

# **Policy 1.0**

## **Policy Control Operator Guide**

### **Free Operator Guide**

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# BSS Evolution: The Real-Time Triumvirate Emerges

**Volubill**

## Introduction

Our industry is rapidly evolving on a number of fronts, particularly when it comes to the management of customer life changing services. Communications Service Providers (CSPs) are working to bring advanced business and pricing models to market in an effort to keep pace with competitive offers and to deliver more consistent customer value. Such change in business strategy requires new functions within Business Support (BSS) and Operations Support (OSS) systems. It also means modification to the business processes defining how services are sold, provisioned, managed and billed. These services have placed challenges on the billing functions, service fulfillment, and service assurance domains. But there is still more.

With the proliferation of new service capabilities, enabled especially by the evolution of network and user devices, comes the exponential increase in data generation by customers using both mobile and fixed-line services. Such increases are now a significant influencer for what has evolved into the “core triumvirate” of real time business support need: billing system upgrades to address real-time rating & charging; policy management tied to customer-defined service options, business definition, and technology operability; and usage data collection (especially IP-based deep packet collection) to understand customer service uptake and for policy enforcement.

This paper defines the BSS challenges involving management of the flow of customer usage transactions. It outlines the basic features a policy management solution should address, and how it ties with the rating & charging and data discovery functions. It also explains how one supplier—Volubill—is working to meet this real-time business challenge.

