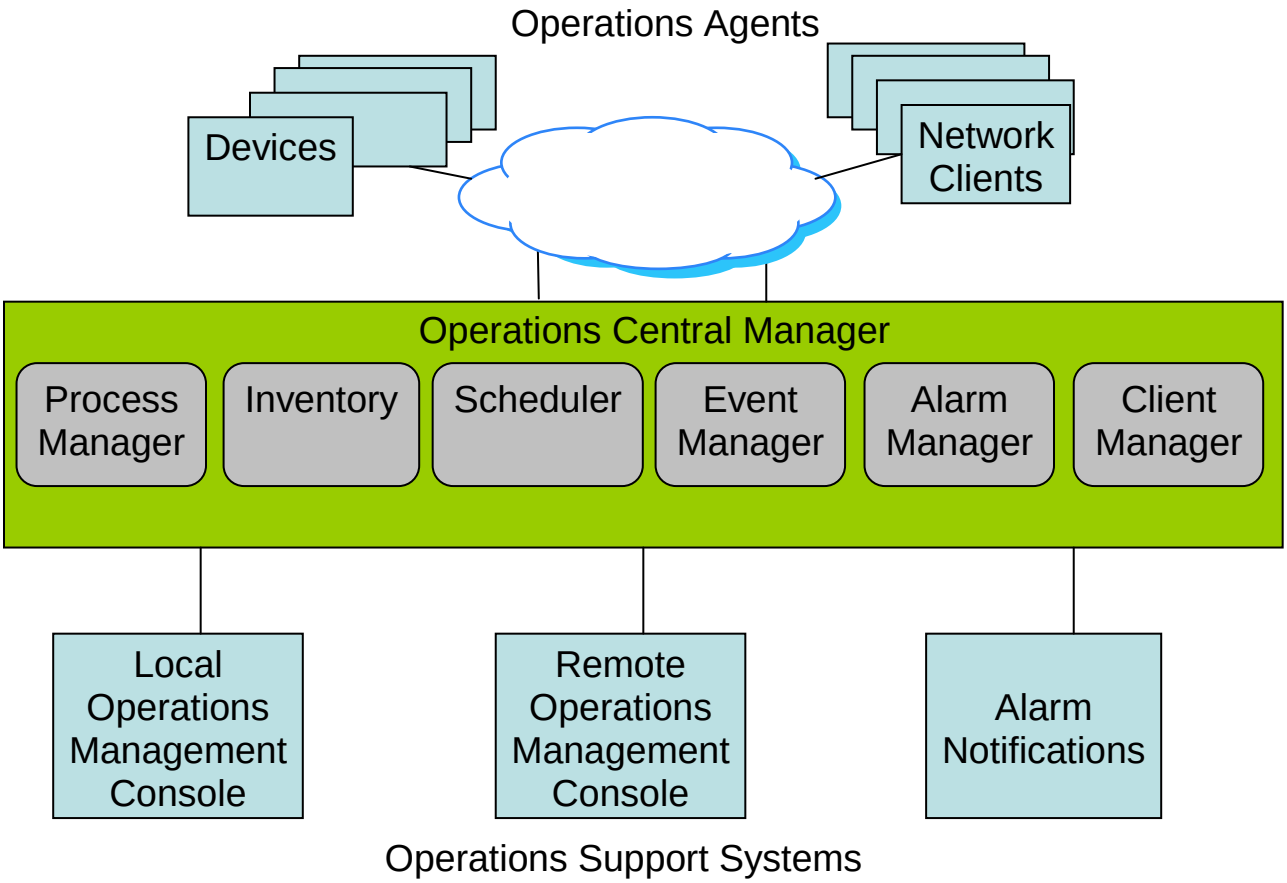
Key business values for OA&M include the following:

- Lays the foundation for managed services and a 24x7 SLA. The customer can elect to have around-the-clock administration and maintenance performed by another vendor, such as Comverse. This requires the SLA vendor to track maintenance data (for example, alarms, job status, statistics) remotely. The platform provides the ability to share the maintenance data with systems (such as Comverse's Remote Site Monitoring [RSM] tool) to deliver high-quality, around-the-clock support. Around-the-clock management of the system, by a knowledgeable vendor, can help to keep costs low while maintaining high availability.
- Positions the Comverse ONE solution to offer service availability for real-time services. All aspects of OA&M need to be in good working order to assure high service availability. The Comverse ONE solution provides the necessary tools to help achieve this high rate. Maintaining service availability helps retain customers and avoid losses of revenue streams.
- Alleviates the disparity in managing central-office and back-office applications. The Comverse ONE solution is a complex system with a distributed architecture. All aspects of the system OA&M information can be viewed through the system user interfaces. This greatly reduces the cost to maintain a large, distributed system.
- Common GUI and CLI to operate the entire Comverse ONE system reduces operational expenses. This provides a central format and location for OA&M data viewing and control access. It reduces training costs and improves costly time-to-resolution of any maintenance problems by providing a common, well-understood set of informative messages.

Functional Architecture of OA&M

The figures below illustrate the OA&M functional architecture.

Figure 27 OA&M Functional Architecture



Functional Components of OA&M

The Comverse ONE platform communicates with operations agents (devices and other systems) and other local equipment. This allows the platform to track inventory, track and control jobs and processes, monitor alarms and maintenance information, and effect recovery scripts when available. The functional components used to support these capabilities include the Process Manager, System Inventory, Event and Alarm Manager, Scheduler, Client Manager, and Resource Monitors.

Process Manager

A process is an executable that runs a piece of code. Usually a process has states that are expressed in a state diagram, which also identifies any controls that exist to change the

behavior of the process (instrumentation). Users have tools to manage processes, including the following:

- Control the life cycle of instrumented and non-instrumented processes (that is, start, stop, pause, resume)
- Instrumented processes implement a process manager API for more granular control
- Interrogate instrumented processes via the API
- Collect status and statistics from instrumented processes via the API
- Monitor and restart processes based on a predefined policy
- Perform scheduling operations (for example, pause, resume, manual execution) using the Console and CLI interfaces

System Inventory

The Comverse ONE platform provides a central repository for the inventory information of nodes. Each node collects hardware and software attributes locally. The Unified Platform Manager collects the information centrally and stores it in a database. Capabilities include the following:

- Collection of software and hardware attributes used for capacity planning and site inventory
- Inventory data model is structured based on node type and resource
- Inventory data model resources have predefined attributes
- Collection script for each resource (that is, disk) periodically collects the attributes for that resource
- Central site inventory stored in RDBMS
- The Console and CLI interfaces provide read-only access to the inventory data
- A mechanism is provided to export the inventory information in XML format

Event and Alarm Manager

The Comverse ONE solution has a central/agent alarm reporting architecture to all controlled nodes. Monitors are located on nodes to actively check the behavior of the node and to report back to the central manager. Tools are provided to assure that alarms are counted accurately and to provide detailed reports. Synchronization between manager and agent is maintained to assure accuracy of event status. The Event and Alarm Manager also includes the following functionality:

- Processes alarms received from external resources (that is, hardware, software, and processes)
- Manages active alarms and alarm history
- Performs alarm correlation and aggregation based on predefined rules to group and manage alarms as higher-level events

- Can perform predefined recovery actions upon receipt of alarms
- Alarms are viewable on either a local operations management GUI or a remote (location) command line interface
- Forwards alarms to northbound alarm managers over Simple Network Management Protocol (SNMP) for traps, Simple Main Transfer Protocol (SMTP) for email, and Short Message Peer-to-Peer (SMPP) for SMS
- Management of alarms can be provided through a Comverse central management service (RSM)

Scheduler

The scheduler is responsible for executing jobs, workflows, and tasks at predefined times. Much of the basic maintenance work can be automated through the timing provided through the Scheduler. Additionally, the Scheduler provides the following

- A uniform interface for scheduling jobs and workflows
- Scheduling is performed using "chron"-like expressions to define the job and workflow schedules
- Scheduling information is provided via the job and workflow configuration files
- The Console and CLI interfaces provide scheduling operations (for example, pause, resume, manual execution)

The Scheduler utilizes jobs, workflows, and tasks.

A job is considered a predefined operation, or set of operations, that is scheduled to execute periodically (for example, backup). A workflow is a series of predefined steps (tasks) that must be executed sequentially to achieve a result. A task is a predefined operation, or set of operations, that is scheduled to execute for one time. Additional features include the following:

- Jobs and workflows semantically consist of a configuration file and one or more scripts
- Jobs can be grouped together to form workflows
- Jobs and workflows provide status on the task performed
- Alarms are generated based on the status provided
- The Console and CLI interfaces provide scheduling operations (for example, pause, resume, manual execution)

Client Manager

The Client Manager includes the following functionality:

- Manages the devices and network clients in the system
- Provides a single entry point for all OA&M user interfaces

- Serves as the policy enforcement point for the OA&M platform
- Handles command execution

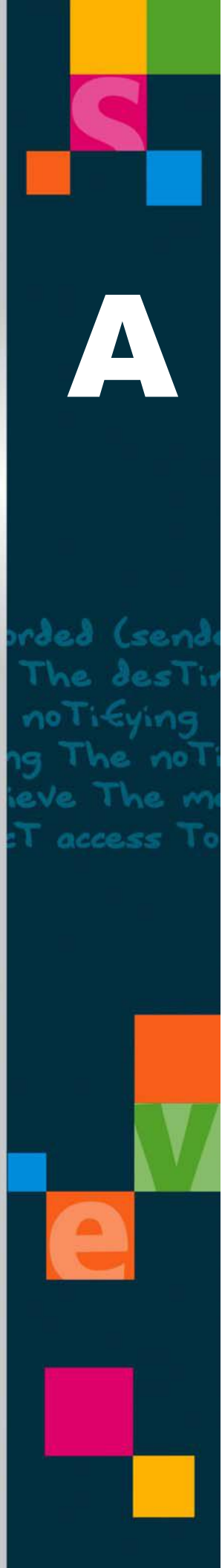
Resource Monitors

Each device or network client contains a resource monitor to collect the information (for example, alarms and status, inventory, process status) that is passed through a generic interface to the central manager. Resource monitor features include the following:

- There are various types of resource monitors (for example, hardware, software, and soft resources)
- Periodically poll resource attributes for predefined alarming conditions (for example, file system capacity)
- Semantically consist of a configuration file and one or more scripts
- Resources that require high availability (that is, database processes) are managed by the native cluster software
- Recovery actions are bound to a resource monitor; alarm conditions trigger recovery action
- Custom resource monitors are custom scripts that adhere to the Unified Platform resource monitor API
- The Console and CLI interfaces provide scheduling operations (for example, pause, resume, manual execution)

Appendix A

Glossary



Glossary

Welcome to the Comverse ONE *Glossary*. This glossary provides a list of terms used specifically for the Comverse ONE Billing and Active Customer Management solution.

