

# AdvOSS

## Charging & Rating Engine

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### PRODUCT DATA SHEET

Latest version of this Product Datasheet can be downloaded from  
[www.advoss.com/resources/datasheet/advoss-charging-rating-product-datasheet.pdf](http://www.advoss.com/resources/datasheet/advoss-charging-rating-product-datasheet.pdf)

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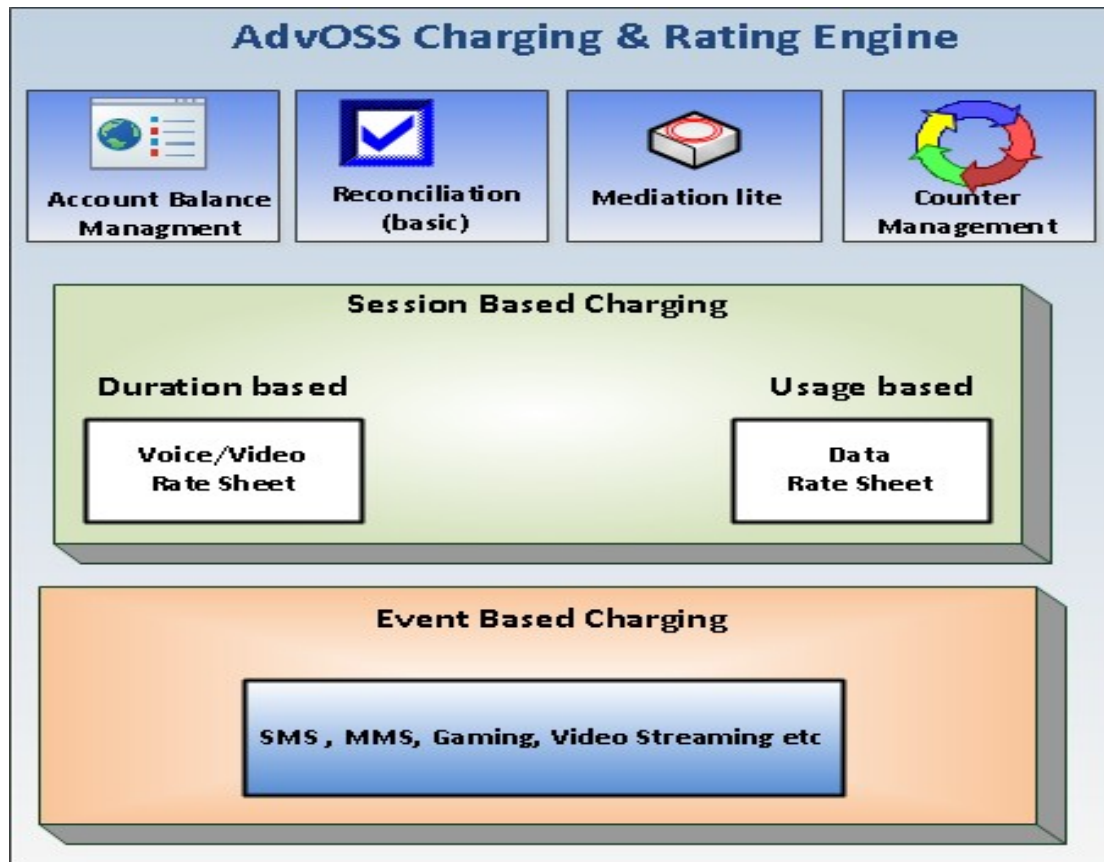
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## 1 AdvOSS Charging & Rating Engine:

AdvOSS Charging & Rating Engine enables a service provider to track usage of its services by its customers. It includes a quota manager that consumes usage of services against different counters defined as part of subscriptions. It also includes an Account Balance Management Function that keeps track of customer's balances. Rating Engine allows flexible pricing mechanisms for usage of services including flat, time varying, progressive and others.

AdvOSS Charging & Rating Engine architecture is based on open APIs and hence can be easily integrated with other B/OSS products to build larger solutions. AdvOSS has a range of B/OSS products in its portfolio with which AdvOSS Charging & Rating Engine comes pre-integrated as part of AdvOSS Solutions.