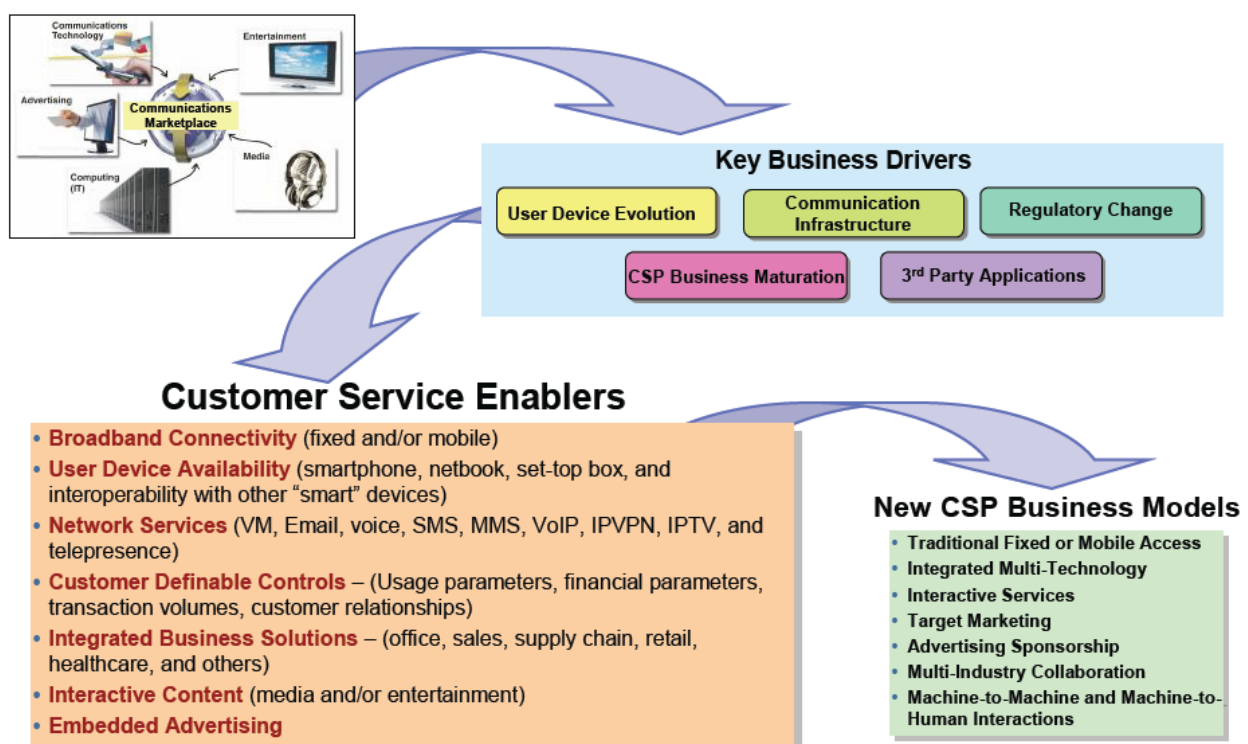
## Market Drivers of Change

Shown in Figure 1 below, new service offerings are driving new business models. For example, the traditional fixed-line voice or mobile service strategy has been replaced with multi-technology, multi-service packages including triple-play (voice, video and data) and quad-play (voice, video, data and mobile) bundles. But that was just the beginning.

As interactive functions, advertising and external content sources bring enhanced business value and solution variety beyond the network connectivity layer, alternative business models will increase in importance and necessity. These will involve, in most cases, analysis of customer service usage data to better fit solution offers with customer needs. It also means providing customers the opportunity to control how their services work, when or where they work, and under what sets of financial conditions they are allowed to work.