Some of the functionality defined in these terms might not be included in your release of the software. Please contact your Comverse support representative for more information regarding the functionality available within your specific release.

This document is intended for informational purposes only. No part of this document shall constitute any contractual commitment by Comverse, Inc.

Term	Acronym	Definition
A		
Access Method Segmentation Key		A key that is used in the rating process. The value of the Access Method Segmentation Key is based on how the call came through the system. For example, a Calling Assistance Access Number (CAAN) is a special number the "network operator" makes available to its subscribers so they can talk to a "switchboard operator," who helps them set up the call. Usually the network operator charges a premium rate for the privilege of talking to a switchboard operator.
account		An entity that represents a customer of an operator. An account can be billable (for example, the liable party that owns the accounts receivable) or nonbillable. An account contains the subscriber profile details and can have associated subscribers and offers. An account can have one or more child accounts (organized in a hierarchy), as well as one or more subscribers and offers. An account can have zero or one account bundle. Accounts can have real-time balances and accumulators.
account hierarchy		A set of parent and child accounts often representing a set of departments in a single corporate entity.

Term	Acronym	Definition
Account Mover	AMP	A module used to support the following: ■ Move account hierarchy from one billing CUST database to another ■ Move account hierarchy from one rating MAIN database to another ■ Move account hierarchy from one rating HIST database to another ■ Move account/subscriber range from one rating MAIN database to another ■ Move account/subscriber range from one rating HIST database to another ■ Move late-coming transaction records from one billing CUST database to another
account offer		An account offer is a sellable entity that can be associated only to an account and is used to provision account-level balances and account-level promotions to the account. Account offers can have associated recurring and non-recurring terms, as well as contract terms. Account offers cannot contain usage items. It models a service that is consumed at the account level. Unlike a primary offer, an account offer is optional, unless it is mandatory as part of a bundle. Note that an offer is a minimum sellable entity that can be delivered to an account or subscriber for the consumption of service. It is a collection of reusable building blocks that models its activity usage type, service, price, eligibility and dependencies with other offers, correlated resources, service payments, and consumed credits. Supported types of offers are: primary offer, supplementary offer, account offer.
account state		The status of the account entity. Valid values are: New, Current, Disc_req, Disc_done, Active, Fraud-locked, Post-active, Disconnected.
accrual accounting		Accounting that deals with amounts that have been earned but not yet invoiced, or invoiced but not yet earned. The Journals capability is based on accrual accounting. Accrual accounting includes the tracking of financial transactions that do not depend on the exchange of money. Examples include (1) usage, which is often provided before the customer is invoiced, and (2) recurring charges, which are often billed before service is provided.

Term	Acronym	Definition
accumulator		Accumulators are registers capable of counting or measuring transactional activity including calls, recharges, data sessions, SMS, and so on. Accumulators can count several types of chargeable activities if they share the same unit type. What an accumulator counts (or does not count) is defined via a set of inclusions/exclusions, applicable to Final AUTs or AUT Groups. Accumulators can count units consumed, occurrences, or currency consumed. When the accumulator is recharge-type, it can count occurrences or currency consumed. In that case, the inclusion/exclusion to Final AUTs is not applicable (because recharge is not usage). Accumulators are cyclical in nature, in that they are periodically reset back to zero. The reset period is configurable, with supported periods of Daily, Weekly, Monthly, Quarterly, Yearly, Bill Cycle, and None. System-initiated activities like recurring charges are not accumulated. Accumulators are primarily used for triggering real-time promotions.
accumulator reset date		The date when an accumulator is reset.
accumulator reset period		The frequency at which an accumulator is reset. Examples: daily, weekly, monthly.
action step (Comverse Self-Service)		Processes used to build page flows with JavaServer Pages (JSPs). Serves as a bridge between the HTML and the business objects world when it comes to user actions. Consists of an action input, an action processor, and an action output. Note: This term is specific to the Comverse Self-Service web framework.
activation charge		A non-recurring charge applied when an offer is first activated.

Term	Acronym	Definition
activity usage type	AUT	Activity usage type represents a customer-driven network event in Unified Rating Engine (for example, phone calls, website visits, or pay-per-view movies). Activity usage type can be classified as Initial AUT and Final AUT. Initial AUTs represent the usage event received from network (that is, the physical service). Final AUTs represent the logical service (that is, the translation of the Initial AUT based on segmentation keys that can drive different rates for the same physical service event received from the network, based on operator/reseller business rules). Definitions of Final AUT are reseller-specific. Final AUTs are subject to pricing via the tariff plan. See also **segmentation keys**.
Actor (Comverse Self-Service)		Concept used to determine the users of your web application. Allows operator to manage safe access to the application. The following are examples of actors: ■ Business administrator ■ Business user ■ Dealer ■ Supplier ■ Consumer Note: This term is specific to the Comverse Self-Service applications.
additional unit rate		The per-unit rate, added to the fixed charge for a rated usage event.
Address Management		Address Management maintains information about service delivery areas. A service delivery area is any defined context that determines the ability to deliver service to a customer, such as single physical addresses. Service delivery areas are linked with a provider's service types to manage product availability by address.
Address Verification Service	AVS	A service supported by credit-card/debit-card companies that verifies the cardholder's billing address against the address on file with the card issuer. AVS is designed to help combat fraud in non-face-to-face transactions. An "AVS response" is a code sent from the credit card clearinghouse to the merchant.

Term	Acronym	Definition
adjustment	ADJ	A credit or debit that adjusts the amount of a specific charge or, in the case of a miscellaneous adjustment, adjusts the amount of an invoice or invoice-open-item. Typically, an adjustment is a one-time financial transaction (as opposed to the recurring aspect of a recurring charge) and a miscellaneous financial transaction (as opposed to the routine and expected charge of most non-recurring charges). An adjustment typically requires action by a customer service representative (CSR) or other employee. A credit adjustment normally credits back funds to the running balances that were originally debited by the charge. Note: By contrast, a direct balance adjustment is a credit or debit to a running balance and has no explicit association with a charge.
adjustment reversal		A special adjustment that modifies an existing adjustment. See also **adjustment**.
advance billing		The practice of charging a customer for services before they are rendered.
Advanced Invoice Numbering	AIN	A module in some deployments that assigns unique sequential numbers to invoices and open items on invoices before formatting. It can group invoices for numbering according to various account or invoice characteristics.
aggregate usage rate		A rate structure based on cumulative usage over a billing period.
Application Server Tier		Part of Self-Service Solutions that provides resources to build, deploy, and run web applications. Consists of the Personalization Manager and the Comverse Self-Service (CSS) Engine.
Application Specific Model	ASM	A Self-Service application component, the ASM consists of a set of Java classes to create a business logic layer over the base Llogic model (BLM) of the Self-Service Platform.
approval process		Process through which an organization user or system is designated to approve changes to contracts and services made by other organization users.
approval sequencer		Process that applies the approval logic to requests in the request queue before submitting
Archiver	ARCH	A module that archives, restores, counts, and deletes data from database tables. Specifically, the Archiver module archives or deletes specified billing data (such as old invoices or evaluated historic data), counts database records, and restores data from archives.
assertive cure		Collections action in which a specific delinquent collectible is identified and forced out of collections (regardless of outstanding balance or collections status).
audit and control	AC	The process that tracks CDRs as they pass through the system.

Term	Acronym	Definition
AUT groups		AUT groups group Final AUTs. Final AUTS include AUT translation from initial to final. Using AUT groups is an efficient way to configure usage inclusions/exclusions applicable to balances and accumulators. See also **activity usage type**.
authorization policy		Set of rules defining which subjects are permitted to access which resources using which actions under which conditions.
authorization rule		The most elementary unit of an authorization policy. It defines the target of the rule (includes subject, resource, and action) and the intended consequence of the rule (that is, permit or deny access).
Automatic Clearing House	ACH	An electronic funds transfer system set up by the Federal Reserve Bank and used by many United States banks to handle EFT transactions.
auto-post delay		Number of days the system waits after sending payments to a credit-card or direct-debit clearinghouse before crediting customer accounts if the clearinghouse does not send a response.
auto-posting payments		CPM or EFT behavior that credits credit-card or direct-debit payments to customer accounts in the absence of a response from the credit-card or direct-debit clearinghouse.
award		A rule that applies a monetary amount or nonmonetary units to a balance. Sources for awards include voucher purchases, recharges, RCs, and bonus plans. The award is consumed in real time, through usage that occurs after the award has been granted. See also **bonus**.
B		
backout		The process of undoing a calculated but not-yet-dispatched invoice, or a historic discount contract evaluation for such an invoice, in case of error.
backout adjustment		Credit against past charges. A backout adjustment is produced only by running a bill backout.
balance		A balance is a collection of funds of a similar unit type. Balances can be either (1) running (real-time authorization) balances or (2) financial (accounts receivable) balances. A balance is a representation of either a monetary or nonmonetary (units-based) amount. A balance can be either postpaid or prepaid. A postpaid balance can signify a unit amount, a monetary credit, or a spending limit, or the total amount due; all of which are incremented based upon user consumption activity. A real-time prepaid balance can represent the reserved holding of funds or units drawn from when a user consumes services. See also **shadow balance**.
balance accumulator		An accumulator that tracks balance amounts. See also **accumulator**.
balance expiration date		Date on which a running balance expires.

