ATIS-0300075.2018(R2023)

Usage Data Management Architecture and Protocols Requirements for Packet-Based Application Services

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Usage Data Management Architecture and Protocols Requirements for Packet-Based Application Services

Alliance for Telecommunications Industry Solutions

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Abstract

This document describes a functional architecture and provides requirements intended for usage data management to be applied to various business applications for accounting and charging of packet-based telecommunications services.

Foreword

The Alliance for Telecommunication Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers. The Telecom Management and Operations Committee (TMOC) – formerly T1M1 -- develops operations, administration, maintenance and provisioning standards, and other documentation related to Operations Support System (OSS) and Network Element (NE) functions and interfaces for communications networks - with an emphasis on standards development related to U.S.A. communication networks in coordination with the development of international standards.

ANSI guidelines specify two categories of requirements: mandatory and recommendation. The mandatory requirements are designated by the word *shall* and recommendations by the word *should*. Where both a mandatory requirement and a recommendation are specified for the same criterion, the recommendation represents a goal currently identifiable as having distinct compatibility or performance advantages.

Suggestions for improvement of this document are welcome. They should be sent to the Alliance for Telecommunications Industry Solutions, TMOC Secretariat, 1200 G Street NW, Suite 500, Washington, DC 20005.

At the time it approved this document, TMOC, which is responsible for the development of this Technical Report, had the following leadership:

P. Galarza, TMOC Chair (iconectiv)

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1 Introduction

1.1 Background

Network Elements and Service Elements are often required to export usage information to facilitate accounting (e.g., billing functions) as well as non-accounting operations. Often usage information is stored in charging and accounting functions as log files (e.g., CDR files), and exported to external systems in batches (off-line charging). Today's rapidly evolving data networks also demand the availability of real-time and high-performance usage collection mechanisms that are related to on-line charging.

This document specifies the usage data management requirements and architecture that provide an integrated approach for meeting the demands of both on-line and offline charging for packet-based application services.

This standard was originally published as a Technical Report. Extensive revisions to the functional requirements, alignment with ITU-T Y.2233 and incorporation of revised technical content from ATIS-0300075.1 provide the rationale for promotion of this document to an American National Standard for usage data collection.

1.2 Scope & Purpose

This document specifies requirements and architecture for the collection and management of usage data for applications across packet-based networks. One purpose of this specification is to interpret and enhance ITU-T Recommendation Y.2233 in the North American context. It will additionally address protocol requirements for various reference points within the charging architecture.

Usage data is fundamental to ensuring customer charging and billing settlements reasonably correlate to the resources consumed to provide telecommunications services. Enhancements and refinements of Y.2233 will support various billing applications normally encountered in the North American context such as found in various supplier-partner relationships, including the following: retail, wholesale, and intercarrier billing settlements. Although usage data can also support non-accounting operations such as traffic management, fraud management, and market analysis, these will not be addressed in detail in this document.

The requirement to account for network and or service usage in real-time carries with it an unspoken requirement: high-performance. In this case, *high-performance* means the efficient use of capabilities of both the network and the network elements, such that the timely availability of usage records is possible even in situations where both the network and network elements are stressed by a high volume of traffic. Attaining such efficiency requires delivery protocols that minimize the overhead involved with delivering event messages and CDRs, while still enabling the reliable transfer of messages.

1.3 Target Billing Applications

The following are a service-independent set of charging applications that are considered in determining the requirements in this document. The target charging applications are:

- *Retail Billing* – The rendering of an invoice for charges due to a Service Provider by a Subscriber to their services, as per an agreed rate plan and service agreement.
- *Wholesale Billing* – The rendering of an invoice for charges due to a Network Operator from a Service Provider for access or transport services via which the Service Provider's services were delivered.
- *Intercarrier Settlement* – The process of assessing the periodic net charges due from one Service Provider to another for services rendered by each of the Service Providers on behalf of the other's Subscribers.