Consider employees of a large corporate account or consumers utilizing a master family service plan. Service control based on minutes of use, download volumes, and even financially bounded limits of content either through downloads or as on-line time with interactive services, are just a few ways that service operability can be configured to address specific customer needs. Such flexibility in service operability can be applied to a large enterprise account, small business customer, or consumer. It allows each to control the manner in which a service may be used in delivering the greatest personal value to the customer.

Figure 1 – Customer Service Enablers and New Business Models



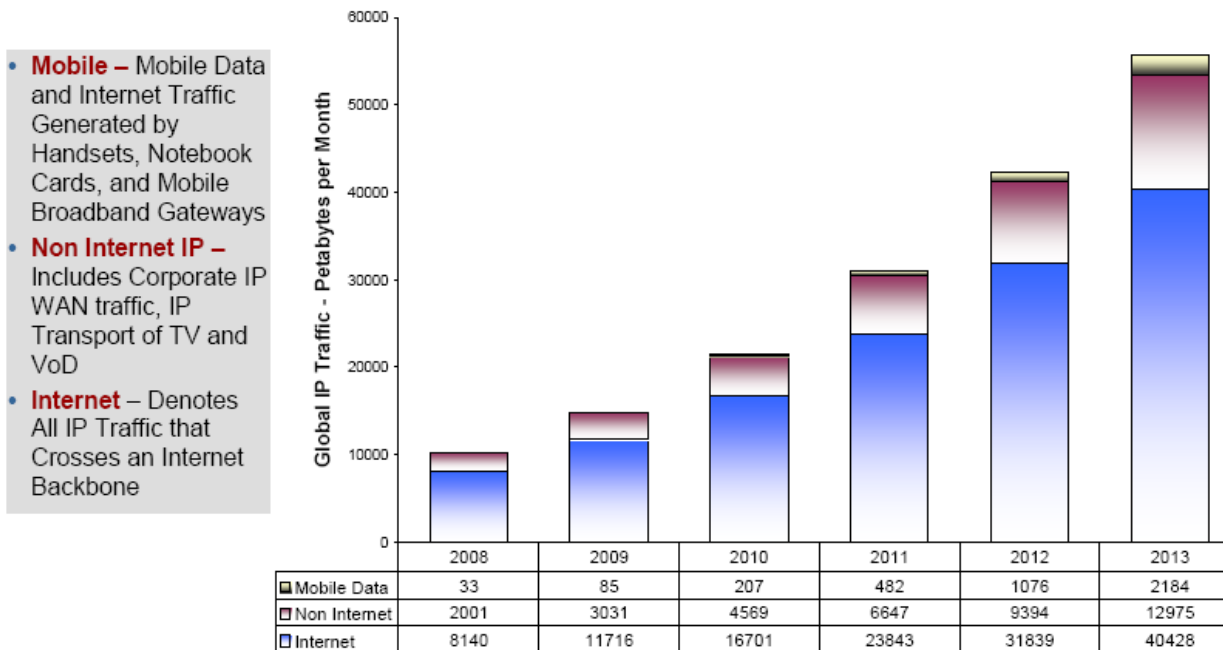
(Source Stratcast 2009)