Term	Acronym	Definition
balance ID		An ID for a running balance (regular or shared). This ID is used to track the transactions that have been applied to this balance, for invoicing, invoice formatting, payment, and journalizing purposes.
balance payment		A payment that applies to a running balance.
base logic model	BLM	CSS Engine component that manages the business logic of your application.
bill cycle		The periodic cycle for calculating, formatting, dispatching, and reviewing invoices. Examples: monthly, quarterly, yearly.
bill date		The date of a single invoice, issued for a particular bill period. This term is highly dependent on context and can mean statement date, preparation date, or cutoff date.
bill format option		A code that can specify a particular bill format template to be used for a given account's invoices. For example, this setting can be used to brand certain invoices by reseller.
bill insert		Additional literature that is sent with the customer bill and that is triggered by a special bill insert code on the invoice.
Bill Invoice Browser	BIB	A customer information interface that allows browsing of all available invoices or a selected list of available invoices and marking them for backout.
Bill Invoice Dispatcher	BID	A process that takes the formatted invoices and dispatches them via paper, tape, email, and so forth.
Bill Invoice Processor	BIP	A process within the postpaid module that selects a set of accounts to bill; accumulates charges; calculates discounts, adjustments, credits, and taxes; creates unformatted bill records; and updates account balances.
bill message		Text message that appears on some or all bills. For example, bill messages can serve as a means to communicate information about a subscriber's existing services (such as a reminder to pay invoices) or about additional services available (such as upsell opportunities for the operator).
bill period		Bill-cycle identifier. Groups all customers that are on the same billing cycle (for example, monthly on the 5th).
bill ref no		Billing reference number. Uniquely identifies an invoice when combined with the number of times the billing reference number counter has been reset.
bill time		The time, at the end of a bill cycle, when charges, awards, and other elements for a bill are calculated and the bill is produced. Contrasted against “real time” whereby transactions are fully processed and charged at rating or event time.
bill-time discount		A promotion scheme that rewards a subscriber with discounts or unit credits based on transactions during the bill period.
billable account		The term "billable" indicates that the account is a liable party. The account can have prepaid, postpaid, or converged offers.
billable indicator		Account attribute that indicates whether an account is billable or nonbillable. The attribute indicates (a) whether the account can have bills generated for it and (b) whether the account can be a liable entity.

Term	Acronym	Definition
billing account (Comverse Self-Service)		In the Comverse Self-Service product, each billing account has an organization or member that is responsible for payment. A billing account has one party responsible for payment. The CID database defines a BILLING_ACCOUNT submodel.
billing frequency		The billing periodicity for the bill cycle. Examples: monthly, quarterly, yearly.
billing units		Raw unit types for a given usage event or rate converted to enable calculation of the total charge on a bill. Example: raw units of seconds type converted to billing units of minutes to determine the total bill charge.
bonus		A promotion scheme that rewards a subscriber with discounts or awards based upon specific subscriber characteristics or upon achieving a certain threshold level of usage. See also **award**.
bonus points		Bonus points calculated during the billing process based upon monetary spending. Bonus points are calculated using a configured factor of monetary spending. Bonus points can then be spent using an external system interfaced to an API.
Browser-Based Graphical User Interface	BBGUI	The Browser-Based Graphical User Interface uses a tool such as Internet Explorer to access the functionalities of the Comverse Mediation software.
bulk discount		A discount applied to the entire amount of the charge beyond a specified threshold. For example, a bulk discount might give 10% off all usage charges if the customer has more than $100 in charges for the bill cycle.
bulk usage rate		A single rate applied to an accumulated usage event.
bundle		A bundle represents a collection of offers that can be provisioned to, or consumed by, a subscriber or account. Examples: subscriber bundle, account bundle.
C		
Call Control Server	CCS	Real-time billing component responsible for processing Signaling System 7 (SS7) ISDN User Part (ISUP) messages associated with IVR sessions, calling cards, and Unstructured Supplementary Service Data (USSD) Callback. Supports all layers of SS7 protocol (including Media Transfer Protocol [MTP] and ISUP) as defined by international standardization bodies, including International Telecommunication Union (ITU) and ANSI.
calling circle		A group that subscribers can join to secure special/differentiated rates and discounts for intragroup usage activity.
campaign		A campaign is a coordinated business effort that presents appropriate messages and offers to specific customers so users can grow their businesses and learn more about their customers.

Term	Acronym	Definition
Campaign Manager		The Campaign Manager is a complete, integrated application component that provides powerful database marketing functionality while remaining easy to use. Typically, campaign management functionality breaks down into four categories of activities: ■ Customer Targeting: Using filters to define the universe of customers a campaign will target and to break that population into segments and sub-segments. ■ Campaign Planning: Splitting segments into test and control groups, describing offers, and assigning those treatments to the various test cells. Setting global permission-based business rules to ensure policies are met. Getting counts and estimating campaign ROI. Planning multi-wave, event-driven, and longitudinal campaigns. ■ Campaign Execution: Scheduling the campaign and extracting from the database the relevant customer information in the correct format for each offer and channel. ■ Closed-Loop Analysis: Tracking all information about the campaign in the Outbound Marketing Data Mart and providing tools to analyze post-campaign effectiveness.
Card Generator		Offline software package for creating batches of recharge vouchers or prepaid calling cards. The software is used as part of the card management process, especially when random numbers are needed for recharge vouchers.
Case Management		A premium capability in the Customer Order Management domain. It captures trouble requests reported by customers and provides the capabilities to enable the effective resolution of issues via cases and tasks
category		A category is a defined division used to regroup a set of values for a concept. Applicable to the following: ■ **Organization Types:** For example, residential customers and business customers can be grouped under the customer category. ■ **Service Types:** For example, a set of services used for display purposes such as Global System for Mobile Communications (GSM) services and value-added services can be grouped together in a category.
cell/campaign cell		In Campaign Management, each pairing of a treatment to a segment is known as a cell. Each cell has no more than one treatment.

Term	Acronym	Definition
charge redirection		Charge redirection is the act of having charges (usage and/or non-usage charges) paid for by an entity other than the entity to which the charge was originally assigned. By default, the liable party for any usage, recurring charge, and non-recurring charge is the using subscriber (technically the owning account of the subscriber). But charge redirection (via liability redirection and shadow balances) allows a different party to be a liable party of for any usage, recurring charge, and non-recurring charge. Comverse ONE supports two different types of charge redirection: (1) liability redirection and (2) shadow balances. See also **liability redirection**.
charge type		Generic term for a type of charge. Applies to usage, recurring charges, and non-recurring charges.
charging		The process of modifying balances based on the calculated amounts for RC terms, NRC terms, and usage.
CID2CBU Loader		Processor that manages notifications from the CID database and uses them to update the CBU database from the CID data. The update is called synchronization.
class		Contains the definitions for one or more file formats. Typically, classes and their associated file formats are installed as part of the Comverse Mediation installation.
clearinghouse		Credit-card or direct-debit clearinghouses are businesses that exchange payment files with the postpaid module and bill customers' credit or debit accounts. Roaming clearinghouses are businesses that settle and exchange roaming usage among mobile carriers.
Collections	COL	A series of capabilities to handle accounts that have long overdue balances. Typical Collections actions are: (1) placing delinquent accounts into collections based upon user-configurable criteria, (2) moving accounts through a collections event queue in which specific actions can take place (for example, sending a reminder letter or making a phone call), and (3) removing resolved accounts from collections or facilitating a write-off. Includes a GUI to manage accounts in Collections.
collections entity		In deployments running Collections, an entity in collections can be at account-level, account-level open item, invoice-level, or invoice-level open item.
collections event		An action performed to help collect outstanding balances from delinquent accounts. Examples include sending a reminder letter or placing a phone call.
collections scenario		A predefined series of scheduled collections events. Collections scenarios are either system-defined or client-defined. For each scenario, events occur in a certain order with a configurable number of days delay before advancing to the next event.
commercial offer		A set of rate plans and associated products dedicated to a contract type. Depends on the organization type.

Term	Acronym	Definition
commitment NRC		A type of non-recurring charge associated with a discount. A charge for enrolling in or activating a discount or discount plan. The commitment is characterized as a minimum amount the subscriber commits to pay.
competitor		In the Comverse ONE Sales Force Automation solution, a competitor is an organization that represents another company that offers similar products and services as the operator. A competitor organization can be added to a specific opportunity. See also **opportunity**.
Comverse Mediation		Comverse Mediation is the Comverse data mediation product. Comverse Mediation is a standalone product. Mediation converts network usage records into the format supported by the billing system. It collects data associated with various events from several network elements and then correlates the usage events to form an aggregated "billable" event. The aggregated billing event can then be rated and billed by the Billing System.
Comverse Mediation entity		A defined collection of mediation logic or other Comverse Mediation configuration information that is either entirely under version control or entirely not under version control. Entities are uniquely identified by their type, name, and version number.
Comverse Self-Service	CSS	Provides customer-oriented solutions to self-service requirements. Developed on top of the Comverse Self-Service Platform. CSS is a suite of products that allows communications service providers to deliver a personalized, self-service customer portal, providing online account management, e-Commerce, and electronic bill analysis. Consists of the Self-Service Solutions and Applications.
Comverse Self-Service Composer		Part of the Self-Service Platform. Contains the following development studios to build your solutions: ■ Presentation Logic Studio (PLS) ■ Integration Logic Studio (ILS) ■ Report Studio (RS) ■ Workspace Resource Wizard
Comverse Self-Service Engine	CSS Engine	Part of the Application Server Tier that handles the transactional and analytical business logic of your Comverse Self-Service application. Consists of: ■ The Base Logic Model (BLM) ■ The Data Access layer (DAL) ■ The Web File System (WFS) to store data in a file system ■ The Query, Reporting, and Analysis Engine (QRA) ■ A set of APIs to manage information in the CID database