## 2 Business Use Cases:

- **Charging**
  - Counter Charging
    - Counters for specific destinations
    - Counters for specific time slots
    - Fair-usage thresholds for counters
    - Higher frequency sub-units like daily or weekly limits within a monthly counter
    - Friend n Family and other user specific counters
      - Work flows for arbitrary business logic to allow setting such counters
      - Interface with subscriber self-serve
  - Monetary Charging
    - Connection Charges
    - Duration based charging
    - Usage based charging
    - Event based charging
  - Multiple rounding schemes for used units
  - Re-Rating application
- **Rating**
  - Time varying rates for duration, usage and events
  - Progressive rates for duration, usage and events
  - Hooks for arbitrary rating schemes
  - Rating Classes
    - Hooks for arbitrary rules definition for rating classes
- **Prefix Matching for counters or rating**
  - Longest Prefix matching
  - Exact Prefix matching
  - Substring matching
  - Start string matching
  - Others definable through hooks

- **Authorization Application**
  - Counter Matching
  - Rate Matching
  - Balance verification
  - Return of total allowed units of Duration, Usage or Events to enforcement point
- **Unit Reservation or Online Charging (OCS) Application**
  - Multiple Charging Basis
    - Duration
    - Usage
    - Events
  - Multiple simultaneous charging for single session based on Duration and Usage
  - Reservation of Counter Units or monetary credit
  - Use of single customer balance for multiple concurrent sessions without credit risk
  - Change of tariff and change of counter support
  - Support for Radius or Diameter server
  - Service Denial based on time of day through rating engine
- **Interim Accounting Application**
  - Real-Time charging of session on every interim on multiple basis
    - Duration
    - Usage
  - Functioning with or without unit reservation
  - Detailed sub-records for each session for counter and rating changes
- **Stop Accounting Application**
  - Refund of unused counter and credit units
- **Revenue Assurance**
  - Reconciliation with secondary CDR sources
- **Credit Control**
  - Real-Time interface to account balance management

- Real-Time interface to taxation
- Comprehensive alerting

### **3 Modules:**

The AdvOSS Charging & Rating Engine is composed of the following modules:

#### **Charging Engine Modules**

- Account Balance Management
- Charging Application
  - Duration Based Charging
  - Event Based Charging
  - Usage Based Charging
  - Duplicate CDR removal
- Mediation Lite
- Basic Reconciliation
- Revenue Assurance Lite
- Quota Management

#### **Rating Engine Modules**

- Duration Based Rate Sheets
- Usage Based Rate Sheets
- Event Based Rate Sheets
- Muti-services Rating
- Rounding
- Time of the Day/Day of the week based Rates
- Holiday Discounts
- Progressive Rating
- Taxation Management
- Rate Activation Management

For details of these modules please see the sections titled “AdvOSS Charging & Rating Engine Modules” later in this document.

## Charging Engine Modules

The AdvOSS Charging Engine offers the following modules:

### 3.1 Account Balance Management:

This module is shared between AdvOSS Converged Billing Module and the AdvOSS Charging & Rating Engine. It supports unified Account Balance Management for subscribers. A common subscriber wallet is maintained and this enables the offering of a truly converged behavior by the billing system. The Account Balance Management module offers the following features:

- Increase Subscriber Balance
- Decrease Subscriber Balance
- Adjust Credit Limit of subscribers: Credit-limit of subscriber may be changed for postpaid customers for flexible postpaid billing management.

The system enforces that any increase or decrease in the Subscriber Balance is always a part of a transaction that justifies the balance adjustment.

### 3.2 Non Usage Charges:

System supports the provision of non usage based charges. These could be one time activation or ongoing e.g. Non usage charges for following type of services or more can be supported:

- Service Setup charges (IPTV, Data, Voicemail etc)
- CPE charges
- FTTH installation fee

### 3.3 Charging Application:

Charging Application module contains following sub-modules and features:

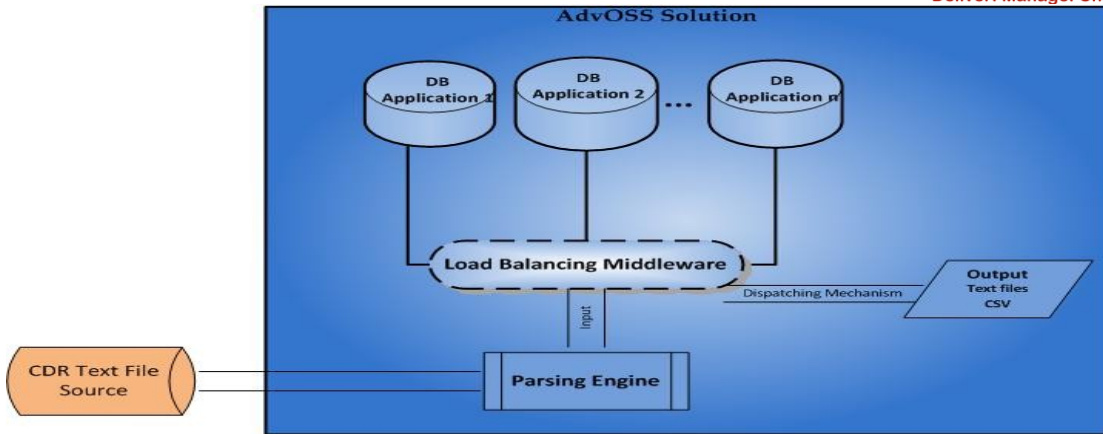


- **Duration Based Charging:** Session based Charges can be applied for voice and other services according to the time duration spent by subscriber in using the particular service. Duration Based Rate Sheets can be defined and rates applied by the Rating Engine.
- **Usage Based Charging:** Applying Charges based on usage/bandwidth consumed by the subscriber. Usage based Rate sheets are defined in the Rating Engine.
- **Event Based Charging:** Event Based Charges can be applied for every instance of some service consumed such as SMS, MMS, downloading Ringtone, Playing Video Game etc
- **Duplicate Record Remover:** Key component of the Mediation application. It checks whether there are any duplicate records by taking into consideration fields like A party number, B party number, time of call, duration etc. Mainly it performs duplicate removal based on following criteria:
  - Charging Identifier Based
  - Rules Based
    - Party A, Party B and Call time based support for multi-party conferencing aware rules is also available.

### 3.4 Mediation Lite:

Mediation & Processing of text based CDRs into the Charging & Rating Engine DB.

- **Parsing Engine** reads Text based files available from the source and parses them to the backend DB
- **Dispatcher:** For flexible distribution of CDR files to other Mediation or Post Processing Systems. Supported Dispatching mechanism would be Text Files(CSV)



### 3.5 Basic Reconciliation:

Reconciliation is one of the supporting module of Charging & Rating Engine. It facilitates to reconcile CDRs and settle disputed issues with these key features:

- Missing on origin: Find missed calls at origination
- Missing on destination
- Different Duration: Find Call Duration difference
- Different Time of Call
- Rate differences

### 3.6 Revenue Assurance Lite

Revenue Assurance Lite is a module of AdvOSS Charging Engine and comes as an application that is called by Mediation Lite or other CDR sources.

Revenue Assurance is always run on a secondary source of CDRs after the primary source of CDRs has been mediated, rated and charged.

Revenue Assurance Lite identifies any CDRs that might have been missed in the original source and arranges them to be rated and charged using the Rating and Charging Engine.

Revenue Assurance Lite is available for all services that generate accounting records.

**Process:**

CDRs are usually generated on a primary source and sent to Rating and Charging Engine through text files or AAA Servers. While this process is happening, CDRs can be made at other sources including gateways, enforcement points, border controllers, AAA Server secondary text files or even on terminating partners.

These CDRs are then fed to Revenue Assurance Lite application that matches each CDR from the existing table of CDRs in the database.

It then identifies any missing CDRs based on CallLegIDs, AcctSessionIDs, ConfIDs, ICIDs or other keys. Once identified

as a missing CDR, Revenue Assurance Lite then hands over that CDR to Rating and Charging Engine for subsequent application to a Customer's account.

Revenue Assurance Lite can be run on as many sources of CDRs as are available without harm.

- **Advanced Functionality**

In addition to basic missing CDRs, Revenue Assurance Lite can also identify CDRs with different values in primary and secondary CDRs. Fields matches are Session Times and Usage Units consumed. In more advanced configurations, Revenue Assurance Lite can also be configured to have the CDRs Re-Rated and can match the rating done by original source.