## A New Requirement: Data Proliferation in Mobile and Fixed Line Networks

The traffic volumes transported across every operator’s network today are increasing exponentially. Some CSPs have reported increases in signaling data traffic from an average of 5-6 Gigabytes per second (Gbps) at the end of 2008 to approximately 24 Gbps in October 2009. This represents a 4X increase in less than a year. A rate of 24 Gbps on a nonstop usage basis is about 62 petabytes per month as a maximum traffic volume generated by the customer base of an “average equivalent” operator. Some operators are reporting much higher traffic volumes.

Assuming there are 300 operator equivalents worldwide in 2009, this level of data generation equates to approximately 18,600 petabytes per month of global network traffic. By comparison, Cisco reported its 2009 estimate of global IP traffic at approximately 15,000 petabytes per month increasing to 55,600 petabytes per month in 2013 as shown in Figure 2 below. This represents a 3.7X increase in global IP traffic between 2009 and 2013. The Cisco numbers are measures and estimates of data traversing the core networks of all service providers globally.

Figure 2 – Data Proliferation: A Major “New” Driver of Change



Source: Stratcast, Cisco Visual Networking Index: Forecast and Methodology, 2008-2013. Published June 2009

The Cisco report also makes an important user behavior observation relative to the advent of advanced smartphone and netbook devices. It states that on average, a smartphone such as an iPhone, Blackberry, Droid, or Android-enabled device, will create as much traffic as 30 basic feature phones, while a netbook or laptop enabled with a 3G mobile unlimited data plan will generate traffic equal to as many as 450 phones.

While exact numbers defining how much data traffic is traversing the global networks or how rapidly these levels will increase in the future is not the focus of this discussion. Even though most voice traffic is transported via TDM-based technology today, the movement to replace this with IP-based technology started several years ago. Hence, the most important observation is

that over the past 12 months IP traffic traversing both mobile and fixed-line networks has increased substantially and is projected to rapidly increase over the next five (5) years. This is causing concern in how to manage customer service needs and to control cost of operations in an environment where network traffic volumes are increasing exponentially and transport revenues are growing slightly. It is the realm where policy management, integrated with usage transaction monitoring and real-time rating & charging can have a significant influence in how CSPs will meet current and future business needs.

## Real-Time Charging and Policy Management: An Intelligent Next Step

The challenges of managing real-time services and the increased levels of customer transaction usage volumes must include intelligent application of business strategy. If handled improperly, negative backlash ensues as Comcast and others found out months ago when they terminated or blocked service of some customers. So what is really needed for CSPs to deal with the increase in traffic volume, new service considerations and a moderately increasing revenue stream? It is possible that the answer is in a real-time solution that can define and enforce policy rules to network and service delivery platforms (SDPs) based on customer-defined service usage limits, service agreement definitions, and network considerations. Stratecast defines such a solution as core to real-time business support. It includes the following:

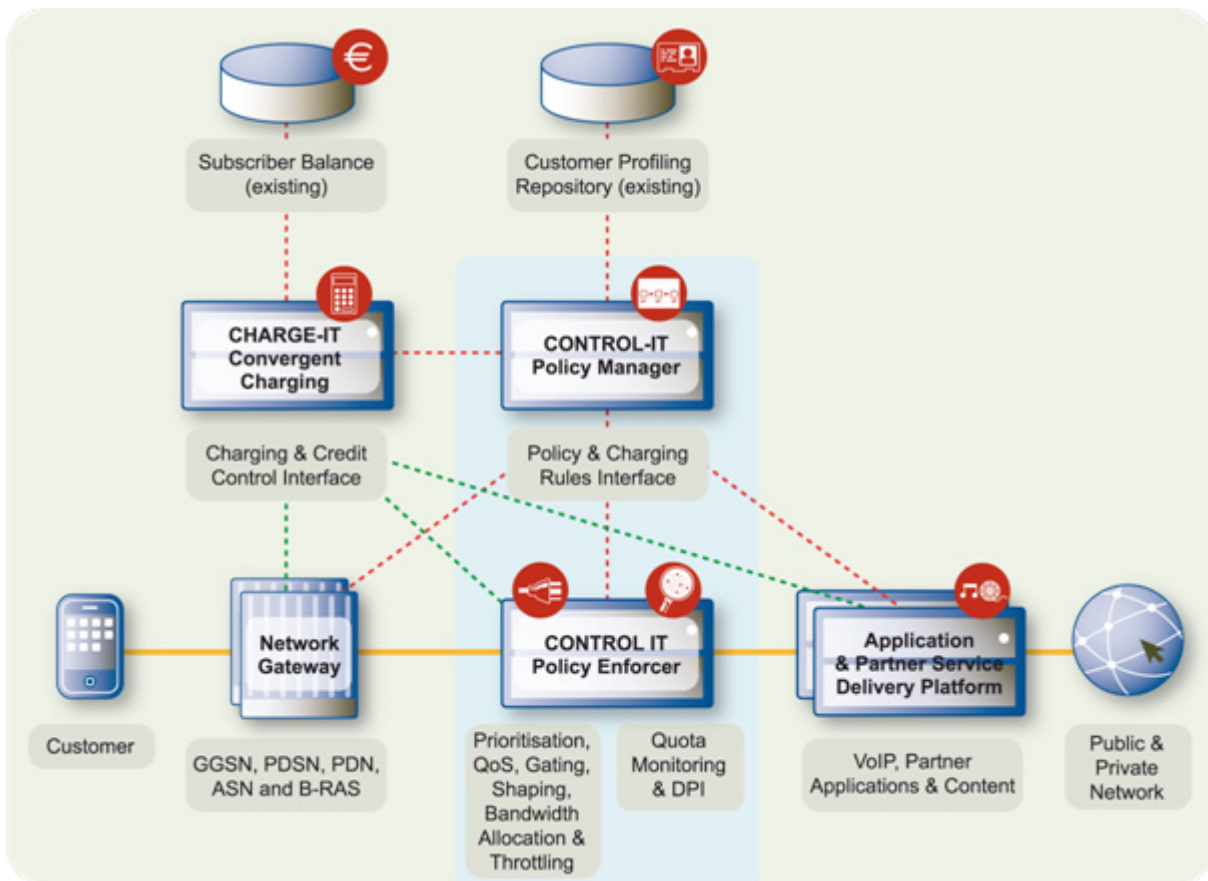
- **Policy Definition and Management** – Policy manager defines the rules that represent the requirements of the business, functionality of network technology, and the manner in which services are used. Rules can be pre-set or offered as options directly to customers based on conditions tied to the way services are expected to work. Examples of control options include location, device type, application usage, bandwidth volume consumed, charging thresholds (spending and credit balances), and time-of-day, week or month. The rules are implemented in real-time through an interface to the policy enforcement engine and rating & charging function. The policy manager satisfies the Policy and Charging Rules Function (PCRF) specified by the 3GPP standards for 3G+ mobility services.
- **Data Collection and Policy Enforcement** – Policy enforcement is dependent on a view of IP-based network traffic, usually through a Deep Packet Collection (DPC) or Inspection (DPI) function. It sits inside the network and executes service behavior rules from the policy manager and real-time decisioning inputs from the rating & charging function. It is designed to authorize or terminate subscriber use of a service, provide notifications, redirect traffic using network-based prioritization rules or premium service plan definitions, and invoke real-time charging conditions such as credit control, payment management, and on-demand service requests. The policy enforcement engine satisfies the Policy and Charging Enforcement Function (PCEF) specified by the 3GPP standards for 3G+ mobility services.
- **Real-time Rating & Charging** – Rating & charging is dependent on mediation to acquire, assemble and normalize transaction information from multiple sources into a common data stream. Rating & charging applies CSP-defined policy and, where applicable, user-defined policy, to this data according to a CSP's business process and service offering definitions. The charging function then accumulates all rated events by customer or group, applies discounts and/or promotions, and calculates a price to be paid for the services consumed. Real-time services involve balance management, with potentially multiple balances per subscriber, and provision for customer notifications when further action is required.