Term	Acronym	Definition
Comverse Self-Service Platform		The foundation of Comverse Self-Service Solutions. Organizes development resources and provides core components to allow the design, development, deployment, and execution of applications. The Self-Service Platform consists of: ■ Comverse Self-Service Runtime (RTE) ■ Comverse Self-Service Software Development Toolkit (SDK) ■ Comverse Self-Service Composer
Comverse Self-Service Runtime		Part of the Comverse Self-Service Platform that contains the components used to run your solution.
concurrent tariff		A feature through which multiple tariffs are applied to the same usage record.
continuous polling		A feature by which the Comverse Mediation module stays connected to a source to receive data whenever the data is available from the source.
contract term		A term that defines the contract duration for an offer or a bundle.
control action fields		Fields that contain management rules or state information for the correlation record. Examples include (1) the ID Correlation Record rules that filter records selected for correlation and (2) the Correlation Record State that identifies the record as incomplete, complete, or excepted.
control data fields		Fields that contain information about the correlation record. Examples include (1) the correlation key for identifying the record and (2) timestamps for indicating when the record was created or last updated.
control group		In Campaign Management, a control group is a segment of a campaign that typically has no treatment and is used for comparison to campaign segments containing actual targeted customers.
core balance		A currency (monetary) balance that is also used to control the subscriber life cycle (S1 to S4 states). Every subscriber must have one and only one core balance. Note that every subscriber primary offer must have one and only one core balance. Supplementary offers never have core balances. Also, accounts never have a core balance.
correlated record		A record that has been harvested from the correlation store.
correlation		A set of actions performed during data mediation that takes input records from one or more sources and produces output records. These outputs are defined using mapping rules.
correlation destination		A destination automatically created by the system and paired with an associated correlation source when a correlation ID is first defined and added to the database. The correlation destination supports mapping incoming records to correlation records in the correlation store.

Term	Acronym	Definition
correlation event		Any action that results in a modification to a record in the correlation store. This includes the initial action of creating the correlation record. Correlation event counts are maintained on a per-record basis for all records contained in the correlation store. Using the correlation input statistics and output statistics reports, you can view event counts that are associated with records and that have been removed from the correlation store for these reasons: deleted, sent to exception, output due to User Complete Action, and output due to Orphan Timeout.
correlation file conversion		Contains a set of user-defined rules that (1) determine which incoming records require correlation; (2) convert incoming records into the correlation file format; (3) define the correlation keys for incoming records; (4) search the correlation store for related records; (5) combine related correlation records in the correlation store; and (6) determine when a correlation record is complete. A correlation file conversion is sometimes referred to as a correlation conversion.
correlation file format		The generic record identification (GRID) file format used for correlation records stored in the correlation store. The correlation file format is defined using the standard GRID functionality.
correlation ID		A set of user-defined rules that (1) manages how correlation records are stored in and removed from the correlation store; (2) assigns one or more correlation file conversion IDs to a data stream; and (3) specifies a source association.
correlation key		A field or combination of fields in a record that can be used to identify the record and match it to other related records. The correlation key is stored in ASCII format in the correlation store and has a maximum length of 99 bytes. An example of a correlation key is the combination of the originating number, terminating number, connect date, and connect time data fields.
correlation key padding character		A single alphanumeric character used to pad the correlation key on the right to the user-defined maximum correlation key length.
correlation record		A record in the correlation store built from mappings defined in the correlation mediation feature.
correlation source		A source automatically created by the system and paired with an associated correlation destination when a correlation ID is first defined and added to the database. All files stored in the CDR Data File Store must be associated with a particular source. After records have been correlated, those marked as complete are harvested from the correlation store and written into files. The files are associated with a correlation source and stored in the CDR Data File Store.
correlation store		A very fast, in-core database that is used to store correlation records.

Term	Acronym	Definition
correlation store conversion		A feature in correlation that allows the mapping of a specific type of source correlation record to a specific type of target correlation record. There can be zero or more target correlation records and one or more source correlation records. The source and target correlation records usually have different correlation keys within the correlation store. When the Comverse Mediation system receives an incoming record containing information associating the source and target records, the target records are correlated with the source records according to the user-defined rules and placed back into the correlation store.
Credit Card Investigation Unit	CCIU	An interface that enables authorized customer service representatives (CSRs) to investigate and manually resolve rejected or nonrouted credit card payments.
Credit Card Payment module	CPM	Processes information in the postpaid module going to and coming from credit card authorization centers. Exchanges payment files with credit card clearinghouses.
credit limit	CL	An operator-defined, cyclical balance limit, used to limit exposure on a postpaid balance. On a periodic basis, the balance is reset to this limit. If a balance reaches its minimum value (usually 0) during a cycle, then that balance cannot be used to authorize events until it is reset to the limit value at the start of the next cycle. Supported cycles include: Daily, Weekly, Monthly, Quarterly, Yearly, Bill Cycle, and None.
cross-product discount		A discount calculated on one set of eligible charges and applied to a different set of target charges. Example: a discount that gives 10% off long-distance charges if local charges are over $25.
cure		Collections task that checks each entity in collections to see if the outstanding balance has been reduced below a configured level and, if it has, removes the entity from collections. Disconnected accounts are cured when their balance is reduced to zero.
currency code		Specifies the currency to be used.
customer		The person (or other party) that receives items from an operator. A customer can represent one or more subscriptions to billable services. A customer is not a data model entity. Note that in the Comverse ONE Sales Force Automation solution, a customer is a business entity that has purchased a product or service from the operator. The term 'customer' collectively refers to both individual (B2C) customers and organization (B2B) customers.
customer account		A billable entity. One customer might have several accounts and thus receive several invoices, one for each account. An account can, but does not always, represent a customer. The phrase "customer account" is used as a basic unit of reference in the postpaid module. Each customer using services has at least one account and is billed at regular intervals. Also known as a postpaid account.

Term	Acronym	Definition
Customer Care Client	CCC	Comverse ONE Prepaid Offer only. Graphical user interface (GUI) that facilitates the provisioning of subscriber information. The CCC is a Windows client that can be downloaded on demand to standalone computers, significantly simplifying upgrades.
customer category		In the Comverse ONE Sales Force Automation solution, customer category is an attribute on an individual and organization that indicates whether the individual or organization is a customer or a prospect.
Customer Center		The graphical user interface used to create and manage accounts, subscribers, and hierarchies.
Customer Interaction Datastore	CID	A relational database model designed to reflect the needs and structure of the modern communications service provider in term of sale, delivery, support, and management. This database is the key data storage of the Comverse Self-Service platform and applications.
Customer Interaction Tracking	CIT	Enables the operator to define interaction types, thus providing the customer service representative (CSR) the ability to log interactions with customers via Customer Center.
cutoff date		The last date in a bill cycle. Charges on or before this date appear on the current bill.
cycle-dependent unit credit		A unit credit plan that offers a fixed amount of credits every bill cycle. See also **cycle-independent unit credit**.
cycle-independent unit credit		A unit credit plan that offers a one-time amount of credits for use against ongoing service usage. When the cycle-independent unit credits are consumed, they are not reset upon the start of the subscriber's monthly billing cycle.
D		
Data Access layer	DAL	Layer responsible for managing the data access to and from the CID database and external sources. It then separates the business logic from the data storage. Access is made through standard SQL statements.
Default Campaign		Every time users click the link to create a campaign from scratch, Campaign Management will start a copy of a default campaign. To create a default campaign, create a campaign and save it in the Defaults directory.
deferral		Revenue that has been billed to a customer for a service that has not yet been provided (for example, a recurring charge). In accounting terms, considered a nonstandard transaction. Deferrals are treated in the postpaid module as a type of accrual.
deposit		A refundable amount of money that is collected by the operator from its subscriber, for services to be rendered. The deposit is refunded if the subscriber pays for all charges when services are terminated. The deposit is kept by the operator if the subscriber does not pay for all charges. For some operators, a deposit affects how an account is treated. For example, a subscriber's monthly credit limit might be increased by the amount of the deposit, for as long as the deposit is held.

Term	Acronym	Definition
discount		A rule that applies a percentage or amount (monetary) reduction on the target charges at the point of processing. The discounts can be applied at rate time or at bill time. Discounts can be applied in a variety of ways, depending on the type of services and discount plans offered by the service provider. Discounts automatically decrease (or in rare cases increase) the amount of charges billed to a customer. Discounts can be combined into discount plans. Discounts cannot be provisioned outside of discount plans or contracts. The term discount also refers to the percentage amount by which a percentage discount decreases a charge or the absolute amount by which a discount decreases a charge.
display step (Comverse Self-Service)		Display steps are processes used to build display pages with JavaServer Pages (JSPs), used within Comverse Self-Service. These pages display data to the user or allow the user to enter data or make choices.
Distributed Audit Service	XDAS	Specification produced by The Open Group that defines a set of generic auditable events that are relevant for most distributed systems such as the Comverse ONE solution. The specification defines a common portable audit record format to facilitate merging and analysis of audit information from multiple components at the distributed system level.
E		
EFT Investigation Unit	EIU	Interface that enables authorized customer service representatives (CSRs) to investigate and resubmit rejected, reversed, or cancelled EFT payments.
Electronic Funds Transfer	EFT	Method for transferring funds directly from a bank account to an accounts receivable account. An EFT transaction is a valid method for recharging a prepaid account balance. Processes debit transaction information in the postpaid module going to and coming from electronic funds transfer clearinghouses including the ACH and exchanges debit payment files with EFT clearinghouses.
entity instance		An instance of an entity. Identified by the name, type, and version number.
entity name		An identifier for an entity. Example: the MFS entity “CIBER.”
entity type		The type associated with an entity.
entity version number		A number associated with an instance of an entity. Used to distinguish the instance from other instances of the same entity.
environment		Refers to the logical definition of all necessary parts to execute a specific task along the project life cycle. An environment is actor-oriented (for example, developer, assembler, test). Typical environments include: development, factory, production. The same system can host several environments. A development system can host both a development environment and a runtime environment.
errored usage		Usage that fails guiding or rating.
event mode		A mode for integrating the transactional and analytical self-service applications. Specific changes referred to as events are synchronized between the CID and the CAW through a process of notifications.