- **Offline and Near Real-Time Configuration**

Revenue Assurance Lite can be run offline or it can be configured to run in near real-time to give all CDRs from a secondary source a secondary parse shortly after the original source has parsed them. This gives better credit control in strictly pre-paid scenarios where finding missing CDRs in secondary sources with a delay might result in lost revenue.

- **Dependencies**

Revenue Assurance Lite depends on Mediation Lite or any other application to parse CDRs and handover to it for further processing. It requires Read-Only access to the original database table of CDRs or a copy of that table for matching and processing.

- **Reporting**

Revenue Assurance Lite sends detailed reports of missing CDRs found, their charging and rating done.

### 3.7 Quota Management:

AdvOSS offers a state-of-the-art Quota Manager with sophisticated counter management features. For enabling smart prepaid quota based services, AdvOSS Quota Manager supports

all types of Time; Volume & Event based counters and comes pre-integrated with its AAA Applications (AAA Server, Policy Server & HSS) & Charging Engine. It can also integrate with any third party Billing System.

**Time based Quota:**

Prepaid time based counters for voice and data services for example

- 100 Free minutes for all local voice calling
- 2 hours Free usage for data service (wi-fi)
- 1 day unlimited data usage(free download/upload)

**Volume based Quota:**

Provide support for management and control of volume based packages for real time Data Services. This may include

- 10 GB download/upload upon limit upon service activation
- 25 GB quota limit for download/upload

**Event based Quota:**

For services such as SMS, MMS, VoD (Video on Demand) and other content related services

- 100 free SMS
- 10 Movie downloads per month

## AdvOSS Rating Engine Modules:

AdvOSS Rating Engine offers CSPs a highly scalable, service agnostic and flexible system that enables the introduction of new, complex and converged service offerings.

AdvOSS Charging Engine takes raw CDRs either as AAA packets or files through Mediation lite, queries the Rating engine for application of the rate. The AdvOSS Rating Engine rates the CDRs according to the rate in the relevant rate sheet for an event, session or usage. Then it returns rated CDRs to the AdvOSS Charging Engine.

It enables creation, maintenance and application of various types of complex rates as described below:

### 3.8 Duration Based Rate Sheets:

Customer can be charged on the basis of how much time the customer spent on CSP network. . It can be mainly applied on Voice Calls or data services such as wi-fi

### 3.9 Usage Based Rate Sheets:

Rating on the basis of bandwidth consumed, separate charges can be defined for upload or download. It depends on the kind of service used by customer i.e. Broadband/DSL, VOD etc.

### 3.10 Event Based Rate Sheets:

Rating for every instance of some service consumed such as SMS, MMS, downloading Ringtone, Playing Video Game etc

### 3.11 Multi-services Rating:

Enables multiple Charging on same session like both Duration and Usage based rates are applied at the same time. AdvOSS Rating Engine offers flexibility in charging customer through applying combination of Usage & Duration based Rates for a single session. For example Charging Customer for wimax

internet service usage for the time duration he has spent as well as the bandwidth consumed (upload/download).

### 3.12 Rounding:

Rating can be done based on rounding intervals e.g. 60/30 based rating for voice where 60 seconds is the first rounding interval and 30 seconds is the second rounding interval.

### 3.13 Time of Day / Day of Week Based Rates:

Supports 24 \* 7 different rates in a week. It means there can be different rates for every hour in a week and different rates for every day in a week.

### 3.14 Holiday discounts:

It allows adding different holiday based rates as per CSP requirements. CSP can define special rates according to different events/holidays and rate their customers.

### 3.15 Progressive Rating:

Differentiated Rating for multiple intervals in a single session/call. Rating for Up to 10 intervals is supported.

### 3.16 Rate Activation Management:

This module enables new rate activation as per the defined date or an automatic change in the rate plan according to the pre-defined date in the system.