An intelligent usage management solution can address a number of business support and operations issues tied to the converging communications marketplace. The challenge is that there are many suppliers in one or two of the domains as described, but relatively few with offerings addressing all three involving organically developed products. There are several existing partnerships between rating & charging and policy management organizations that have teamed with the DPC/DPI suppliers. Hence, a number of multi-partner solutions are now available, which will continue to evolve in the foreseeable future.

### Volubill Usage Management Solution

The Volubill usage management solution encapsulates three of the real-time business support functions to provide policy management, rating & charging, and policy enforcement functionality. Shown in Figure 3 below, this solution consists of the following components:

Figure 3 – Volubill Usage Management Solution Architecture



Source: Volubill

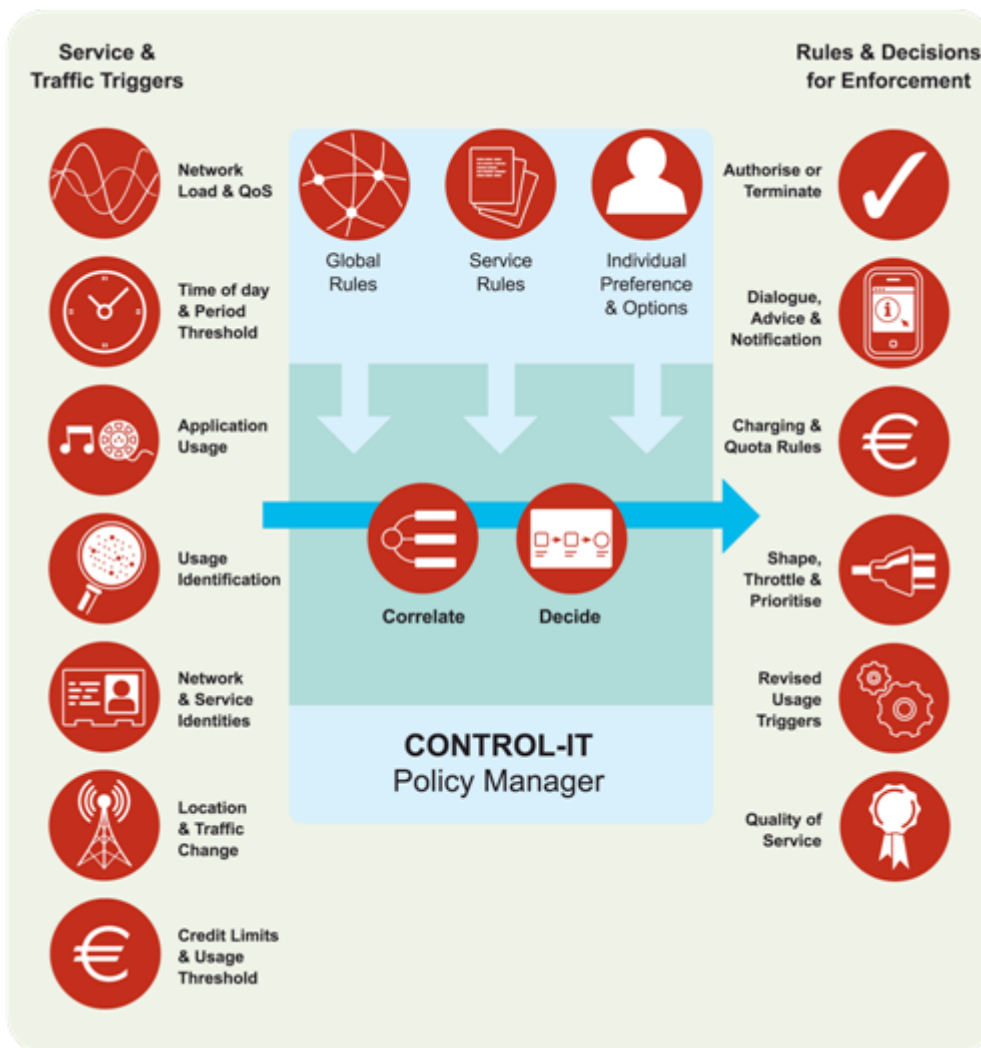
- CONTROL-IT Policy Manager** – The real-time CONTROL-IT Policy Manager, as shown in Figure 4 below, contains rules representing the requirements of business, network and IT groups as stakeholders in how services are delivered. It evaluates traffic information such as network identities, bandwidth, volume, time, location & destination at authorization, and similar information from various network gateways, SDPs or the CONTROL-IT Policy Enforcer. It then delivers decisions to enforcement points that will authorize, throttle or terminate service ses-