Term	Acronym	Definition
exclusions		In Campaign Management, exclusions prevent members who were recipients of other campaigns from being included in the current campaign. Exclusions take place only when the campaign is being executed through scheduler. Exclusions can be based on the same campaign code, the same treatment code, any treatment code, or the same message code. The exclusions can be set to "forever" or to a specified number of days.
extension		Customized processor created using the ILS.
External Payment Gateway		Receives external real-time payments (for example, a credit card payment) and ensures its secure download.
F		
forecast		In the Comverse ONE Sales Force Automation solution, a forecast is a prediction made about an organization's future revenue. In the Comverse ONE Sales Force Automation solution, forecasts are based on the extended sales values of all products (offers and bundle) in all opportunities expected to close in the sales period covered by the forecast. See also **opportunity**.
Friends and Family	F&F	A feature in the Comverse ONE solution that enables subscribers to designate frequently called numbers to be grouped into phone books that will grant them preferred rates when called.
G		
grace period		Number of days to wait after a bill's due date before beginning to charge late fees. For contracts: The period after a contract's termination date during which the customer still receives the benefits of the contract. For historic discounts: The period during which previously-earned discount rate can be applied to current invoice, but during which no additional contribution is made to determine future discount rates.
grant		A grant is a specific unit type held by the balance entity (container). Individual grants have different expiration dates.
guaranteed minimum discount		Reduces the charges to a specified threshold, after all other discounts have been calculated and applied to the total charges.
guiding		The process of determining the charging party for the consumed usage.
H		
hard timeout		Termination of a user session because it has exceeded the allowable session duration.
headquarters discounting		Calculates discounts for a group of accounts known as the headquarters (HQ) discount group. The accounts in the group must belong to the same account hierarchy. At the end of the billing period, charges for all accounts in the group are added together, and the discount is applied to the sum of the charges.
hierarchy		Describes the structure of an organization.

Term	Acronym	Definition
High Availability	HA	The High Availability configuration offers protection against a fatal hardware or software error at a single physical location for the Comverse Mediation product. The HA feature allows for the failure of a single processor with minimal service outage and with no loss of access to data already collected. The high availability configuration consists of an active and a standby hardware platform. Both platforms share common storage for billing data and the administrative database. Also known as Disaster Recovery.
Historic Discount Processor	HDP	Batch process that evaluates historic contract contributions and calculates discounts/rebates to pass to Billing and Financials.
hot bill		An on-demand bill created outside of an account's provisioned billing cycle to show current charges and credits. See also **interim bill**.
I		
incremental discount		Breaks up a charge by discrete thresholds with a discount applied to each increment. Example: 10% off all usage charges between $100 and $200, and 15% off for usage over $200, in the bill cycle. Also called a tiered discount.
incremental rating		Applying a different rate to each charge segment before adding the individual charges for a total charge. Also known as "stepped rating." "Telescoping charges" is a type of incremental rating in which the rates for each segment decrease. For example, the rate for segment 2 is less than or equal to the rate for segment 1, and the rate for segment 3 is less than or equal to the rate for segment 2.
individual case basis	ICB	Rate for products, services, discounts, or unit credits that is negotiated on a per-customer basis. Allowed for both account-level and service-instance-level products and services provisioned to a customer. Also called ICB rates.
inferred response		In Campaign Management, inferred responses are used to analyze campaign effectiveness when there is not a complete record of campaign member responses. Filters (campaign/cell/treatment, date, and desired activity) can be used to define who should be counted as having responded.
installment NRC		An installment NRC is a non-recurring charge that can be split up into multiple smaller installments and charged over time instead of all at once.
Integration Logic Studio	ILS	Graphical tool provided by Self-Service Composer to design and develop connectors for data exchange between your solution and Operations and Business Support Systems (OSS/BSS) tiers.

Term	Acronym	Definition
Intelligent Synchronization Framework	ISF	Integrates Comverse Self-Service solutions with Operations and Business Support Systems (OSS/BSS) tiers. Consists of: ■ The Integration Logic Studio (ILS) ■ CustDim Loader, Loopback, Synchronizer, and Operations Support Systems (OSS) Connectors ■ The Extraction, Transformation, and Loading framework (ETL) ■ Set of administration tools
Interaction Management		A premium capability in the Customer Order Management domain. It provides the ability to capture and maintain an historical view of customer interaction notes and actions that are available to users while they interact with and manage a customer
interactive voice response	IVR	An interactive voice response system allows the subscriber to query account balances, recharge accounts, change language, or contact Customer Care by means of audible announcements played by an automated service. IVR also allows the service provider to initiate informational announcements to the subscriber about an account or the progress of a call.
interim bill		On-demand bill created outside of an account's provisioned billing cycle to show current charges and credits. See also **hot bill**.
Inventory		Inventory is a premium product in the Customer and Order Management domain. It enables customers to define the inventory (for example, handset, modem, cable boxes, and telephone numbers) that is required to be provisioned to an offer.
invoice		Cyclically generated or on-demand detailed listing of charges, taxes, and outstanding balance against an account, associated discounts or credits, and adjustments. Also includes invoice number, invoice date, total amount, and so on. Invoices can be generated and formatted for dispatch to customers.
Invoice Designer		In some deployments, a graphical user interface that produces templates that define invoice formats. These templates are used when invoices are formatted.
Invoice Mode		Invoice Mode is for deployments of bill presentment and analysis only. In this environment, the Comverse Self-Service applications might not be integrated with back-office systems such as CRM and billing. Instead, billing files might be the only source of data.
Invoice zero		A holding place for all unbilled usage for an account. Invoice zero displays each unbilled usage record for the active account. Once the usage becomes billed, invoice zero is empty until usage is processed again for the account. Overpayments and payments that have not yet appeared on a bill are also held in invoice zero. Also called suspense account.

Term	Acronym	Definition
J		
journal code		Code that the external general ledger or accounting system uses to represent accounts, subaccounts, or other identifiers. Held in a database and written to the Journals feed file.
Journals feed file		Feed file produced by the Journals process for input into a general ledger or other accounting system.
journal key		A postpaid module field for determining where to journalize financial information.
Journals module	JNL	A process within the postpaid module that collects all of the charges for a given period and outputs them to a flat file that can be imported into a general ledger. JNL books the original entry in a double-entry system, which lists all transactions and the accounts to which they belong.
jurisdiction		Territorial range of a usage event (for example, interstate or intrastate). Acts as an optional key into the usage rating and rate period tables so that different rates and discounts can be applied for different jurisdictions.
L		
language code		The unique identifier that determines the language to be used in descriptions and other text.
late fee		A postpaid debit non-recurring charge that accrues automatically when a subscriber's unpaid balance at the end of the grace period exceeds a threshold limit.
lead		In the Comverse ONE Sales Force Automation solution, a lead is a circumstance in which a customer or prospect has expressed interest in purchasing a product or service. In the customer case, the lead is termed an 'upsell' lead; in the prospect case, a 'prospect' lead.
letter event		Collections event that creates letters, using the Letter Writer feature, for printing or deletion by an administrator.
liability redirection		A feature that allows charges (such as usage, a recurring charge, or a non-recurring charge) to be paid for by an entity (account or shadow subscriber) different from the entity that uses the services. Liability redirection involves configurable charge redirection to liable parties as follows: ■ Account to account ■ Subscriber to account ■ Subscriber to shadow subscriber See also **charge redirection**.
liable account		Account that is liable for payments for services used by the owning account and/or subscribers.
list (Campaign Management)		In Campaign Management, a list is a set of members in the data mart that meet given criteria. The types of lists available are based on system configuration. Lists can be saved as either criteria or materialized members. Lists can be filtered by demographic filters, top N filters, or transaction filters.

Term	Acronym	Definition
location		The location of the calling (origination) party or the called (destination) party. A location typically is a geographical segment of a billable area. Locations are hierarchical. For example, "Boston" and "Massachusetts" are both locations, and Massachusetts contains the Boston location along with other locations. Other examples are locations in the real-time billing module or jurisdictions in the postpaid module.
location segmentation key		Consists of a compound expression defined via a combination of one or more of the following location parameters: (1) location relationship; and (2) jurisdiction, distance band ID, and zone class.
Lockbox Payment module	LBX	Batch process that brings in check payment files from banks (in cases where customers pay bills directly to the bank) and posts payments to the appropriate accounts. Also known as the Lockbox module.
Lockbox Investigation Unit	LIU	An interface within the postpaid module that allows authorized personnel to investigate rejected or nonrouted lockbox payments.
M		
macro		Script-defining external APIs to be used as commands in Integration Processes.
market code		(1) A market segmentation key. A group classification to be used for account segmentation activities such as promotion availability, bill messages and journaling, and so on. (2) An arbitrary customer designation, such as a gold or platinum customer. The value can be left Null.
matrix data transformer		Part of a report providing an analysis of your data in a two-dimension matrix. Type of data transformer. This transformer contains: ■ A prompt block used for interactive filters on dimension values ■ Charts ■ Sorts on dimension values ■ Formats and expressions on dimension values and measures
member		Defines a physical person. Members can have: ■ One or more contracts ■ An access to the Self-Service Solutions application to manage their own contracts, the contracts of their organization, or the contracts of other organizations
Message Investigation Unit	MIU	An interface within the postpaid module that allows for investigation of usage charges that cannot be guided and/or rated.
Message Processing System	MPS	A subsystem responsible for extracting usage event information from external usage files, calculating charges for each usage event, and associating those events and charges with the appropriate customers.