*All Charging & Rating Engine modules and features mentioned above are optional and can be provided to CSP as per the business requirements and the product license acquired.*

## 4 Integration Points

AdvOSS Charging & Rating Engine architecture is based on open APIs and hence can be easily integrated with other B/OSS products to build larger solutions. AdvOSS has a range of B/OSS products in its portfolio with which AdvOSS Charging & Rating Engine comes pre-integrated as part of AdvOSS Solutions. It offers points of integration with the following systems:

### 4.1 Billing Systems

AdvOSS Charging & Rating Engine can integrate with Billing Systems that are responsible for billing and revenue management. AdvOSS offers its own fully featured Converged Billing System as well with which Charging & Rating Engine comes pre-integrated.

### 4.2 Voucher Management System (VOMS)

AdvOSS Charging & Rating Engine can integrate with Voucher Management Systems that are responsible for managing the voucher lifecycle. AdvOSS offers its own fully featured Voucher Management System as well with which AdvOSS Charging & Rating Engine comes pre-integrated.

### 4.3 Mediation System

AdvOSS Charging & Rating Engine can integrate with Mediation Systems for rating of CDRs coming through Mediation. AdvOSS offers its own fully featured Mediation System as well with which AdvOSS Charging & Rating Engine comes pre-integrated.

### 4.4 AAA Servers

AdvOSS Charging & Rating Engine can integrate with AAA Servers , over Radius or Diameter interfaces , for receiving AAA Data. Through the AAA Servers, it also supports integration with any third party credit control application. AdvOSS offers its own fully featured AAA

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Servers which supports Radius and Diameter protocols and contain Credit Control Application. AdvOSS Charging & Rating Engine comes pre-integrated with the AdvOSS AAA Servers.

#### **4.5 Web based Subscriber Self Care Applications**

AdvOSS Charging & Rating Engine can integrate with Web based Subscriber Self Care Applications. AdvOSS offers its own fully featured Web Based Subscriber Self care module that is part of AdvOSS CRM and with which AdvOSS Charging & Rating Engine comes pre-integrated.

#### **4.6 IVR based Subscriber Self Care Applications**

AdvOSS Charging & Rating Engine can integrate with IVR based Subscriber Self Care Applications. AdvOSS offers its own fully featured IVR Application Server hosting the IVR based subscriber self care application. This is pre-integrated with AdvOSS Charging & Rating Engine.

## 5 Key Benefits

AdvOSS Charging & Rating Engine offers the following key benefits to the CSPs, in addition to its feature set:

### 5.1 Workflow Hooks:

The System offers the advance feature of providing workflow hooks on all kinds of events and control flow points within the charging and rating logic. Context specific information depending on the current state of workflow is made available in the hook as parameters. The CSP can alter the workflow by interfacing with any of the hooks present in the system.

### 5.2 Scalability:

The System can scale linearly up to a few million subscribers offering substantial advantages in terms of cost reduction and ease of scalability. Scalability is achieved using various techniques like distributed database design.

### 5.3 Reliability:

The system provides high reliability and ensure mechanism to avoid system downtime though fully redundant DB architecture

### 5.4 Robustness:

The system is very robust and keeps performing in the fact of errors.

### 5.5 Customizability:

The system is designed to allow for easy and rapid customizations as per CSP requirements, on demand.

### 5.6 Disaster Recovery:

The System can be deployed in two geographically distant data centers, for disaster recovery reasons. AdvOSS Database solutions provide real-time DB replication to remote slaves. This gives the remote location an almost real-

time image of the live database and the system can fall back to remote location in a disaster situation.

### **5.7 Flexibility:**

The system is service agnostic and has the architectural provision to support any business model. This allows for easy customizability to support specific requirements of a CSP.

### **5.8 Resilience:**

The system works at high loads within its thresholds and gracefully keeps working by handling the situations even beyond the guaranteed thresholds e.g. by rejecting requests.

### **5.9 Speed:**

The system guarantees high speed of operations and latency times associated with the operations.

### **5.10 Data Integrity:**

The systems preserve the integrity and correct relationship of data in order to guarantee the correct behavior.

### **5.11 High Availability:**

The system uses various techniques to ensure a high availability behavior.

### **5.12 Redundancy:**

The system achieves redundancy through multiple methods like having database servers in active/active configuration. The database servers as well as the servers hosting the GUIs are hosted in geographically distributed data centers.

### 5.13 Security:

Powerful role based security is implemented in the AdvOSSCRM GUI . Detailed Audit Trail and logging is provided by the system, in order to cater for security requirements.