sions, enforce fair usage policy and service caps, initiate self-care or message-based advice-of-charge, advice-of-service, and service status.

- CONTROL-IT Policy Enforcer** – The CONTROL-IT Policy Enforcer is a router-based system that sits inline with network gateways and SDPs as shown in Figure 5 below. It selectively monitors and manages any subscriber session based on policy rules supplied through a policy manager. It uses deep and shallow packet inspection to identify traffic application and usage. CONTROL-IT Policy Enforcer provides real-time throttling, termination or prioritization of subscriber sessions based on policy decisions such as reaching usage volume limits, network detrimental applications or subscriber premium service plans. It also invokes real-time charging, credit control, quota requests and payment management across all subscriber types.

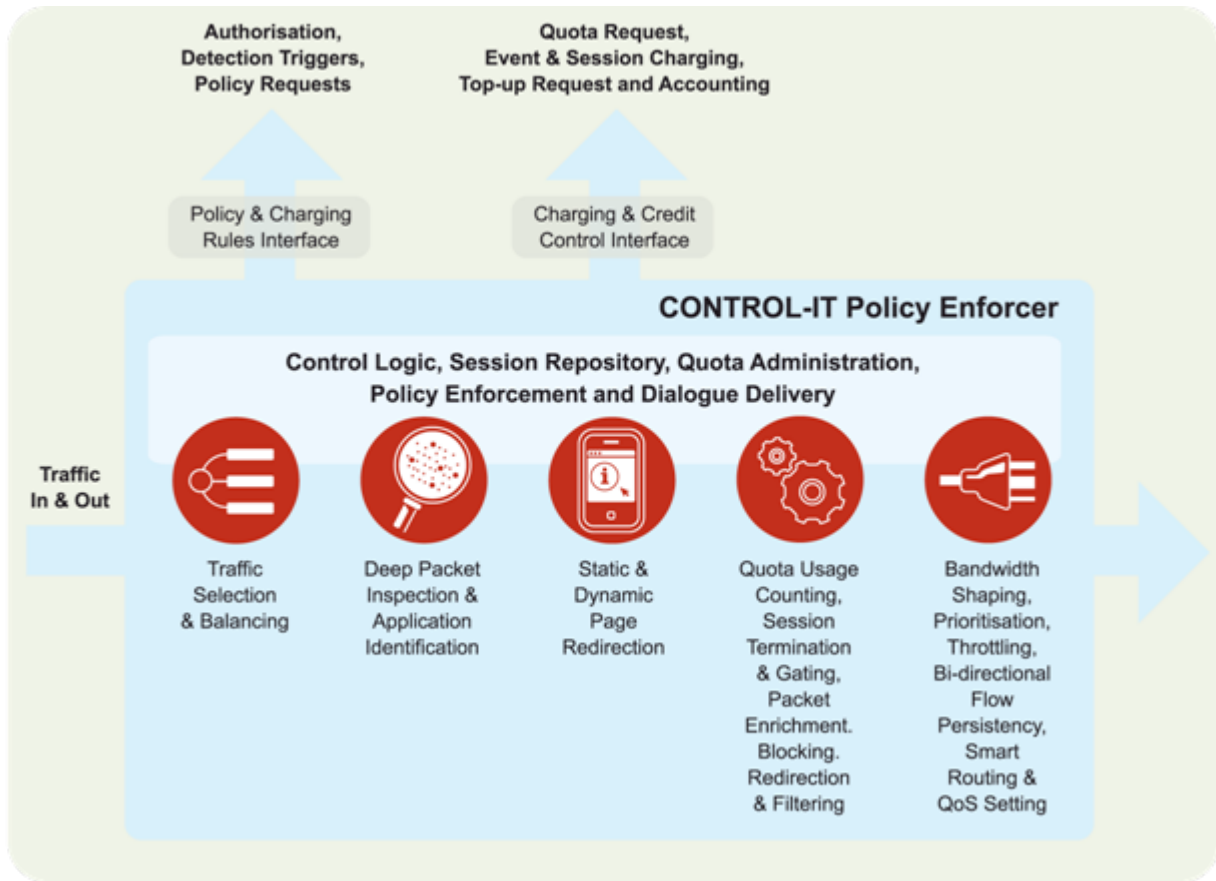
Figure 4 – Volubill CONTROL-IT Policy Manager



- CHARGE-IT Convergent Charging** – The convergent charging module performs real-time rating & charging in addition to providing balance management, active mediation, user dialogue management, voucher management, self-care and customer care, product/service catalog, and subscriber profile repository. It can manage customer account hierarchies for

coverage of different subscriber types. It works with the policy manager for authorization or termination of services based on all financially-based service usage constraints defined by either the CSP or subscriber. It also interfaces with other IN-based platforms, data warehouse systems, CRM, accounting systems and SDPs.

Figure 5 – Volubill CONTROL-IT Policy Enforcer



Source: Volubill

Volubill states that its intelligent usage management solution, for delivering CSPs with dynamic service offerings and control functions, is essential for addressing a number of business needs. For example, where network bandwidth is a serious concern, limiting usage by metrics according to specific uses that make sense to the consumer can reduce churn and improve loyalty by offering customers service choice based on limits defined by duration, priority levels, data volume per month or application units applied against either general use, a location/destination, congestion periods, specific applications or to specific time bands.

Through some of Volubill's CSP successes, they have found that if customers are allowed through self-care to select different limits and allocation of usage, to a point that it becomes personal and affordable, they will remain loyal even in highly competitive markets. Enabling customers to top-up, upgrade or even downgrade their services through pro-active notifications and self-care dialogue in relation to their specific service limits (e.g. data volume quota), application needs (e.g. online gaming or VoIP), quality of experience (e.g. bad video streaming quality) or restrictions (e.g. use of P2P at peak times) allows them to be instantly gratified

against their circumstances, while the CSP benefits from continued loyalty and/or additional revenue collection.

For further information about this topic or about Volubill, please contact:  
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### **About Volubill**

Volubill provides innovative real-time charging and policy control solutions to telecoms operators worldwide. Volubill's solutions enable operators to manage data services based on subscriber and service centric usage policies, charging models and session control in order to maximize revenues & service experience and eliminate churn. Founded in 2001, Volubill is a global company with in excess of 70 customers world-wide.

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