Term	Acronym	Definition
MIU Batch	MIUB	See **Message Investigation Unit**.
Monetary Transaction Record	MTR	A financial transaction, other than a call detail record (CDR) or Recharge, generated by the real-time billing module as a result of modifying a balance. Note that for the integration with postpaid, Recharges are grouped with MTRs.
Multiserver Architecture	MSA	Configurable logical and physical architecture that allows multiple subscriber (Customer and Billing) databases to be set up in a single instance of the Comverse product.
N		
negative discount		Increases the total charge amount to which the discount applies. For example, if you set a rebate with a discount amount of $20, it adds $20 to the given target amount. For encouraging higher usage among the customers.
nonbillable account		An account that is not the liable party and that has its charges redirected to other account(s).
nonmonetary balance		A running balance that holds units other than currency.
non-recurring charge	NRC	A one-time charge, such as a returned check fee, installation fee, activation fee, termination fee, or equipment purchase. Can be applied at either the account or subscription level.
O		
OCM Repository		The Online Catalog Manager (OCM) has a datastore called the OCM Repository. The OCM Repository handles the following: ■ Structured catalog content (catalog entities along with their attributes and associations) ■ Unstructured content as media files ■ Publication information and history
OCM2CID Loader		This connector takes the data published by the OCMPublisher and loads it into the CID.
OCMPublisher		This connector manages the extraction and publication of data from the OCM Repository.
offer		An offer is a minimum sellable entity that can be delivered to an account or subscriber for the consumption of service. It is a collection of reusable building blocks that models its activity usage type, service, price, eligibility, and dependencies with other offers, correlated resources, service payments, and consumed credits. Types of offers are primary offer, supplementary offer, and account offer.
Online Catalog Manager	OCM	A standalone web application used to manage the Product Catalogs of Self-Service Solutions.
open-item ID		In open-item accounting, open-item IDs are identifiers that classify the A/R amounts into specific categories. Payments, collections, and journal posting can be done on the basis of open items. Users can manage open-item IDs in the Product Catalog.

Term	Acronym	Definition
opportunity		In the Comverse ONE Sales Force Automation solution, an opportunity represents the next step in the sales cycle after lead qualification. An opportunity is a sales deal that is solid enough to devote sales resources towards. An opportunity is associated with a defined sales process, which includes the sales activities to be worked in order to win the deal.
ordering instructions		In the Comverse ONE Sales Force Automation solution, ordering instructions provide the sales person a place to enter any information he or she thinks is important to the ordering of the associated opportunity. See also **opportunity**.
outcollects		Roaming data records received from a Mediation System that need to be transmitted out to a partner. Same as "outgoing."
owning account		An owning account is the account that is the logical parent of a particular subscriber. It is the account that actually consumes the services. This is distinct (sometimes) from a liable account, which can pay for subscriber charges but can exist in a separate hierarchy. An account is a parent account of its child account if it is one step higher in the hierarchy and closer to the root account. A parent account can have zero or more child accounts, and a child account can be a parent account to zero or more child accounts. A child account must have one and only one parent account.
P		
Package Manager		Comverse Mediation feature that allows you to add headers and trailers to usage data before transmission, send variable size blocked data in a fixed block output format, and send usage data in record structure format.
partners		In the Comverse ONE Sales Force Automation solution, a partner is an organization that represents another company with whom the operator coordinates efforts to produce additional revenues. A partner organization can be added to a specific opportunity. See also **opportunity**.
passive		The protocol in which the source controls data collection.
pay-as-you-go promotion		A standard or rollover unit credit promotion that includes a single product-element recurring charge and a single active unit credit plan that offers a single active unit credit discount in either monetary or units amounts. When terminated, a pay-as-you-go promotion charges customers for used unit credits only.
payment		Money applied by the customer against outstanding charges for the customer's account.

Term	Acronym	Definition
Payment Card Industry Data Security Standard	PCI DSS	Organization that oversees security standards as guidelines for members, merchants, and service providers that store, process, and transmit cardholder data. PCI DSS aims to protect cardholder data, safeguarding the storage and transmission of such sensitive data through the use of encryption and secure protocols and policies.
payment due date		Date when payment for charges invoiced for the bill period is due.
payment-insensitive real-time balance		Real-time postpaid bill-cycle spending limit. This type of real-time "balance" is really a per-bill-cycle credit limit that is reset at (or near) the beginning of each bill cycle. Payments are generally not applied to this real-time "balance"; only current bill-cycle charges and credits are applied. This real-time bill-cycle spending limit is not really a balance as it does not reflect the customer's financial obligation, nor does it reflect an amount of credit that the customer has. It merely reflects how much credit the customer still has available.
payment-sensitive real-time balance		Real-time credit limited postpaid balance. Payment-sensitive means that all credits and debits (including payments) are applied to the real-time balance, thus making the real-time balance a running total of the customer's obligation. This is sometimes referred to as the credit-card credit-limit model. This represents the customer's total credit limit/credit risk, independent of billing cycles.
Personalization Manager		The part of the Application Server Tier that handles the presentation logic for web applications. Consists of: ■ The Self-Service application template ■ The JavaServer Page Framework (JFN) application framework ■ The Presentation Logic Studio (PLS)
pipeline		In the Comverse ONE Sales Force Automation solution, pipeline provides sales information for all stages of the sales process and provides information about the number of opportunities, team members, and potential monetary value for the opportunities in process. The pipeline module provides a graphical funnel view of sales records in the sales pipeline. See also, **opportunity** and **sales process**.
point of sale	POS	The system used to facilitate sales of services and equipment oftentimes located at operator shops and kiosks or at dealers at franchisee locations. The POS system is also commonly used to manage stock and market devices and calling plans.
point origin		The number that originates the call. See also **usage point**.
point target		The number that is called. See also **usage point**.
Policy Administration Point	PAP	An XACML component that creates policies and stores them in a repository. In the Comverse ONE solution, the Security Server acts as the PAP.
Policy Decision Point	PDP	An XACML component that makes decisions about authorization requests.

Term	Acronym	Definition
Policy Enforcement Point	PEP	An XACML component that makes requests for authorization and enforces authorization decisions. In the Comverse ONE solution, the Unified API is an example of a PEP.
postbill adjustment		A credit applied against any or all charges that appear on the customer's existing invoice.
prebill adjustment		A credit applied against usage charges that have not been invoiced.
prep delay		The difference between the cutoff date for a bill and the date and time when BIP generates the bill. A prep delay is often built into the operations of invoice production to allow time for all usage for a given period to arrive for inclusion on the bill.
prepayment		A prepayment is a payment intended for an invoice or a charge that has not yet been issued. Each entry can identify an amount assigned to taxes distinct from the remainder of the prepayment.
Presentation Logic Studio		Graphical tool provided by Self-Service Composer to model, design and visualize pageflows using action and display steps (JavaServer Page [JSP] files).
Presentation Server		Part of the Personalization Manager. A Presentation Server consists of user interfaces for the different potential users. These user interfaces consist of one or more menus, linked to a number of pageflows. The Personalization Manager can support many different Presentation Servers.
pricing		The Unified Rating Engine act of assigning an actual price to a usage, based on rates, duration, and so on. See also **tariff**. Another example of pricing is defining the price of a RC term (with rating keys and rates).
primary offer		A mandatory offer that must be provisioned to a subscriber in order to receive/consume service(s). See also **offer**.
product		In the Comverse ONE Sales Force Automation solution, a product in the Sales system generally represents and offer or bundle for sale to an organization customer.
Product Catalog	PC	The Product Catalog is the Comverse ONE solution's system-provisioning datastore for coherent and centralized management of market offerings. It supports multiple virtual operator product definitions within a deployment and provides various paradigms for market segmentation and product pricing.
product request		In the Comverse ONE Sales Force Automation solution, a product request is a request to locate or configure a product to add to a specific opportunity. It is a form associated with an opportunity that contains fields that a sales person uses to describe the needed offer or bundle. See also **opportunity**.
production filter		Optional mediation feature that allows filtering of incoming data based on specified criteria.

Term	Acronym	Definition
production search		Optional mediation feature that allows users to search billing data files stored on disk for records containing user-specified values.
promotion		A preconfigured grouping of charges, rates, and/or awards and discounts, by which subscribers consume services. The benefit of a promotion can be applied in either real time or bill time. Promotions can be applied at rating time (referred to as rating time promotions) and can be applied at billing time (referred to as billing time promotions). A promotion plan reduces a charged amount, allocates free services, or credits a balance.
proposal		In the Comverse ONE Sales Force Automation solution, a proposal is a report of the current state of an opportunity, intended to be sent to and reviewed by the organization customer, and listing information about the operator, the customer, and the opportunity. Opportunity information includes all products (offers and bundles) included in the opportunity, summary pricing information for each product, and any outstanding product requests related to the opportunity. Once generated, a Proposal can be exported as an html document for eventual transmission to the customer.
prospect		In the Comverse ONE Sales Force Automation solution, a prospect is a business entity that might purchase a product or service from the operator, but has not yet done so. The term 'prospect' collectively refers to both individual (B2C) and organization (B2B) prospects.
protocol		From the Comverse Mediation perspective, there are two types of protocol interaction modes: active and passive. From a network perspective, protocol refers to particular network messaging that is used between the network elements. Examples of network protocol include CAMEL and IS-826.
provisioning item		Provisioning items define the types of customer information that must be captured in order to provision a usage plan on the network.
Q		
queue		Collections task that manages collection event work queues and moves accounts through a collections scenario.
quota		In the Comverse ONE Sales Force Automation solution, the sales quota is used primarily for reporting purposes when comparing sales quotas against forecast and actual sales results..

Term	Acronym	Definition
R		
rate		A preconfigured amount per unit that is used to price usage and non-usage charge types. Rates are derived based on a number of key fields. For usage, some of the keys used to derive rates include, but are not limited to, the following: ■ AUT ■ Segmentation keys ■ Calendar ■ Currency For recurring charges and nonrecurring charges, the keys used to derive rates include the following: ■ Frequency ■ Class of Service ■ Subscriber class ■ Subscriber type ■ Rate class ■ Offer ■ Currency See also **tariff** and **segmentation keys**.
rate class		Differentiates classes of subscriptions and accounts for rating purposes. For example, rate classes could be defined as business and individual, allowing business and individual subscribers to have different rates for the same product or service.
rate period		Defines a specific time or date when a tariff plan can change rates. Enables discount for usage during that time period.
rate plan		Defines the sale policy of a subset of the offer's services.
rated amount		The amount to be billed in a currency defined for the rated charge, instead of in the customer's currency (which is called the amount). For instance, a particular Boston/Toronto charge is rated in Canadian dollars. For a U.S. account, the amount appears in U.S. dollars and the rated amount appears in Canadian dollars.
rating		Rating refers to the entire process of authorizing, pricing, discounting, and charging usage through the Unified Rating Engine.
rating key		An account or subscription attribute that affects the rate for a charge type. Rating keys enable the configuration of multiple rates for the same charge type. Elements used to rate products, include price, type, currency, billing frequency, active date, rate period, and zone.

Term	Acronym	Definition
rating time bonus item		An item that defines a bonus/award based on the subscriber's usage. Example: after using 500 minutes, get five SMS messages for free.
rating time discount item		An item that defines a monetary discount that is applied at rating time per event.
rating time promotion plan		A collection of one or more rating-time bonus items and/or rating-time discount items that reduces a charged amount, allocates free services, or credits a balance. Examples: 10% discount on voice; pay $10/month in recurring charges and get 50 free SMS messages.
raw units		Total usage specified in a predetermined type (for example, seconds) in a predetermined field.
RC/NRC term		Term that defines the characteristics of the recurring or non-recurring charges assessed through an offer.
real balance		A monetary or nonmonetary unit that is consumed via an offer. Core balance must be associated with a primary offer. Non-core-balances can be associated with all offers.
rating-time		Describes an activity or transaction that occurs during the rating and/or charging process, as opposed to waiting until the end of a cycle (bill time). Note that the "rating-time" rating and/or charging process takes place, in most cases, during the actual duration of the usage event that is being rated and/or charged.
real-time bill-cycle limit		This is a per-bill cycle spending limit. Also known as real-time bill-cycle credit limit, or real-time bill-cycle limited balance.
rebate		Discount in which the customer receives money back instead of receiving free units of usage or a percentage off charges.
receiver-initiated		A type of protocol in which Comverse Mediation initiates all data collection sessions with the source. Also known as active protocol.
recharge		Recharging is a process by which a subscriber adds time, units, or monetary value for services to running balances. This can also extend or change an expiration date for a running balance. Recharging is done with physical or electronic recharge vouchers. Recharges are the primary way that money is received into prepaid operations.
recurring charge	RC	A charge assessed at regular intervals regardless of subscriber activity. Example: a monthly subscription fee.
Recurring / Non-Recurring Charge Server	RCS	The entity that generates recurring and non-recurring charges and applies them to subscriber balances.
Red Hat Package Manager	RPM	RPM is a command line-driven package management system capable of installing, uninstalling, verifying, querying, and updating computer software packages. RPM is free software, released under the GNU GPL.
refund		A return of money. There can be many different events across prepaid and postpaid operations that trigger refunds. This is a generic term for the return of money to the subscriber. It applies only to monetary amounts and not to units.
regular balance		A running balance that is neither a shadow balance nor a shared balance. See also **shadow balance** and **shared balance**.

Term	Acronym	Definition
Request Handling and Tracking	RHT	This feature uses the Workflow application that allows customers to define rules to externalize process flow logic from the application, easily and quickly change their business processes, and be confident that each job follows the execution plan laid out in the process definition. See also **Workflow**. RHT provides Business Process Management capabilities to the Customer and Order Management domain (product) to enable end-to-end service fulfillment. This feature provides operators the ability to define the process flow logic and business rules associated with their service order fulfillment business processes. It ensures that each step of the business processes as laid out in the process definition is executed as required. RHT tracks (1) the current state of each job initiated in the service fulfillment process and (2) a history of all past jobs.
reseller		A service provider who leases an operator's services (such as a network, billing, and/or rating system) and then resells the leased services to subscribers. Typically, all data specific to the reseller is segmented; that is, only the reseller can view the offers and bundles they sell and the pricing terms and conditions. Examples: virtual operators such as mobile virtual network operators (MVNOs) and virtual internet service providers (VISPs), and large dealers or channels who sell branded services.
resource		Any file that is part of a component or module that is targeted to the runtime environment. Resources can be either development-time or runtime resources.
Role-Based Access Control	RBAC	Primary access control mechanism in the Comverse ONE solution. Users gain access to resources based on which role they are in.
rollover		An award from a cyclical promotion that can be carried forward to one or more cycles beyond the bill cycle in which the award was granted.
rule (Campaign Management)		In Campaign Management, a rule is a single set of filters triggered by a single condition. Rules have three parts: ■ Name ■ Trigger ■ Filter For example, name: No Discount in NYC; trigger: cell code = discount; filter: city ≠ New York.
rule-combining algorithm		Resolves conflicts among rules in an authorization policy.
rule set		A named collection of one or more rules that are active for a given set of users.

Term	Acronym	Definition
running balance		A balance that can be either prepaid or credit-controlled postpaid and that is decremented by usage or RCs or NRCs. Usage-related running balances can be either a monetary type (when it is associated with currency) or a nonmonetary type (units-based). A running balance is managed in real time or near real time.
S		
Sales Force Automation		A premium capability in the Customer Order Management domain. It provides sales lead and opportunity management, including the ability to assign resources to work the leads and opportunities to closure according to defined sales processes for both new and existing customers
sales process		In the Comverse ONE Sales Force Automation solution, the sales cycle is conducted through a sales process. A sales process consists of sales stages, each of which can consist of one or more tasks. When an opportunity is created it is associated with one of the sales processes configured in the system. See also, **opportunity**.
sales users		A Sales Force Automation system user is anyone with a login account to the Sales system. Users are granted permissions to applications based on user roles and profiles. Access to various aspects of the Sales system and resources depends on the roles assigned to the user. For example, an application can have a Sales User and a Sales Manager User defined, where the Sales Manager User can generate forecasts and perform other actions not available to the Sales User.
scored list		A list whose members are ranked using a measurement or a predictive model.
security role		An abstract entity that, by means of authorization policies, has access to resources. An individual user's role determines that user's access privileges. A security role is a privilege granted to groups of users based on specific conditions.
Security Server		The server that checks user authentication within a Comverse ONE system to approve or reject service.
seed		In Campaign Management, seeds are dummy customers included in a campaign to ensure that the campaign has been executed as planned. Typically, a fulfillment house does not know which campaign recipients are legitimate customers and which are seeds. Seed information is not included in financial projections, historical records, or counts.

Term	Acronym	Definition
seeding strategy		In Campaign Management, there are four seeding strategy options, from least to most prevalent: ■ No seed strategy (do not include seeds) ■ All seeds in each treatment ■ Seeds even across cells ■ All seeds in each cell Seed files are created by the administrator. There are four output options: ■ Seeds on top ■ Seeds on bottom ■ Seeds interspersed ■ Camouflaged ❒ If some fields in a seed record are incomplete, the fields are filled with information from the record above the seed record ❒ Seeds on top cannot be camouflaged
segment		In Campaign Management, a segment is a logical subset of the target audience. Campaign data for each segment is recorded separately. Segments are frequently separated into subsegments to compare how different members of the target audience behave to similar or different offers.
segmentation key		An attribute that affects the rate for a charge type. For usage, there are currently the following-segmentation keys, each consisting of multiple attributes: (1) Account Segmentation Key, (2) Subscriber Segmentation key, (3) Location Segmentation Key, (4) Special Feature segmentation Key, (5) Access Method Segmentation Key, (6) Offline Segmentation Key, (7) Market Segmentation Key.
sequence number		A numeric identifier assigned to a series of data records, blocks, or files. It is used to identify any gaps in a series. Sequence numbers are typically generated by the source, but they can be generated by Comverse Mediation using the Sequence Numbers page.
service		Defines any kind of product sold. Services can be delivered by various means, such as wireline, mobile, or cable. Services can be shared between different contract types.
service item		Service items define the types of customer information the CSR must capture in order to provision a service plan on the network.
service data point	SDP	An Oracle database instance (or instances) used in a real-time billing module deployment to hold the subscriber data and the current Product Catalog configuration set. It is a real-time database. The real-time billing History databases (there are several kinds) are housed on SDPs as well, but those databases are separate from the subscriber database.

Term	Acronym	Definition
Serviceability		Serviceability, a component of the Customer and Order Management domain, maintains service delivery area data. This data maps physical addresses with available services. This component also maintains the criteria used by the ordering system to determine whether a particular geographical location (address) has the prerequisite requirements that would allow delivery of an offering. See also **Address Management**.
set-top box		A device used in a video cable system that delivers video at the customer's location.
shadow balance		A monetary or nonmonetary (units-based) balance that is used for liability redirection of certain specified charges. A shadow balance does not contain any real value. Instead, it points to a real balance (for example, the core balance) and draws from there.
shadow subscriber		A subscriber whose charges are paid by an account other than its own. A shadow subscriber is a virtual subscriber. The shadow-subscriber feature allows certain charge liabilities to be redirected from one account to another. The shadow subscriber is liable for those redirected charges. For example, if an employee must pay for calls outside of business hours, then charges for calls made after work can be redirected to a personal account. See also **liability redirection** and **liable account**.
shared balance		A running balance that can be shared by multiple subscribers of an account. A shared balance uses shadow subscribers.
short message service	SMS	Mobile telephony service that allows short messages to be sent to cell-phones. SMS messages are limited to 160 alphanumeric characters in length, and can contain no images or graphics.
single subscriber account	1SA	An account that has only one subscriber. Note that 1SAs are no longer permitted in an account hierarchy and must be split into separate account and subscriber rows when added to hierarchies (or simply brought in as only subscribers via subscriber transfer).
soft timeout		Termination of a user session because it has been inactive (idle) longer than the allowable time.
spending limit		A user-definable (account-definable) cyclical limit on a balance, put in place to voluntarily control spending on a balance. A spending limit is used to limit exposure on a postpaid balance. Spending limits are reset cyclically and are not impacted by payments.
split strategy		In Campaign Management, a split strategy is a method that determines which members of a segment receive which treatment. By default, the split strategy of every segment is random. The other options are 'nth from the lowest scores' or 'nth from the highest scores' both of which require a scored list. For example, if there are four cells with percentages 30%, 20%, 50%, and 10%, then the top or bottom 30% (according to the scores in the scored list) are placed in the first cell, then the next 20% in the next cell, then the next 50% in the third cell, and finally the bottom or top 10% in the last cell.

Term	Acronym	Definition
strategy		Collections mechanism that can be modified to extend collections functionality in a controlled manner. Site-specific strategies can be externally programmed to meet specific requirements, such as defining how real-time events are handled within the system.
subscriber		A subscriber is at a specific service-delivery point for a product or service being used by an account. Examples: a telephone line, a login account for an online service, an end point in a leased line network.
subscriber segmentation key		A compound expression defined via a combination of one or more subscriber/service parameters that have been marked as applicable for a subscriber rating segmentation key.
subscriber state		The status of the subscriber entity of an account. Valid values are: Active, Awaiting Activation, Awaiting Recharge, Disconnected, Fraud-locked, Idle, Post-active, and Suspended.
subscriberID		Real-time billing subscriber ID, which is not necessarily the same as a postpaid subscriber external ID nor a postpaid internal identifier (subscr_no). A real-time billing subscriberID + Identity maps to a service instance within the postpaid module. The only way that real-time billing ever refers to the subscriber entity. In other words, if you want to access a subscriber record of any kind you always use this.
supplementary offer		An offer that can be provisioned to a subscriber to receive/consume additional service(s). A supplementary offer is not included in a primary offer. Note that an offer is a minimum sellable entity that can be delivered to an account or subscriber for the consumption of service. It is a collection of reusable building blocks that models its activity usage type, service, price, eligibility and dependencies with other offers, correlated resources, service payments, and consumed credits. Common types of offers are: primary offer, supplementary offer, account offer. See also **primary offer**.
suspense account		See **invoice zero**.
symmetric key encryption		Type of encryption in which the same key is used for both encryption and decryption.
system parameter		A configurable setting that globally controls the behavior of processes, utilities, and interfaces.
T		
tariff		Used to price all usage transactions, such as voice calls, data transactions, and other information services. A tariff defines the price for the usage in terms of some chargeable unit such as money per time unit (for voice calls) or bytes (for data downloads). Example: A simple tariff is 1 cent per second. For a call lasting 120 seconds, the account is charged $1.20. See also **rate**.

Term	Acronym	Definition
tariff plan	TP	A set of predefined tariffs used by the software to charge subscribers for transaction activities. Each tariff plan is assigned a calendar that enables different tariffs to be configured by time type. Each tariff plan also is assigned a unit type for the purpose of charging. (Each usage plan employs a number of different tariff plans, each of which is pointed to by a unique application, subtype, and unit type triplet defined in the Activity Definition table.) See also **concurrent tariff**.
task event		A Collections task that processes collections entities, such as Re-Treat, Treat, Queue, Cure, Event Treat, and Assertive Cure.
task mode		Type of task performed by a process. For example, BIP operations differ depending on whether the particular operation is run in Production, Pro forma, Backout, or another task mode.
tax exemption		State of being exempt from a particular tax, either for a charge or a customer account. A charge can be defined as tax-exempt based on its tax package instance, tax type, or geocode (that is, a code based upon geographical location). If an account is defined as exempt from a particular tax, then no tax applies, even when paying for a service that is normally taxed.
tax package		Specialized tax calculation software, including location, tax type, and tax rate data.
territory		In the Comverse ONE Sales Force Automation solution, a territory represents a geographical or logical division of the Sales customer base.
time type		A defined segment of time used for rating. Different time types have different associated tariff plans. Examples: Offpeak time, Peak time.
total monetary liability	TML	A running, real-time summation of an account's outstanding monetary liability. All monetary debits increment the TML value, and all monetary credits decrement the TML value. TML = unbilled charges + billed charges - payments - credits - adjustments - refunds. (Unbilled charges include any unbilled NRCs and RCs.)
total monetary liability limit	TML limit	A limit on the TML for the purpose of triggering notifications or actions. See also **total monetary liability**.
transmapper		Processors that transform Java objects (used for interaction with Comverse Self-Service applications and Operations and Business Support Systems [OSS/BSS]) and XML strings (used for message transport).
Transaction Synchronization Server	TSS	Updates total monetary liability in response to payments, late fees, billing-time taxes, HDP discounts, or credits. It updates running balances in response to cycle-time promotions, billing-time taxes, or bill backouts.
treat		Collections task that identifies delinquent entities, moves them into collections, and assigns and schedules scenario events for them.
treatment		In Campaign Management, a treatment is an offer that will be extended to campaign recipients. A treatment can also be referenced in one or more output files.

Term	Acronym	Definition
treatment strategy		In Campaign Management, a treatment strategy is a saved segment that can be applied to one or more existing segments at one or more levels of the segment tree. A treatment strategy without treatment code can be used as a "segmentation" strategy in a campaign. Can be used to rapidly create trees with repetitive structure. Can be reused over and over again. Existing segments and filters from a campaign or a segmented list can be turned into a treatment strategy.
trouble ticket		Describes an issue reported by the user.
U		
Unified API	UAPI	The Unified Application Programming Interface is a programmatic interface for client-side application development. The Unified API runs in a Java 2 Platform, Enterprise Edition, (J2EE) environment, exposing a Web Services interface. Also available is the client Software Development Kit (SDK), which is a client-side development environment capable of running business logic. Note that the Unified API also includes an Enterprise JavaBeans (EJB) interface, but this interface is highly abstracted and is not intended for direct use by client applications that do not use the client SDK.
Unified Platform user interfaces (Management Console and Management Shell command line interface [CLI])		The Unified Platform Management Console is a Web-based graphical user interface (GUI) that is accessed using a standard Web browser. The Management Console's Home page provides a summary of various site-wide conditions and access to the several services such as Event, Process, and so on. The Unified Platform Management Shell command line interface (CLI) is a command line interpreter (also referred as a shell), implemented as a Perl script, that provides a text-based interface. This Management Shell acts as a command line interpreter for Unified Platform commands.
Unified Rating Engine	URE	The Comverse ONE solution Unified Rating Engine (URE) enables operators to charge for all telecom services in real time and non-real-time, with complete real-time balance management for prepaid, postpaid, and hybrid customers. It has a flexible charging model that can adapt to evolving customer models with the ability to limit overall customer liabilities for reduced financial risk. It enables real-time and deferred promotions, with cross-product discounting to create innovative marketing offers for penetrating new customer segments and reducing churn. It supports many rating features to meet a wide range of requirements from the wireline, mobile, cable, and Internet broadband industries.
unit credit	UC	A special kind of fixed-amount discount restricted to usage charges that are applied in the form of free usage. Unit credits can apply to any charge type: usage, recurring, or non-recurring charge. Unlike other discounts, unit credits can be configured to carry over from one billing period to the next.
unit type		Can be monetary or nonmonetary. A monetary unit type needs to have a currency type. A nonmonetary unit type implies units.

Term	Acronym	Definition
usage item		A usage item defines the available and permitted usage activities and their associated tariffs and thus is the relationship between the AUT and the tariff plan.
usage jurisdiction		See **jurisdiction**.
usage plan		A collection of one or more usage items that defines available and permitted usage activities and their associated rates.
usage point		An origin or target (destination) of usage, such as phone numbers or document numbers. Usage points must be associated with a jurisdiction.
user role		The user role defines the features available to a user, and the scope of each feature. An individual user's role determines the user's access privileges. The list of possible user roles depends on the organization type. See **security role**.
V		
versioning		Product Catalog versioning includes the configuration and management of data sets to facilitate propagation and to control the release of data to test, production, and other systems. A complete version consists of one set of service data (the service version) and multiple sets of reseller data (the reseller version) grouped together and propagated as a unit. Corrective versioning, change history logging, record level locking, and auditing and security are supported.
VIP code		A code designating the level of special handling required for an account.
virtual balance		A synonym for shadow balance. See **shadow balance**.
Voucher Management System	VoMS	This is the sum total of all of the various voucher management pieces in the real-time billing module but is most often applied when the real-time billing installation features a Centralized Voucher System (CVS) database. That is, instead of each subscriber database (which, in a service area like the former Soviet Union, might be spread over a large area with *many* physical SDP devices that belong to one network operator) having a set of unique vouchers loaded, *all* of that operator's vouchers reside in the CVS. Also includes entities such as the Card Generator software. Also, a feature in Customer Center that allows a user to perform various voucher administration activities (such as search, view, delete, and state transition). It provides system-wide voucher management (including search and batch delete).
W		
Workflow		Workflow is a third-party product used in the Comverse ONE solution for Business Process Management Applications. The Workflow database serves as a central knowledge base containing the current state of each job as well as a history of all past jobs.

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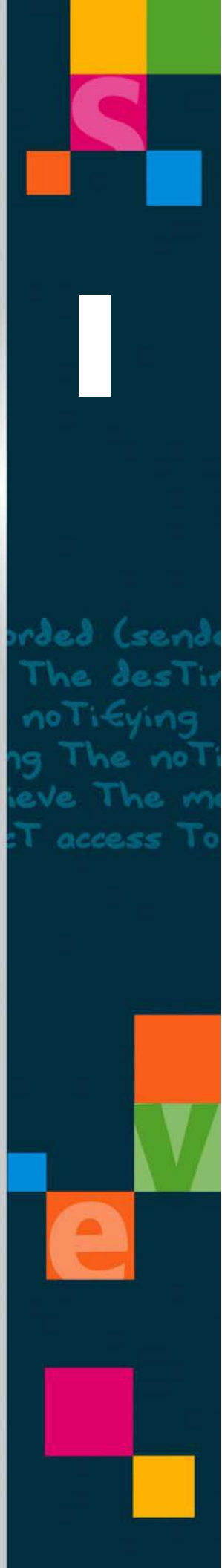

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